Chapter 13 – Statistical Description of Data

Basics, Collection and Presentation of Data

Past Year Questions

PYQ May 18

(1) Divided bar chart is considered for
a. Comparing different components of a variable
b. The relation of different components to the table
c. (a) or (b)
d. (a) and (b)

PYQ Nov. 18

(2) Data are said to be _____ if the investigator himself is responsible for the collection of the data.
a. Primary data
b. Secondary data
c. Mixed of primary and secondary data
d. None of these

PYQ Nov. 18

(3) A suitable graph for representing the portioning of total into sub parts in statistics is:
a. A Pie chart
b. A pictograph
c. An ogive
d. Histogram

PYQ Nov. 20

(4) The average of salaries in a factory is ₹ 47,000. The statement that the average salary ₹ 47,000 is_____.
☆
a. Descriptive Statistics
b. Inferential
c. Detailed
d. Undetailed

PYQ Nov. 20

(5) Statistics cannot deal with _____ data.
a. Quantitative
b. Qualitative
c. Textual
d. Undetailed

PYQ Nov. 20

(6) Sweetness of a sweet dish is:
a. Attribute
b. Discrete variable
c. Continuous variable
d. Variable

PYQ Nov. 20

(7) Census reports are used as a source of_____ date.
a. Secondary
b. Primary
c. Organize
d. Confidential

PYQ Nov. 20

(8) You are an auditor of a firm and the firm earns a profit of ₹ 67,000 you stated to them that the annual profit is ₹ 67,000. This is ____ type of statistics.
☆
a. Descriptive
b. Detailed
c. Non detailed
d. Inferential

PYQ Nov. 20

(9) The _____ are used usually when we wants to examine the relationship between two variables.
☆
a. Bar Graph
b. Pie Chart
c. Line Chart
d. Scatter Plot

PYQ Nov. 20

(10) When data are classified according to one criterion, then it is called _____ classification.
a. Quantitative b. Qualitative
c. Simple d. Factored

PYQ Jan. 21

(11) A bar chart is drawn for
a. Continuous data
b. Nominal data
c. Time series data
d. Comparing different components

PYQ Jan. 21

(12) A tabular presentation can be used for
a. Continuous series data
b. Nominal data
c. Time series data for longer period
d. Primary data

Note: Question not right

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PYQ Jan. 21

(13) A variable with qualitative characteristic is known as
a. Quality variable
b. An attribute
c. A discrete variable
d. A continuous variable

PYQ Jan. 21

(14) The accuracy and consistency of data can be verified by
a. Scrutiny
b. Internal Checking
c. External Checking
d. Double Checking

PYQ Jan. 21

(15) The left part of a table providing the description of rows is called.
a. Caption b. Box – head
c. Stub d. Body

PYQ Jan. 21

(16) Sweetness of sweet dish is.
a. An attribute
b. A discrete variable
c. A continuous variable
d. A variable

PYQ July 21

(17) _____ Means separating items according to similar characteristics grouping them into ☆ various classes:
a. Classification
b. Editing
c. Separation
d. Tabulation

PYQ July 21

(18) In graphical representation of data, ideographs ☆ are also called as:
a. Picto-graphs
b. Asymmetry graphs
c. Symmetry graphs
d. Pictograms

PYQ July 21

(19) A graph that uses vertical bars to represent data is called a:
a. Line graph
b. Scatter plot
c. Vertical graphs
d. Bar graph

PYQ July 21

(20) In a graphical representation of data, the largest numerical value is 45, the smallest numerical value is 25. If classes desired are 4 then which class interval is:-
a. 45 b. 5
c. 20 d. 7.5

PYQ July 21

(21) Data collected on religion from the census reports are:
a. Primary data
b. Unclassified data
c. Sample data
d. Secondary data

PYQ July 21

(22) Data collected on religion from the census reports are:
a. Primary data
b. Unclassified data
c. Sample data
d. Secondary data

Note: Duplicate

PYQ July 21

(23) Which of the following diagram is the most appropriate to represents various heads in total cost?
a. Pie chart
b. Bar graph
c. Multiple Line chart
d. None

PYQ Dec. 21

(24) A national institute arranged its student's data in accordance with different states. This arrangement of data is known as
a. Temporal Data
b. Geographical Data
c. Ordinal Data
d. Cardinal Data

PYQ Dec. 21

(25) Multiple axis line chart is considered when
a. There is more than one time series
b. The units of the variables are different
c. In any case
d. If there are more than one time series and unit of variables are different.

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PYQ June 22

(26) If data is collected from a census Report. What type of data it is:-
a. Time series data
b. Primary data
c. Secondary data
d. Geographical data

PYQ June 22

(27) Sweetness is an
a. Attribute b. Quantity
c. Quality d. a or c

PYQ June 22

(28) Which of the following is not a way of Presenting data?
a. Tabular form
b. Textual form
c. Graphical form
d. Regression analysis

PYQ June 22

(29) ☆ Which of the following does not form characteristics in dividing the data?
a. No. of auditors auditing Accounts.
b. No. of files audited by auditor
c. No. of files audited less than 6, less than 5, less than 10
d. File less than, moderate than, higher than

PYQ June 22

(30) ☆ Which one is research data?
a. Discrete and Continuous
b. Qualitative and Quantitative
c. Processed and Unprocessed
d. Organise and unorganised data

PYQ Dec 22

(31) Which one of the following is a source of primary data?
a. Government Records
b. Research Articles
c. Journals
d. Questionnaire filled by Enumerators

PYQ Dec 22

(32) Which is the left part of table providing description of the rows?
a. Caption
b. Box Head
c. Stub
d. Body

PYQ Jun 23

(33) The share holding pattern of ABC Ltd. is as follows:

Share holders	No. of shares in Millions
Promoter	120
FII	25
DII	20
Govt	20
Public	15

What is the difference between central angles (in degree) for shares held by Promoters and Public, in pie chart?
a. 216
b. 189
c. 180
d. 99

PYQ Jun 23

(34) What does an Ogive curve represent?
a. The cumulative frequency and class boundary
b. The frequency and class boundary
c. The frequency and cumulative frequency
d. The frequency and class interval

PYQ Jun 23

(35) The following is the data related to the daily income of 86 persons:

Income in ₹	No. of persons:
500-999	15
1000-1499	28
1500-1999	36
2000-2499	7

What is the percentage of persons earning at least ₹ 1,500 per day?
a. 50% b. 45%
c. 40% d. 60%

PYQ Jun 23

(36) For tabulation, 'caption' is
a. The upper part of the table
b. The lower part of the table
c. The main part of the table
d. The upper part of a table that describes the rows and sub-rows

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Answer Key		
1 d	2 a	3 a
4 a	5 b	6 a
7 a	8 a	9 c
10 c	11 d	12 b
13 b	14 a	15 c
16 a	17 a	18 d
19 d	20 b	21 d
22 c	23 a	24 b
25 b	26 c	27 d
28 d	29 d	30 b
31 d	32 c	33 b
34 a	35 a	36 d

Basics, Collection and Presentation of Data

Mock Test Paper Questions

MTP May 18

(1) Statistics is concerned with
- a. Qualitative information
- b. Quantitative information
- c. a or b
- d. Both a & b

MTP May 18

(2) 'Stub' of a table is the _____ part of the table describing the _____.
- a. Left, Columns
- b. Right, Columns
- c. Right, Rows
- d. Left, Rows

MTP Nov 18

(3) ☆ The technician of graphic presentation is extremely helpful in which of the following
- a. Analysing the changes at different points of Time
- b. Analysing cause and effect relationship
- c. Analysing proportional relationship
- d. Analysing the degree of relationship

MTP Nov 18

(4) Statistics Analyses:
- a. Qualitative
- b. Quantitative
- c. Either Qualitative or Quantitative
- d. Quantitative and Qualitative

MTP May 19

(5) Statistics is applied in
- a. Economics
- b. Business Management
- c. Commerce and Industry
- d. All of these

MTP May 19

(6) The primary data are collected by
- a. Interview Method
- b. Observation Method
- c. Questionnaire Method
- d. All of these

MTP May 19

(7) The best method to collect data, in case of a natural calamity, is
- a. Personal Interview
- b. Indirect Interview
- c. Questionnaire Method
- d. Direct Observation Method

MTP May 19

(8) 'Stub' of a table is the
- a. Left part of the table describing the columns
- b. Right part of the table describing the columns
- c. Right part of the table describing the rows
- d. Left part of the table describing the rows

MTP May 19 Series II

(9) The best method to collect data, in case of a natural calamity, is
- a. Personal Interview
- b. Indirect Interview
- c. Questionnaire Method
- d. Direct observation Method

MTP May 19 Series II

(10) The entire upper part of a table is known as
- a. Caption
- b. Stub
- c. Box head
- d. Body

MTP Nov 19

(11) The number of times a particular item occurs in a given data is called its
- a. Variation
- b. Frequency
- c. Cumulative Frequency
- d. None of these

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MTP Nov 20

(12) The most appropriate diagram to represent the data relating to the monthly expenditure on different items by a family is ?
- a. Histogram
- b. Pie-diagram
- c. Frequency polygon
- d. Line graph

MTP Apr 21

(13) The best method to collect data in case of natural calamity is
- a. Personal interview.
- b. Telephone interview.
- c. Mailed questionnaire method.
- d. indirect interview.

MTP Nov 21

(14) Which of the following is not an example of continuous variable?
- a. Temperature in India
- b. Profit of Company X
- c. Number of road accidents
- d. A person's height

MTP Oct 21

(15) Statistics is concerned with
- a. Qualitative information
- b. Quantitative information
- c. (a) or (b)
- d. Both (a) and (b).

MTP Oct 21

(16) The primary data are collected by
- a. Interview method
- b. Observation method
- c. Questionnaire method
- d. All these

MTP June 22

(17) Data are said to be _____ if the investigator himself is responsible for the collection of data.
- a. Primary Data
- b. Secondary Data
- c. Mixed of Primary and Secondary Data
- d. None of these

MTP Dec 22 – Series I

(18) The cost of sugar in a month under the heads of raw Materials, labor, direct production, and others were 12, 20, 35, and 23 units respectively. What is the difference between the central angles for the largest and smallest components of the cost of sugar?
- a. 72^0
- b. 48^0
- c. 56^0
- d. 92^0

MTP Dec 22 Series II

(19) Data are said to be _____ if the investigator himself is responsible for the collection of data.
- a. Primary Data
- b. Secondary Data
- c. Primary and Secondary
- d. None of these

MTP Dec 22 Series II

(20) A suitable graph for representing the portioning of total into sub parts in statistics is:
- a. A Pictograph
- b. A Pie Chart
- c. An Ogive
- d. A Histogram

MTP June 2023 Series I

(21) The most accurate mode of data presentation is:
- a. Diagrammatic
- b. Tabulation
- c. Textual presentation
- d. None of these

MTP June 2023 Series I

(22) Which is the left part of the table providing the description of the rows?
- a. Captain
- b. Box head
- c. Stub
- d. Body

Answer Key

1 d	2 d	3 a
4 b	5 d	6 d
7 a	8 d	9 a
10 c	11 b	12 b
13 a	14 c	15 d
16 d	17 a	18 d
19 a	20 b	21 b
22 c		

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Frequency Distribution

Past Year Questions

PYQ May 18

(1) Frequency density is used in the construction of
a. Histogram
b. Ogive
c. Frequency polygon
d. None when the classes are of unequal width.

PYQ Nov. 18

(2) The following frequency distribution is classified as

X	12	17	24	36	45
F	2	5	3	8	9

a. Continuous distribution
b. Simple Frequency Distribution
c. Cumulative frequency distribution
d. None of these

PYQ Nov. 18

(3) Histogram is useful to determine graphically the value of
a. Arithmetic mean
b. Median
c. Mode
d. None of these

PYQ Nov. 18

(4) The number of times a particular items occurs in a class interval is called its:
a. Mean
b. Frequency
c. Cumulative frequency
d. None of these

PYQ Nov. 18

(5) An ogive is a graphical representation of
a. Cumulative frequency distribution
b. A frequency distribution
c. Ungrouped data
d. None of these

PYQ Nov. 18

(6)

Class	0-10	10-20	20-30	30-40	40-50
Freq.	4	6	20	8	3

For the class 20-30. Cumulative frequency is:
a. 10 b. 26
c. 30 d. 41

PYQ June 19

(7) Which of the following graph is suitable for cumulative frequency distribution?
a. 'O'give b. Histogram
c. G.M d. A.M

PYQ June 19

(8) Histogram can be shown as
a. Ellipse b. Rectangle
c. Hyperbola d. Circle

PYQ June 19

(9) _____Series is continuous.
a. Open ended
b. Exclusive
c. Close ended
d. Unequal call intervals

PYQ June 19

(10) Ogive graph is used for finding
a. Mean b. Mode
c. Median d. None of these

PYQ June 19

(11) Histogram is used for finding
a. Mode b. Mean
c. First quartile d. None of these

PYQ Nov. 19

(12) The graphical representation of cumulative frequency distribution is called.
a. Histogram
b. Historiagram
c. Ogive
d. None of these

PYQ Nov. 20

(13) Types of cumulative frequencies are:
a. 1 b. 2
c. 3 d. 4

PYQ Jan. 21

(14) From a histogram one cannot compute the approximate value of
a. Mode
b. Standard deviation
c. Median
d. Mean

PYQ Jan. 21

(15) Mode can be obtained from_____
a. Frequency polygon
b. Histogram
c. Ogive
d. All of the above

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PYQ Jan. 21

(16) Most of the Commonly used distributions provide
a. Bell – shaped
b. U Shaped
c. J – Shaped Curve
d. Mixed Curve

PYQ Jan. 21

(17) Which of the following is suitable for the graphical representation of a Cumulative frequency distribution?
a. Frequency polygon
b. Histogram
c. O give
d. Pie chart

PYQ July 21

(18) Frequency density of a class interval is the ratio of _____.
a. Class frequency to the total frequency
b. Class length to class frequency
c. Class frequency to the cumulative frequency
d. Frequency of that class interval to the corresponding class length.

PYQ Dec. 21

(19) Ogive curves are used to determine
a. Mean b. Median
c. Mode d. Range

PYQ June 22

(20) Less than 'o' give curve give-
a. Mean b. Median
c. Mode d. M D

PYQ June 22

(21) Histogram can be drawn when
a. Class interval are equal
b. Class interval are unequal
c. Frequency of class interval are equal
d. None of these

PYQ June 22

(22) If the cumulative frequency are plotted on axis then which type of curve is formed
a. Ogive
b. Frequency curve
c. Histogram
d. Frequency Polygon

PYQ Dec 22

(23) The suitable formula for computing the number of class intervals is (N is total frequency)
☆ a. 3.322 logN b. 0.322 logN
c. 1 + 3.322 logN d. 1 – 3.322 logN
Note: Out of Syllabus

PYQ Dec 22

(24) Ogive for more than type and less than type distributions intersect at
a. Mean b. Median
c. Mode d. Origin

PYQ July 21

(25) The modes of presentation of data are:
a. Textual, Diagrammatic and Internal presentation
b. Tabular, Textual and Internal presentation
c. Textual, Tabular and Diagrammtic presentation
d. Tabular, Diagrammatic and Internal Presentation

Answer Key

1 a	2 b	3 c
4 b	5 a	6 c
7 a	8 b	9 b
10 c	11 a	12 c
13 b	14 b	15 b
16 a	17 c	18 d
19 b	20 b	21 d
22 a	23 c	24 B
25 c		

Frequency Distribution

Mock Test Paper Questions

MTP May 18

(1) The pair of averages whose value can be determined graphically?
a. Mean and median
b. Mode and mean
c. Mode and median
d. None of these

MTP May 18

(2) The difference between the upper and lower limit of a class is called
a. Class interval b. Mid value
c. Class boundary d. frequency

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MTP May 18

(3) What is exclusive Series
- a. In which both upper and lower limit are not included in class frequency
- b. In which lower limit is not included class frequency
- c. In which upper limit is not included in class frequency
- d. None of the above

MTP Nov 18

(4) ☆ For frequency distribution and time series which form of presentation is rarely used.
- a. Diagrammatic presentation
- b. Graphic
- c. both Diagrammatic and Graphic
- d. More information required

MTP Nov 18

(5) Frequency Polygon is meant for ---------frequency distribution
- a. Single
- b. Double
- c. Multi
- d. None of the above

MTP Nov 18

(6) Ogive is also called as
- a. frequency graph
- b. cumulative frequency graph
- c. Histogram
- d. None of these

MTP Nov 18

(7) There are _____ types of frequency curves
- a. 1 b. 2
- c. 3 d. 4

MTP Nov 18

(8) The J shaped curve starts with a _____frequency
- a. Minimum b. Maximum
- c. Either a & b d. none

MTP Nov 18

(9) Mid values are also called
- a. Lower limit
- b. Upper limit
- c. Class mark
- d. None

MTP May 19

(10) Pie-diagram is used for
- a. Comparing different components and their relation to the total
- b. representing qualitative data in a circle
- c. Representing quantitative data in circle
- d. (b) or (c).

MTP May 19 Series II

(11) A frequency distribution
- a. Arranges observations in an increasing order
- b. Arranges observation in terms of a number of groups
- c. Relates to a measurable characteristic
- d. All of these

MTP May 19 Series II

(12) Mode of a distribution can be obtained from
- a. Histogram
- b. Less than type ogives
- c. More than type ogives
- d. Frequency polygon

MTP Nov 19

(13) Frequency density is used in the construction of.
- a. Histogram
- b. Ogive
- c. Frequency Polygon
- d. None of these

MTP May 20

(14) The difference between Upper limit and lower limit of a class is called
- a. Class Interval
- b. Class boundaries
- c. Mid-Value
- d. Frequency

MTP May 20

(15) Median of a distribution can be obtained from
- a. Frequency polygon
- b. Histogram
- c. Less than type ogives
- d. None of these.

MTP Nov 20

(16) The distribution of income is an example of frequency distribution of
- a. Continuous variable
- b. A discrete variable
- c. An attribute
- d. (b) or (c)

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MTP March 21

(17) ☆ Histogram is used for presentation of the following type of series
a. Time Service
b. Continuous Series
c. Discrete Series
d. Individual Series

MTP March 21

(18) The graphical representation of cumulative frequency distribution is called–
a. Histogram
b. Pie Chart
c. Frequency Polygon
d. Ogive

MTP March 21

(19) The difference between upper limit and lower limit of a class is called:
a. Class Interval b. Class boundary
c. Mid-value d. Frequency

MTP Apr 21

(20) The following frequency distribution

x	12	17	24	36	45
f	2	5	3	9	8

is classified as-
a. Continuous b. Discrete
c. Cumulative d. None of these

MTP Oct 21

(21) The curve obtained by joining the points, whose x- coordinates are the upper limits of the class-intervals and y coordinates are corresponding cumulative frequencies is called
a. Ogive
b. Histogram
c. Frequency Polygon
d. Frequency Curve

MTP March 22

(22) Median of a distribution can be obtained from
a. Frequency polygon
b. Histogram
c. ogives
d. None of these.

MTP March 22

(23) For the non-overlapping classes 0—19 , 20—39 , 40—59 the class mark of the class 0—19 is
a. 0 b. 19
c. 9.5 d. none of these

MTP March 22

(24) For open-end classification, which of the following is the best measure of central tendency?
a. AM b. GM
c. Median d. Mode

MTP June 22

(25) Histogram is used for finding:
a. Mode b. Mean
c. First Quartile d. None

MTP June 22

(26) Relative frequency for a particular class lies between:
a. 0 and 1
b. 0 and 1, both inclusive
c. -1 and 0
d. -1 and 1

MTP June 22

(27) Less than type and more than type Ogives meet at a point known as:
a. Mean b. Median
c. Mode d. None of these

MTP Dec 22 – Series I

(28) The distribution of profits of a company follows:
a. J-shaped frequency curve
b. U-shaped frequency curve
c. Bell-shaped frequency curve
d. Any of these

MTP Dec 22 – Series I

(29) Median of a distribution can be obtained from:
a. Histogram
b. Frequency Polygon
c. Less than type ogives
d. none of these

MTP Dec 22 – Series I

(30) Frequency density corresponding to a class interval is the ratio of
a. Class Frequency to the Total Frequency
b. Class Frequency to the class Length
c. Class frequency to the class Frequency
d. Class Frequency to the Cumulative Frequency.

MTP Dec 22 – Series II

(31) The number of times a particular items occurs in a class interval is called its:
a. Mean
b. Cumulative Frequency
c. Frequency

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d. None of the above

MTP Dec 22 – Series II

(32) An Ogive is a graphical representation of:
a. Cumulative Frequency distribution
b. Ungrouped Data
c. A frequency distribution
d. None of the above

MTP Dec 22 Series II

(33) Histogram can be shown as:
a. Ellipse b. Rectangle
c. Hyperbola d. Circle

MTP Dec 22 Series II

(34) _____ Series is continuous.
a. Open ended
b. Exclusive
c. Close ended
d. Unequal class intervals

MTP Dec 22 Series II

(35) Ogive graph is used for finding:
a. Quartiles b. Deciles
c. Median d. All of these

MTP Dec 22 Series II

(36) Histogram is useful to determine graphically the value of:
a. AM b. Mode
c. Median d. None of these

MTP June 2023 Series I

(37) Ogive for more than type and less than distributions intersect at
a. Means b. Median
c. Mode d. Origin

MTP June 2023 Series II

(38) Perpendicular is drawn from the point of intersection of 2 Ogives on the horizontal axis. The value of x denotes:
a. First Quartile
b. Second Quartile
c. Third Quartile
d. Any of the above

MTP June 2023 Series II

(39) In study of impact of novel Coronavirus in the world, a frequency graph is plotted for age on the x axis and fatalities on the y axis. Which frequency curve is most expected as the output?
a. J shaped curve
b. U shaped curve
c. Bell shaped curve
d. Mixed shaped curve

Answer Key

1	c	2	a	3	c
4	a	5	a	6	b
7	d	8	a	9	c
10	a	11	d	12	a
13	a	14	a	15	c
16	a	17	b	18	d
19	a	20	b	21	a
22	c	23	c	24	c
25	a	26	a	27	b
28	c	29	c	30	b
31	c	32	a	33	b
34	b	35	d	36	b
37	b	38	b	39	a

Numerical Problems

Past Year Questions

PYQ July 21

(1) There are 200 employees in an office in which 150 were married. Total male employees were 160 out of which 120 were married. What was the number of female unmarried employees?
a. 30 b. 40
c. 50 d. 10

PYQ Dec. 21

(2) In a study about the male and female students of commerce and Science departments of a college in 5 years, the following data's were obtained:

1995	2000
70% female students	75% female students
65% read commerce	40% read science
20% of male students read science	50% of female students read commerce
3000 total no. of students	3600 total no. of students

After combining 1995 and 2000 if x denotes the ratio of female commerce students to female Science student and y denotes the ratio of male commerce student to male Science student, then
a. $x = y$ b. $x > y$
c. $x < y$ d. $x \geq y$

PYQ Dec. 21

(3) A student makes in five subject S1, S2, S3, S4 and S5 are 86, 79, 90, 88 and 89. If we need to draw a Pie chart to represent these markers, then what will be the Central angle for S3.
a. 103.2^0 b. 75^0
c. 105.6^0 d. 94.8^0

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PYQ Dec. 21

(4) The following data relate to the marks of a group of students:

Marks	<10	<20	<30	<40	<50
F	15	38	65	84	100

How many students got marks more than 30?

a. 65 b. 50
c. 35 d. 43

PYQ Dec. 21

(5) The following data relate to the marks of 48 students in Statistics:

56 10 54 38 21 43 12 22
48 51 39 26 12 17 36 19
48 36 15 33 30 62 57 17
5 17 45 46 43 55 57 38
43 28 32 35 54 27 17 16
11 43 45 2 16 46 28 45

What are the frequency densities for the class intervals 30-39, 40-49, 50-59?

a. 0.20, 0.50, 0.90
b. 0.70, 0.90, 1.10
c. 0.1875, 0.1667, 0.2083
d. 0.9, 1.10, 0.7

PYQ June 22

(6) The profitability of a blue chip company is shown by -

a. Bell Shape curve
b. U shake curve
c. J Shape curve
d. Mixed curve

Answer Key

1 d	2 c	3 b
4 c	5 d	6 a

Numerical Problems

Mock Test Paper Questions

MTP Nov 19

(1) The width of each of ten classes in a frequency distribution is 2.5 and the lower class boundary of the lowest class is 10.6. Which one of the following is the upper class boundary of the highest class?

a. 35.6 b. 33.1
c. 30.6 d. None of these

Note: Wrong Ans in MTP

MTP Nov 19

(2) ☆ Let L be the lower class boundary of a class in a frequency distribution and m be the mid point of the class. Which one of the following is the higher class boundary of the class?

a. $m+\frac{m+2}{2}$ b. $L+\frac{m+L}{2}$
c. 2m-L d. m-2L

MTP May 20

(3) Find the number of observations between 250 and 300 from the following data

Value	More than 200	More than 250	More than 300	More than 350
No of observation	56	38	15	0

a. 56 b. 23
c. 15 d. 8

MTP May 20

(4) The following data relate to the marks of a group of students:

Marks:	Below 10	Below 20	Below 30	Below 40	Below 50
No. of students	15	38	65	84	100

How many students got marks more than 30?

a. 65 b. 50
c. 35 d. 43

MTP Nov 20

(5) The following data relates to the incomes of 90 persons:

Income in ₹	1500-1999	2000-2499	2500-2999	3000-3499
No. of persons	13	32	20	25

Which is the percentage of persons earning more than ₹ 2000?

a. 45 b. 85.56
c. 52 d. 55

MTP Nov 20

(6) The number of accidents for seven days in a locality are given below :

No. of accidents : 0 1 2 3 4 5 6
Frequency : 12 15 23 30 9 3 2

What is the number of cases when 3 or less accidents occurred?

a. 56 b. 6
c. 80 d. 87

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MTP March 21

(7)

No. of accidents	Frequency
0	36
1	27
2	33
3	29
4	24
5	27
6	18
7	9

In how many cases 5 or more accidents occur?

a. 96 b. 133
c. 78 d. 54

MTP Nov 21

(8) Salaries of employees working in ABC limited is as follows:

Salary	Below 10	Below 20	Below 50	Below 100	Below 1000
No. of employees	28	34	65	84	123

Find the number of employees with salaries more than 50k?

a. 65 b. 84
c. 39 d. 58

MTP Oct 21

(9) The following data relate to the incomes of 86 persons:

Income	500-999	1000-1499	1500-1999	2000-2499
Freq.	15	28	36	7

What is the percentage of persons earning more than ₹ 1500?

a. 50 b. 45
c. 40 d. 60

MTP Oct 21

(10) The following data relate to the marks of a group of students:

Marks	<10	<20	<30	<40	<50
Freq	15	38	65	84	100

How many students got marks more than 30?

a. 65 b. 50
c. 35 d. 43

MTP March 22

(11) Cost of sugar in a month under the heads raw Materials, labour, direct production and others were 12, 20, 35 and 23 units respectively. What is the difference between the central angles for the largest and smallest components of the cost of sugar?

a. 72^0 b. 48^0
c. 56^0 d. 92^0

MTP March 22

(12) ☆ In a study relating to the laborer's of a jute mill in West Bengal, the following information was collected. 'Twenty per cent of the total employees were females and forty per cent of them were married. Thirty female workers were not members of Trade Union. Compared to this, out of 600 male workers 500 were members of Trade Union and fifty per cent of the male workers were married. The unmarried non-member male employees were 60 which formed ten per cent of the total male employees. The unmarried non-members of the employees were 80'. On the basis of this information, the ratio of married male non-members to the married female non-members is

a. 1: 3 b. 3: 1
c. 4: 1 d. 5: 1

MTP June 22

(13) The frequency of the Class 20-30 in the following data is;

Marks	0-10	10-20	20-30	30-40	40-50
Freq	5	13	28	34	38

a. 5 b. 28
c. 15 d. 13

PYQ Jul 21, MTP June 22

(14) There were 200 employees in an office in which 150 were married. Total male employees were 160 out of which 120 were married. What was the female unmarried employees?

a. 30 b. 10
c. 10 d. 50

MTP Dec 22 Series II

(15) From the following data, cumulative frequency for the class 20 – 30 is

Class	0-10	10-20	20-30	30-40	40-50
Freq	4	6	20	8	3

a. 26 b. 10
c. 41 d. 30

Answer Key

1 a	2 c	3 b
4 c	5 b	6 c
7 d	8 d	9 a
10 c	11 d	12 c
13 b	14 b	15 d

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Chapter 14: Measures of Central Tendency and Dispersion

Arithmetic Mean

Past Year Questions

PYQ May 18

(1) If the variables x and z are so related that $z = ax+b$ for each where a and b are constant, then $\bar{z} = a\bar{x} + b$

a. True b. False
c. Both d. None of these

PYQ May 18

(2) If each item is reduced by 15 A. M is

a. Reduced by 15
b. Increased by 15
c. Reduced by 10
d. None of these

PYQ May 18

(3) The average of a series of overlapping averages, each of which is based on a certain number of item within a series is know as.

a. Moving average
b. Weighted average
c. Simple average
d. None of these

PYQ Nov. 18

(4) The mean of 20 items of a data is 5 and if each item is multiplied by 3, then the new mean will be

a. 5 b. 10
c. 15 d. 20

PYQ Nov. 18

(5) The algebraic sum of the deviation of a set of values from their arithmetic mean is

a. >0 b. = 0
c. <0 d. None of these

PYQ May 18

(6) Which one of the following is not a central tendency?

a. Mean Deviation
b. Arithmetic mean
c. Median
d. Mode

PYQ Nov. 18

(7) If total frequencies of three series are 50, 60 and 90 and their means are 12, 15 and 20 respectively, then the mean of their composite series is

a. 16 b. 15.5
c. 16.5 d. 14.5

PYQ Nov. 18

(8) If the mean of the following distribution is 6 then the value of P is

☆

X	2	4	6	10	P+5
F	3	2	3	1	2

a. 7 b. 5
c. 8 d. 11

PYQ June 19

(9) The AM of 15 observation is 9 and the AM of first 9 observation is 11 and then AM of

☆ remaining observation is

a. 11 b. 6
c. 5 d. 9

PYQ Nov. 19

(10) $\sum_{i=1}^{n}(\bar{x} - x_i)$ is equal to

a. $\bar{x}\sum_{i=1}^{n} x_i$
b. $n(\bar{x}\sum_{i=1}^{n} x_i)$
c. $\bar{x} - n\bar{x}$
d. Zero

PYQ July 21

(11) There are n numbers. When 50 is subtracted from each of these number the sum of the

☆ numbers so obtained is – 10. When 46 is subtracted from each of the original n numbers, then the sum of numbers so obtained is 70. What is the mean of the original n numbers?

a. 56.8 b. 25.7
c. 49.5 d. 53.8

PYQ July 21

(12) The mean of 'n' observation is 'x'. If k is added to each observation, then the new mean is.

a. k b. xk
c. x – k d. x +k

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PYQ Dec. 21

(13) If there are 3 observations 15, 20, 25 then the sum of deviation of the observations from their AM is

a. 0 b. 5
c. -5 d. 10

PYQ Dec. 21

(14) If average mark for a group of 30 girls is 80, a group of boys is 70 and combined average is 76, then how many are in the boy's group?

a. 21 b. 20
c. 22 d. 19

PYQ Dec. 21

(15) For a data having odd number of values, the difference between the first and the middle value ☆ is equal to the difference between the last and the middle value; similarly the difference between the second and middle values is equal to that of second last and middle value so on. Therefore, the middle value is equal to

a. Half of the range
b. Half of standard deviation
c. Mode
d. Mean

PYQ June 22

(16) When each value does not have equal importance then

a. A M
b. G M
c. H M
d. Weighted Average

PYQ June 22

(17) The mean of 20 observation is 38. If two observation are taken as 84 and 36 instead of 48 ☆ and 63 find new means.

a. 38.45 b. 41.15
c. 37.55 d. 40.05

PYQ Dec 22

(18) The mean of 50 observations is 36. If two observations 30 and 42 are to be excluded, then ☆ the mean of the remaining observations will be:

a. 36 b. 38
c. 48 d. 50

PYQ Dec 22

(19) The average age of 15 students in a class is 9 years. Out of them, the average age of 5 ☆ students is 13 years and that 8 students is 5 years. What is the average of remaining 2 students?

a. 5 years b. 9 years
c. 10 years d. 15 years

PYQ Jun 23

(20) A professor has given assignment to students in a Statistics class. A student Jagan computes the arithmetic mean and standard deviation for a set of 100 observations as 50 and 5 respectively. Later on, Sonali points out to Jagan that he has made of mistake in taking one observation as 100 instead of 50. What would be the correct mean if the wrong observation is corrected?

a. 50.5 b. 49.9
c. 49.5 d. 50.1

PYQ Jun 23

(21) Find the mean of the following data

Class interval	Frequency
10-20	9
20-30	13
30-40	6
40-50	4
50-60	6
60-70	2
70-80	3

a. 23.7 b. 35.7
c. 39.7 d. 43.7

PYQ Jun 23

(22) A professor has given assignment to students in a Statistics class. A student Jagan computes the arithmetic mean and standard deviation for a set of 100 observations as 50 and 5 respectively. Later on, Sonali points out to Jagan that he has made of mistake in taking one observation as 100 instead of 50. What would be the correct mean if the wrong observation is corrected?

a. 50.5 b. 49.9
c. 49.5 d. 50.1

Answer Key

1 a	2 a	3 a
4 c	5 b	6 a
7 c	8 a	9 b
10 d	11 c	12 d
13 a	14 b	15 d
16 d	17 c	18 a
19 d	20 c	21 b

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Arithmetic Mean

Mock Test Paper Questions

MTP May 18

(1) The mean of first 3 terms is 14 and the mean of next 2terms is 18. The mean of 5 numbers is

a. 14.5 b. 15
c. 14 d. 15.6

MTP Nov 18

(2) If the mean of the set of observations $x_1, x_2, x_3, ..., x_n$, is $\bar{x}$, then the mean of the observation $x_1 + ki$, where $i = 1,2,3, \ldots\ldots n$

☆

a. $\bar{x} + k(n+1)$
b. $\bar{x} + kn$
c. $\bar{x} + \frac{k}{n}$
d. $\bar{x} + \frac{k}{2}(n+1)$

MTP Nov 18

(3) The mean salary for a group of for a group of 50 male workers is Rs.4800 per month and that for a group of 50 female workers is Rs. 5600. the combined mean salary is

a. 5100 b. 5200
c. 5300 d. 5400

MTP Nov 18

(4) The mean age of a group of 100 men and women is 25 years. If the mean age of the group of men is 26, then that of the group of women is 21 then the ratio of women and men in the group:

a. 1:1 b. 1:2
c. 1:3 d. 1:4

MTP May 19, ICAI SM

(5) If the relationship between two variables u and v are given by $2u + v + 7 = 0$ and if the AM of u is 10, then the AM of v is

a. 17 b. -17
c. -27 d. 27

MTP May 19 Series II

(6) If there are 3 observations 15, 20, 25 then the sum of deviation of the observations from their AM is

a. 0 b. 5
c. -5 d. None of these

MTP Nov 19

(7) The mean of the values of 1, 2, 3 ....., n with respective frequencies x, 2x, 3x, ... nx is.

a. $\frac{n+1}{2}$ b. $\frac{n}{2}$
c. $\frac{2n+1}{3}$ d. $\frac{2n+1}{6}$

MTP Nov 19

(8) The mean of four observations is 10 and when a constant a is added to each observation, the mean becomes 13. The value of a is

a. 2 b. -3
c. 3 d. None of these

MTP Nov 19, ICAI SM

(9) The average salary of a group of unskilled workers is Rs.10,000 and that of a group of skilled workers is Rs.15,000. If the combined salary is Rs.12,000, then what is the percentage of skilled workers?

a. 40% b. 50%
c. 60% d. None of these

MTP Nov 19

(10) The average of n numbers is x. If each of the numbers is multiplied by (n+1); then the average of new set of numbers is

a. X b. $\frac{x}{n+1}$
c. $(n+1)x$ d. None of these

MTP Nov 19

(11) The average weight of 8 person increases by 1.5 kg, if a person weighing 65 kg replaced by a new person, what would be the weight of the new person?

☆

a. 76 kg b. 80 kg
c. 77 kg d. None of these

MTP May 20

(12) If the relationship between two variables u and v are given by $2u + v + 7 = 0$ and if the AM of u is 10, then the AM of v is

a. 17 b. –17
c. –27 d. 27

ICAI SM, MTP Nov 20

(13) Two variables assume the values 1,2, 3,.. 5 with frequencies as 1, 2, 3, ..5 , then what is the AM ?

a. 11/3 b. 15/8
c. 4.86 d. 10

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MTP March 21

(14) The sum of the squares of deviations of a set of observations has the smallest value, when the deviations are taken from their:

a. A.M b. H.M
c. G.M d. None

MTP March 21

(15) Let the mean of the variable 'x' be 50, then the mean of u=10+5x will be:

a. 250 b. 260
c. 265 d. 273

MTP March 21

(16) If sum of squares of the values = 3390, N = 30 and standard deviation = 7, find out the mean.

☆ a. 113 b. 210
c. 8 d. None of these

MTP March 21

(17) Which of the following measures of central tendency cannot be calculated by graphical method?

a. Mean b. Mode
c. Median d. Quartile

MTP Apr 21

(18) The mean salary for a group of 40 female workers is 5000 per month and that for a group of 60 male workers is 6000 per month. What is the combined mean salary?

a. 6500 b. 6200
c. 6160 d. 5600

MTP Mar 21, MTP Apr 21

(19) The mean of the variable x is 50, then the mean of u = 10+5x will be

a. 250 b. 260
c. 265 d. 273

MTP Apr 21

(20) The sum of mean and SD of a series is a + b, if we add 2 to each observations of the series then the sum of the mean and SD is

a. a+b+2 b. 6-a+b
c. 4+a-b d. a+b+4

MTP Nov 21

(21) At ABC ltd, the average age of employees is 36. Average age of male employees is 38 and that of females is 32. Find the ratio of female to male in the company.

a. 1:3 b. 2:1
c. 1:2 d. 3:1

MTP Nov 21

(22) The mean height of girls in class in 162cm while for boys is 182cm. The ratio of number of girls: boys is 1:2. Find the mean height of the whole class

a. 170 cm b. 180 cm
c. 154 cm d. None of these

Note: Correct Ans is 175.33

MTP Nov 21

(23) The average of 10 observations is 14.4. If the average of first four observations is 16.5. The average of remaining 6 observations is :

a. 13.6 b. 13.0
c. 13.2 d. 12.5

MTP Oct 21

(24) Mean of 25,32,43,53,62,59,48,31,24,33 is

a. 44 b. 43
c. 42 d. 41

MTP Oct 21

(25) If the A.M of any distribution be 25 & one term is 18. Then the deviation of 18 from A.M is

a. 7 b. -7
c. 43 d. None of these

MTP Oct 21

(26) The algebraic sum of the deviations of a frequency distribution from its mean is always,

a. greater than zero
b. less than zero
c. zero
d. a non-zero number

MTP Oct 21

(27) Pooled Mean is also called

a. Mean
b. Geometric Mean
c. Grouped Mean
d. none

MTP March 22

(28) If average marks for agroup of 30 girls is 80 , a group of boys is 70 and combined average is 76, then how many boys are in the group ?

☆ a. 21 b. 20
c. 22 d. 19

MTP March 22

(29) If there are three observations 15, 20, 25, then the sum of deviation of the observations from their AM is.

a. 0 b. 5
c. -5 d. 10

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MTP March 22

(30) The mean weight of 15 students is 110 kg. The mean weight of 5 of them is 100 kg. and of another five students is 125 kg. then the mean weight of the remaining students is :

a. 120 b. 105
c. 115 d. None of these

MTP June 22

(31) A batsman in his 20th innings makes a score of 120 and thereby increases his average by 5.

☆ What is his average after 20th innings?

a. 60 b. 55
c. 65 d. 70

Correct Ans is 25 (all options in MTP are wrong)

MTP June 22

(32) The mean of first three terms is 14 and mean of next two terms is 18. The mean of all five terms is

a. 14.5 b. 15
c. 14 d. 15.6

MTP Dec 22 – Series I

(33) In a group of persons, average weight is 60 kg. If the average of males and females taken separately is 80 kg and 50 kg respectively, find the ratio of the number of males to that of females.

a. 2:3 b. 3:2
c. 2:1 d. 1:2

MTP Dec 22 – Series I

(34) The mean of 100 students was 45. Later, it was discovered that the marks of two students were misread as 85 and 54 instead of 58 and 45. Find correct mean.

a. 68 b. 36
c. 44.64 d. 52

MTP Dec 22 Series II

(35) The AM of 15 observations is 9 and the AM of first 9 observations is 11 and then AM of remaining observations is:

a. 11 b. 6
c. 5 d. 9

MTP June 2023 Series I

(36) The mean of 100 observations is 50. If one of the observations which was 50 is replaced by 40, the resulting mean will be:

a. 40 b. 49.90
c. 50 d. None of these

MTP June 2023 Series I

(37) The mean annual salary of all employees in a company is ₹ 25,000. The mean salary of male and female employees is ₹ 27,000 and ₹ 17,000 respectively. Find the percentage of males and females employed by the company

a. 60% and 40% b. 70% and 25%
c. 70% and 30% d. 80% and 20%

MTP June 2023 Series I

(38) The average age of 15 numbers in a class is 9 years. Out of them, the average age of 5 students is 13 years and that 8 students is 5 years. What is the average of remaining 2 students?

a. 5 years b. 9 years
c. 10 years d. 15 years

MTP June 2023 Series II

(39) The students of a class 10th have an average weight of 50 kg. The strength of the class is 49 students. On including the weight of the principal, the average weight shoots up by 0.8 kg. Find the weight of the principal?

a. 75 b. 90
c. 85 d. None of these

MTP June 2023 Series II

(40) The average of (p+q) consecutive numbers starting from 1 is 'r'. If 's' is added to each of the numbers then the new average will be?

a. r + s b. r + (s/2)
c. (r + (p+q+s))/(p+q) d. None of these

MTP June 2023 Series II

(41) The average weight of 40 people is increased by 2.4 kg when one man weight 73 kg is replaced by another man. Find the weight of the new man?

a. 121 b. 169
c. 154 d. 149

MTP June 2023 Series II

(42) The average salary of the whole employees in a company is ₹ 400 per day. The average salary of officers is ₹ 800 per day and that of clerks is ₹ 320 per day. If the number of officers is 40, then find the number of clerks in the company?

a. 50 b. 100
c. 150 d. 200

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MTP June 2023 Series II

(43) The average of 6 numbers is 30. If the average of the first four is 25 and that of the last three is 35, the fourth number is

a. 25 b. 30
c. 35 d. 40

MTP June 2023 Series II

(44) A student marks were wrongly entered as 85 instead of 45. Due to that the average marks for the whole class got increased by one-fourth. The no. of students in the class is?

a. 80 b. 160
c. 40 d. 20

Answer Key

1	d	2	d	3	b
4	d	5	c	6	a
7	c	8	c	9	a
10	c	11	c	12	c
13	a	14	a	15	b
16	c	17	a	18	d
19	b	20	a	21	c
22	d	23	b	24	d
25	b	26	c	27	c
28	b	29	a	30	b
31	c	32	d	33	d
34	c	35	b	36	b
37	d	38	d	39	B
40	a	41	b	42	d
43	a	44	b		

Median and Partition Values

Past Year Questions

PYQ May 18

(1) For 899, 999, 391, 384, 390, 480, 485, 760, 111, 240. Rank of median

a. 2.75 b. 5.5
c. 8.25 d. None of these

PYQ Nov. 18

(2) The median of the data 5, 6, 7, 8, 9, 10, 11, 12, 15, 18, 18 and 19 is

a. 10.5 b. 10
c. 11 d. 11.5

PYQ June 19

(3) Which of the following is positional average?

a. Median b. GM
c. HM d. AM

PYQ June 19

(4) For the distribution

x	1	2	3	4	5	6
f	6	9	10	14	12	8

The value of median is

a. 3.5 b. 3
c. 4 d. 5

PYQ Nov. 19

(5) The deviations are minimum when taken from:

a. Mean b. Median
c. Mode d. None of these

PYQ Nov. 19

(6) Find the median of the following.

Class	0-10	10-20	20-30	30-40	40-50
Freq.	2	3	4	5	6

a. 35 b. 32
c. 36 d. 37.5

PYQ Nov. 19

(7) Find the median of the following:

Class	0-10	10-20	20-30	30-40	40-50
Freq.	5	15	28	10	2

a. 10.57 b. 23.57
c. 25 d. None of these

PYQ Nov. 20

(8) Which measure is suitable for open-end classification?

a. Median b. Mean
c. Mode d. GM

PYQ Nov. 20

(9) 50^{th} Percentile is equal to

a. Median b. Mode
c. Mean d. None of these

PYQ Nov. 20

(10) Which one of the these is least affected by extreme value?

a. Mean b. Median
c. Mode d. None of these

PYQ Nov. 20

(11) Ten matches data is given. Then which of the following cannot be found?

a. Least score
b. Highest score
c. Best score
d. Median score

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PYQ Jan. 21

(12) Which of the following measure does not possess mathematical properties?
a. Arithmetic mean
b. Geometric mean
c. Harmonic mean
d. Median

PYQ Dec. 21

(13) The median value of the set of observations 48, 36, 72, 87, 19, 66, 56, 91 is
a. 53 b. 87
c. 61 d. 19

PYQ Dec. 21

(14) ☆ Along a road there are 5 buildings of apartments, marked as 1, 2, 3, 4, 5. Number of people residing in each building is available. A bus stop is to be setup near one of the buildings so that the total distance walked by the resident to the bus stop from their buildings must be kept minimum. One must consider involving _____ to find the position of the bus stop.
a. Mean b. Median
c. Mode d. Weighted mean

PYQ June 22

(15) The 3rd decile for the numbers 15,10, 20, 25, 18, 11, 9, 12 is
a. 13 b. 10.70
c. 11.00 d. 11.50

PYQ Dec 22

(16) The relationship between two variables x and y is given by $4x - 10y = 20$. If the median value of the variable x is 10 then what is median value of variable y?
a. 1.0 b. 2.0
c. 3.0 d. 4.0

PYQ Dec 22

(17) Mean deviation is minimum when deviations are taken from:
a. Mean b. Median
c. Mode d. Range

PYQ Dec 22

(18) The median of the observations 42, 72, 35, 92, 67, 85, 72, 81, 51, 56 is:
a. 69.5 b. 72
c. 64 d. 61.5

PYQ Jun 23

(19) The median of the following set of observations: 24, 18, 36, 42, 30, 28, 21, 29, 25, 33 is
a. 26.5 b. 27.5
c. 28.5 d. 29.5

PYQ Jun 23

(20) For a given data set: 5, 10, 3, 6, 4, 8, 9, 3, 15, 2, 9, 4, 19, 11, 4; what is the median?
a. 8 b. 6
c. 4 d. 9

Answer Key

1 b	2 a	3 a
4 c	5 b	6 b
7 b	8 a	9 a
10 b	11 c	12 d
13 c	14 b	15 b
16 b	17 b	18 a
19 c	20 b	

Median and Partition Values

Mock Test Paper Questions

MTP May 19

(1) For open-end classification, which of the following is the best measure of central tendency?
a. AM b. GM
c. Median d. Mode

MTP May 19

(2) The presence of extreme observations does not affect
a. AM b. Median
c. Mode d. Any of these

MTP May 19

(3) Quartiles are the values dividing a given set of observations into
a. Two equal parts
b. Four equal parts
c. Five equal parts
d. None of these

MTP May 19

(4) What is the value of the first quartile for observations 15, 18, 10, 20, 23, 28, 12, 16?
a. 17 b. 16
c. 12.75 d. 12

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MTP May 19 Series II

(5) The presence of extreme observations does not affect
a. AM b. Median
c. Mode d. Any of these

MTP May 19 Series II

(6) The third decile for the numbers 15, 10, 20, 25, 18, 11, 9, 12 is
a. 13 b. 10.70
c. 11 d. 11.50

MTP Nov 19

(7) The third decile for the numbers 15, 10, 20, 25, 18, 11, 9, 12 is
a. 13 b. 10.7
c. 11 d. 11.50

MTP Nov 19

(8) For open-end classification, which of the following is the best measure of central tendency?
a. AM b. GM
c. Median d. Mode

MTP Nov 19

(9) The presence of extreme observations does not affect
a. AM b. Median
c. Mode d. None of these

MTP Nov 19

(10) Two variables x and y are given by $y = 2x - 3$. If the median of x is 20, what is the median of y?
a. 20 b. 40
c. 37 d. 35

MTP May 20

(11) For open-end classification, which of the following is the best measure of central tendency?
a. AM b. GM
c. Median d. Mode

MTP May 20

(12) In case of an even number of observations which of the following is median?
a. Any of the two middle-most value
b. The simple average of these two middle values
c. The weighted average of these two middle values
d. Any of these

MTP May 20

(13) Two variables x and y are given by $y = 2x - 3$. If the median of x is 20, what is the median of y?
a. 20 b. 40
c. 37 d. 35

MTP Nov 20

(14) Quartile can be determined graphically using
a. Ogive
b. Histogram
c. Pie-chart
d. Frequency polygon

MTP Apr 21

(15) The point of intersection of less than ogive and greater than ogive curve is gives us
☆ a. Mean b. Mode
c. Median d. H.M

MTP Apr 21

(16) The median of the data 13, 8 ,11, 6, 4, 15, 2, 18 is
a. 5 b. 8
c. 11 d. 9.5

MTP Apr 21

(17) What is the value of the first quartile for observations 15, 18, 10, 20, 23, 28, 12, 16?
a. 17 b. 16
c. 12.75 d. 12

MTP Nov 21

(18) Find D_6 for the following observations. 7, 9, 5, 4, 10, 15, 14, 18, 6, 20
a. 11.40 b. 12.40
c. 13.40 d. 13.80

MTP Oct 21

(19) The median of 27, 30, 26, 44, 42, 51, 37 is
a. 30 b. 42
c. 44 d. 37

MTP March 22

(20) The median value of the set of observations 48, 36, 72, 87, 19, 66, 56 and 91
a. 53 b. 87
c. 61 d. 19

MTP June 22

(21) The first Quartile is 142 and Semi-Inter Quartile Range is 18 , then the value of Median
☆ is:
a. 151 b. 160
c. 178 d. None of these

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MTP Dec 22 – Series I

(22) Calculate the value of 3rd quartile from the following data 40, 35, 51, 21, 25, 16, 29, 27, 32
a. 37.50 b. 30.25
c. 25 d. 35

MTP Dec 22 Series II

(23) Which of the following is positional average?
a. Median b. GM
c. HM d. AM

MTP Dec 22 Series II

(24) For the distribution, calculate Median

X	1	2	3	4	5	6
F	6	9	10	14	12	8

a. 3.5 b. 3
c. 4 d. 5

MTP June 2023 Series I

(25) The relationship between two variable x and y is given by $4x - 10y = 20$. If the median value of the variable x is 20 then what is median value of variable y?
a. 1.0 b. 2.0
c. 3.0 d. 6.0

MTP June 2023 Series I

(26) The median of the observations 42, 72, 35, 92, 67, 85, 72, 81, 51, 56 is
a. 69.5 b. 72
c. 64 d. 61.5

Answer Key

1 c	2 b	3 b
4 c	5 b	6 b
7 b	8 c	9 b
10 c	11 c	12 b
13 c	14 a	15 c
16 d	17 c	18 b
19 d	20 c	21 b
22 a	23 a	24 c
25 d	26 c	

Mode, GM, HM

Past Year Questions

PYQ Nov. 19

(1) Find the mode of the following data:

Class	3-6	6-9	9-12	12-15	15-18	18-21
Freq.	2	5	10	23	21	12

a. 25 b. 4.6
c. 14.6 d. 13.5

PYQ Nov. 19

(2) Histogram is used to represent
a. Mode b. Median
c. Percentile d. Quartile

PYQ Nov. 19

(3) Find the mode of the following:

0-10	10-20	20-30	30-40	40-50	50-60
7	14	22	34	20	19

a. 32 b. 34.61
c. 25.42 d. 35

PYQ Jan. 21

(4) ☆ From the record on sizes of shoes sold in a shop, one can compute the following to determine the most preferred shoe size.
a. Mean b. Median
c. Mode d. Range

PYQ Jan. 21

(5) If $y = 3 + (4.5)x$ and the mode for x – value is 20, then the mode for y – value is
a. 3.225 b. 12
c. 24.5 d. 93

PYQ July 21

(6) If $y = 3 + 1.9x$, and mode of x is 15, then the mode of y is:
a. 15.9 b. 27.8
c. 35.7 d. 31.5

PYQ Dec. 21

(7) ☆ One hundred participants expressed their opinion on recommending a new product to their friends using the attributes : most unlikely, not sure, likely, most likely. The appropriate measure of central tendency that can be used here is
a. Mean
b. Mode
c. Geometric mean
d. Harmonic mean

PYQ Nov. 18

(8) The Geometric mean of 3, 6, 24 and 48 is
a. 8 b. 12
c. 24 d. 6

PYQ July 21

(9) ☆ Expenditures of a company (in million rupees) per item in various years

Year	Item of expenditures				
	Salary	Fuel & Trans.	Bonus	Int. on Loans	Taxes
1998	288	98	3.00	23.4	83
1999	342	112	2.52	32.5	108
2000	324	108	3.84	41.6	74
2001	336	133	3.68	36.4	88

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2002	420	142	3.96	49.4	98

What is the average amount of interest per year which the company had to pay during this period?

a. 33.66 b. 36.66
c. 31.66 d. 39.66

PYQ Dec. 21

(10) If two variables a and b are related by $c = ab$ then G.M. of c is equal to

a. G.M of a + G.M. of b
b. G.M. of a × G.M. of b
c. G.M. of a – G.M. of b
d. G.M. of a / G.M. of b

PYQ Nov. 20

(11) ☆ Given the weights for the numbers 1, 2, 3 .....n are respectively $1^2, 2^2, 3^2 \ldots\ldots n^2$ then weighted HM is_____

a. $\frac{2n+1}{4}$
b. $\frac{2n+1}{6}$
c. $\frac{2n+1}{3}$
d. $\frac{2n+1}{2}$

PYQ Nov. 20

(12) ☆ The harmonic mean A and B is 1/3 and harmonic mean of C and D is 1/5. The harmonic mean of ABCD is

a. 8/15 b. 1/4
c. 1/15 d. 5/3

PYQ Nov. 20

(13) A fire engine rushes to a place of fire accident with a speed of 110 kmph and after the completion of operation returned to the base at a speed of 35 kmph. The average speed per hour in per-direction is obtained as _____ speeds.

a. Average of
b. H M of
c. G M of
d. Half of HM of

PYQ Jan. 21

(14) If there are two groups with n_1 and n_2 observations and H_1 and H_2 are respective harmonic means, then the harmonic mean of combined observation is

a. $\frac{n_1H_1 + n_2H_2}{n_1 + n_2}$
b. $\frac{n_1H_1 + n_2H_2}{H_1 + H_2}$
c. $\frac{n_1 + n_2}{n_1H_1 + n_2H_2}$
d. $\frac{(n_1 + n_2)H_1H_2}{n_1H_2 + n_2H_1}$

PYQ Jun 23

(15) Find the mode of the following data:

X	F(x)
25-30	20
30-35	53
35-40	42
40-45	42
45-50	41
50-55	43

a. 31.75 b. 30.75
c. 33.75 d. 35.75

PYQ Jun 23

(16) The Geometric Mean of 3, 7, 11, 15, 24, 28, 30, 0 is

a. 6 b. 0
c. 9 d. 12

Answer Key

1 c	2 a	3 b
4 c	5 d	6 d
7 b	8 b	9 b
10 b	11 c	12 b
13 b	14 d	15 c
16 b		

Mode, GM, HM

Mock Test Paper Questions

MTP May 19

(1) If x and y are related by $x–y–10 = 0$ and mode of x is known to be 23, then the mode of y is

a. 20 b. 13
c. 3 d. 23

MTP Oct 21

(2) If x and y are related by $x–y–10 = 0$ and mode of x is known to be 23, then the mode of y is

a. 20 b. 13
c. 3 d. 23

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MTP Nov 18

(3) The Geometric mean of the series $1, k, k^2, k^3, \ldots, k^n$ where k is constant is

☆ a. $k^{\frac{(n+1)}{2}}$ b. $k^{n+0.5}$

c. k^{n+1} d. k^{n+2}

MTP March 21

(4) G.M is a better measure than others when,

☆ a. Ratios and percentages given

b. Interval of scale is given

c. Both (a) and (b)

d. Either (a) or (b)

MTP March 22

(5) If two variables a and b are related by c= ab then GM. of c =

a. GM of a + GM of b

b. GM of a × GM of b

c. GM of a - GM of b

d. GM of a /GM of b

MTP June 22

(6) Geometric Mean of 8,4, 2 is

a. 4 b. 2

c. 8 d. none of these

MTP Dec 22 – Series I

(7) The geometric mean of three numbers 40, 50, and x is 10, and the value of x is

☆ a. 5 b. 4

c. 2 d. $\frac{1}{2}$

MTP May 18

(8) A man travels from Delhi to Agra at an average speed of 30km per hour and back at an average speed of 60 km per hour. What's the average Speed.

a. 48 km/hr b. 40 km/hr

c. 45 km/hr d. 35 km/hr

MTP Nov 19

(9) A person travels from A to B at the rate of 20 km/hr. and from B to A at the rate of 30km/hr. What is the average rate of whole journey?

a. 30 km/ hr. b. 24 km/hr.

c. 35 km/hr. d. None of these

MTP Nov 20

(10) If there are two groups with 75 and 65 as harmonic means containing 15 and 13 observation, then combined HM is given by

a. 70 b. 72.25

c. 78 d. 76

MTP March 21

(11) A man travels at a speed of 20km/hr and then returns at a speed of 30 km/ hr. His average speed of the whole journey is:

a. 25km/hr b. 24.5km/hr

c. 24km/hr d. None

MTP March 21

(12) If there are two groups with 75 and 65 as harmonic means and containing 15 and 13 observations. Then the combined H.M. is given by:

a. 70 b. 80

c. 70.35 d. 69.48

MTP Oct 21

(13) If there are two groups with 75 and 65 as harmonic means and containing 15 and 13 observations, then the combined HM is given by

a. 65 b. 70.36

c. 70 d. 71

MTP Dec 22 – Series I

(14) A train covered the first 5 km of its journey at a speed of 30km/hr. and the next 15 km at a speed of

☆ 45 km/hr. The average speed of the train was:

a. 38 km/hr. b. 40 km/hr.

c. 36 km/hr. d. 42 km/hr.

MTP June 2023 Series I

(15) Mode is:

a. Least frequent value

b. Middle Most value

c. Most frequent Value

d. None of these

MTP June 2023 Series II

(16) A shopkeeper wants to place an order for t-shirts with the wholesaler based on past sales data. The size he orders will be decided looking at the _____ of past sales data?

a. Mean

b. Median

c. Mode

d. None of the above

Answer Key

1 b	2 b	3 a
4 a	5 b	6 a
7 d	8 b	9 b
10 a	11 c	12 a
13 c	14 b	15 c
16 c		

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Other Central Tendency Problems

Past Exam Questions

PYQ May 18

(1) Relation between mean, median and mode is
- a. mean-mode = 2 (mean-median)
- b. mean-median = 3 (mean-mode)
- c. mean-median = 2 (mean-mode)
- d. mean-mode = 3 (mean-median)

PYQ Nov. 18

(2) If in a moderately skewed distribution, the values of mode and mean are 32.1 and 35.4 respectively, then the value of the median is
- a. 34.3 b. 33.3
- c. 34 d. 33

PYQ June 19

(3) In a moderately skewed distribution the values of mean & median are 12 & 8 respectively. The value of mode is
- a. 0 b. 12
- c. 15 d. 30

PYQ June 19

(4) For a symmetric distribution
- a. Mean = Median = Mode
- b. Mode = 3 Median = 2 Mean
- c. Mode = $\frac{1}{3}$ Median = $\frac{1}{2}$ Mean
- d. None of these

PYQ Nov. 19

(5) If the AM & GM of two numbers are 30 and 24 respectively. Find the no's.
- a. 12 and 24 b. 48 and 12
- c. 30 and 20 d. 40 and 20

PYQ Nov. 20

(6) If the AM and HM of two numbers are 6 and 9 respectively, then GM is
- a. 7.35 b. 8.5
- c. 6.75 d. None of these

PYQ Dec. 21

(7) If the AM and GM for 10 observations are both 15, then the value of HM is
- a. Less than 15
- b. More than 15
- c. 15
- d. Cannot be determined

PYQ Dec. 21

(8) ☆ For a moderately skewed distribution the median is twice the mean, then the mode is _____ times the median.
- a. 3 b. 2
- c. 2/3 d. 3/2

PYQ Dec. 21

(9) Given that mean = 70.20 and mode = 70.50, the Median is expected to be.
- a. 70.15 b. 70.20
- c. 70.30 d. 70.35

PYQ Dec 22

(10) If mean $(\bar{X})$ is = 10 and mode (Z) is = 7, then find out the value of median (M)?
- a. 9 b. 17
- c. 3 d. 4.33

PYQ Dec 22

(11) If Arithmetic Mean and Geometric Mean between two numbers are 5 and 4 respectively, then these numbers are:
- a. 2 & 3 b. 2 & 8
- c. 4 & 6 d. 1 & 16

PYQ Dec 22

(12) If Arithmetic mean between two numbers is 5 and Geometric mean is 4 then what is the value of Harmonic mean?
- a. 3.2 b. 3.4
- c. 3.5 d. 3.6

PYQ Jun 23

(13) For a moderately skewed distribution of marks in statistics for a group of 200 students, the mean marks and median marks were found to be 55.60 and 52.40, respectively. What are the modal marks?
- a. 54.43 b. 48
- c. 53.56 d. 46

PYQ Jun 23

(14) If the mean of two numbers is 30 and geometric mean is 24, then what will be the Harmonic mean of two numbers?
- a. 19.2 b. 21.8
- c. 22.3 d. 18.4

Answer Key

1 d	2 a	3 a
4 a	5 b	6 a
7 c	8 b	9 c
10 a	11 b	12 a
13 d	14 a	

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Other Central Tendency Problems

Mock Test Paper Questions

MTP May 18

(1) If the arithmetic mean between two numbers is 64 and the Geometric Mean between them is 16 . The Harmonic mean between them is ___

a. 64 b. 4
c. 16 d. 40

MTP May 18

(2) When the mean is 3.57 and mode is 2.13, then the value of median is ___

a. 3.09 b. 5.01
c. 5.01 d. none of these

MTP Nov 18

(3) The relationship between Mean, Median and Mode

a. Mean-Mode = 3(Mean-Median)
b. Mode = 2 Median – 3 Median
c. Median- Mode = 3 (Median-mean)
d. none of these

MTP Nov 18

(4) Relationship between AM, GM, and HM

a. GM ≥AM≥ HM
b. AM ≥GM≥ HM
c. HM ≥AM≥ GM
d. none of these

MTP May 19

(5) For a moderately skewed distribution, which of the following relationship holds?

a. Mean – Mode = 3 (Mean – Median)
b. Median – Mode = 3 (Mean – Median)
c. Mean – Median = 3 (Mean – Mode)
d. Mean – Median = 3 (Median – Mode)

MTP May 19

(6) Which of the following results hold for a set of distinct positive observations?

a. AM ≥ GM ≥ HM
b. HM ≥ GM ≥ AM
c. AM > GM > HM
d. GM > AM > HM

MTP May 19 Series II

(7) For a moderately skewed distribution, which of the following relationship holds?

a. Mean – Mode = 3 (Mean – Median)
b. Median – Mode = 3 (Mean – Median)
c. Mean – Median = 3 (Mean – Mode)
d. Mean – Median = 3 (Median – Mode)

MTP May 20

(8) For a moderately skewed distribution, which of the following relationship holds?

a. Mean – Mode = 3 (Mean – Median)
b. Median – Mode = 3 (Mean – Median)
c. Median – Mode = 3 (Mean – Median)
d. Mean – Median = 3 (Median – Mode)

MTP March 21

(9) If the A.M. and H.M. for two numbers are 5 and 3.2 respectively then the G.M. will be:

a. 4.05 b. 16
c. 4 d. 4.10

MTP Apr 21

(10) Which of the following statements is true?

a. Usually mean is the best measure of central tendency.
b. Usually median is the best measure of central tendency.
c. Usually mode is the best measure of central tendency.
d. Normally, GM is the best measure of central tendency

MTP Apr 21

(11) When mean is 3.57 and mode is 2.13 then the value of the median is

a. 3.09 b. 5.01
c. 4.01 d. None of these

MTP Apr 21

(12) The A.M and H.M for two numbers are 5 and 3.2 respectively then the G.M will be

a. 4.05 b. 16
c. 4 d. 4.10

MTP Nov 21

(13) Which of the following is not a criteria for ideal measure of central tendency?

a. It should be ambiguously defined
b. It should be simple to compute
c. It should be based on all the observations
d. None of these

MTP Nov 21

(14) ☆ If the rates return from three different shares are 100%, 200% and 400% respectively. The average rate of return will be.

a. 350% b. 233.33%
c. 200% d. 300%

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MTP Nov 21

(15) Find the two numbers if AM and GM is 10 and 6 respectively.

a. 6, 6 b. 12, 8
c. 9, 4 d. 18, 2

MTP March 22

(16) For a moderately skewed distribution, the median is twice the mean , then the mode is ____ times the median.

a. 3 b. 2
c. 2/3 d. 3/2

MTP March 22

(17) If the Arithmetic mean between two numbers is 64 and the Geometric mean between them is 16. The Harmonic Mean between them is _____.

a. 64 b. 4
c. 16 d. 40

MTP June 22

(18) When mean is 3.57 and mode is 2.13 then the value of median is

a. 3.09 b. 5.01
c. 4.01 d. None of these

MTP June 22

(19) If the difference between mean and mode is 33, then the difference between Mean and Median will be ____ ☆

a. 63 b. 31.5
c. 11 d. None of these

MTP Dec 22 – Series I

(20) If the difference between Mean and Mode is 69, then the difference between Mean and Median will be _____ ☆

a. 63 b. 31.5
c. 23 d. None of these

MTP Dec 22 Series II

(21) In a moderately skewed distribution the values of mean and median are 12 and 8 respectively. The value of mode is:

a. 0 b. 12
c. 15 d. 30

MTP Dec 22 Series II

(22) For a symmetric distribution:

a. Mean = Median = Mode
b. Mode = 3 Median – 2 Mean
c. Mode = 1/3 Median = 1/2 Mean
d. None

MTP June 2023 Series I

(23) If mean ($\bar{x}$) is = 10 and mode (Z) is = 7, then find out the value of median (M)

a. 9
b. 17
c. 3
d. 4.33

MTP June 2023 Series I

(24) If Arithmetic mean between two numbers is 5 and Geometric mean is 4 then what is the value of Harmonic mean?

a. 3.2
b. 3.4
c. 3.5
d. 3.6

MTP June 2023 Series II

(25) AM and GM are both negative values, HM is equal to:

a. $H = \frac{G}{A^2}$
b. $H = \frac{G^2}{A}$
c. $H = \frac{G^2}{\sqrt{A}}$
d. None

MTP June 2023 Series II

(26) Which of the following is the correct relation between mean, median and mode

a. $\text{Median} = \text{mode} + \frac{2}{3}(\text{mean} - \text{mode})$
b. 2Mean = Mode – 3Median
c. 2Mean = Mode + 3Medain
d. Mode = 3Medain + 2Mean

Answer Key

1 b	2 a	3 a
4 b	5 a	6 c
7 a	8 a	9 c
10 a	11 a	12 c
13 a	14 c	15 d
16 b	17 b	18 a
19 c	20 c	21 a
22 a	23 a	24 a
25 a	26 a	

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Range

Past Exam Questions

PYQ Nov. 18

(1) If the range of a set of values is 65 and maximum value in the set is 83, then the minimum value in the set is

a. 74 b. 9
c. 18 d. None of these

PYQ Nov. 19

(2) Difference between upper limit and lower limit of a class is known as.

a. Range
b. Class mark
c. Class size
d. Class boundary

PYQ Jan. 21

(3) The relationship between P-series and Q- series is given by $2P-3Q-10=0$. If the range of P-series is 18. What would be the range of Q?

a. 10 b. 15
c. 9 d. 12

PYQ July 21

(4) If the relationship between x and y is given by $2x + 3y = 10$ and the range of y is 10, then what is the range of x?

a. 10 b. 18
c. 8 d. 15

PYQ Dec. 21

(5) The marks secured by 5 students in a subject are 82, 73, 69, 84, 66. What is the coefficient of Range

a. 0.12 b. 12
c. 120 d. 0.012

Answer Key

1 c	2 c	3 d
4 d	5 b	

Range

Mock Test Paper Questions

MTP May 18

(1) If the range of x is 2, what would be the range of $-3x + 50$?

a. 2 b. 6
c. -6 d. 44

MTP May 19

(2) The range of 15, 12, 10, 9, 17, 20 is

a. 5 b. 12
c. 13 d. 11

MTP May 19 Series II

(3) The range of 15, 12, 10, 9, 17, 30 is

a. 5 b. 12
c. 13 d. 21

MTP May 19 Series II

(4) If the range of x is 2, what would be the range of $-3x+50$?

a. 2 b. 6
c. - 6 d. 44

MTP May 20

(5) If Rx and Ry denote ranges of x and y respectively where x and y are related by $3x+2y+10=0$, what would be the relation between x and y?

a. $Rx = Ry$ b. $2\,Rx = 3\,Ry$
c. $3\,Rx = 2\,Ry$ d. $Rx = 2\,Ry$

MTP Nov 20

(6) The range of 28, 22, 40, 20, 15, 50 is

a. 40 b. 22
c. 35 d. None of these

MTP Mar 21, MTP Apr 21

(7) What is the coefficient of range for the following distribution?

Class	10-19	20-29	30-39	40-49	50-59
Freq.	11	25	16	7	3

a. 22 b. 50
c. 75.82 d. 72.46

MTP June 2023 Series II

(8) Which of the following is a correct statement?

a. Range is unaffected by the change in origin or change in scale
b. Range is affected by the change in origin or change in scale
c. Range is unaffected by the change in origin but affected by change in scale
d. Range is affected by the change in origin but unaffected by change in scale

Answer Key

1 b	2 d	3 d
4 b	5 c	6 c
7 d	8 c	

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Mean Deviation

Past Exam Questions

PYQ Nov. 20

(1) Which of the following measure of dispersion is based on absolute deviations?
- a. Range
- b. S. D
- c. Mean deviation
- d. Quartile deviation

PYQ Jan. 21

(2) Find the coefficient of mean deviation about mean for the data: 5, 7, 8, 10, 11, 13, 19
- a. 17.28
- b. 28.57
- c. 32.11
- d. 18.56

PYQ July 21

(3) If a school has 14 teachers, their heights (in cm) are:
172, 173, 164, 178, 168, 169, 173, 172, 173, 164, 178, 168, 169, 173
then average deviation of this data is:
- a. 2.43 approx.
- b. 3.93 approx.
- c. 3.43 approx.
- d. 2.92 approx.

PYQ July 21

(4) The probable value of mean deviation when $Q_3 = 40$ and $Q_1 = 15$ is:

☆
- a. 15
- b. 18.75
- c. 17.50
- d. 0

PYQ July 21

(5) If every observation is increased by 7 then:
- a. Standard deviation increased by 7
- b. Mean deviation increased by 7
- c. Not affected at all
- d. Quartile deviation increased by 7.

PYQ July 21

(6) The mean deviation of the numbers 3, 10, 6, 11, 14, 17, 9, 8, 12 about the mean is (correct to one decimal place):
- a. 8.7
- b. 4.2
- c. 3.1
- d. 9.8

PYQ June 22

(7) Mean Deviation of data 3, 10, 10, 4, 7, 18, 5 from mode is
- a. 4.39
- b. 4.70
- c. 4.14
- d. 5.24

PYQ June 22

(8) Which of the following is based on absolute deviation?
- a. Standard deviation
- b. Mean deviation
- c. Range
- d. Quartile deviation

PYQ June 23

(9) If x and y are related as $4x+3y+11 = 0$ and mean deviation of y is 7.20, what is the mean deviation of x?
- a. 2.7
- b. 7.2
- c. 4.5
- d. 5.4

PYQ June 23

(10) The mean deviation about the mean for the data 12, 16, 24, 30, 35, 39, 40 is
- a. 9.14
- b. 9.41
- c. 8.91
- d. 9.81

Answer Key

1 c	2 c	3 c
4 a	5 c	6 c
7 c	8 b	9 d
10 a		

Mean Deviation

Mock Test Paper Questions

MTP Nov 18

(1) The MD about the Mean for the data 6,9,11,10,12,12
- a. 1.47
- b. 1.57
- c. 1.67
- d. 1.87

MTP Nov 20

(2) The mean deviation about Mode for the numbers 4/11, 6/11, 8/11, 9/11, 12/11, 8/11 is
- a. 9/15
- b. 12
- c. 6/11
- d. 1/6

MTP Nov 20

(3) If the relation between x and y is $5y - 3x = 10$ and the mean deviation about mean for x is 12, then the mean deviation of y about mean is
- a. 9.20
- b. 6.80
- c. 7.20
- d. 15.80

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MTP March 21

(4) If two variables x and y are related by $2x + 3y - 7 = 0$ and the mean and mean deviation about mean of x are 1 and 0.3 respectively, then the co-efficient of mean deviation of y about mean is:

☆ a. -5 b. 4
c. 12 d. 50

MTP March 21

(5) The equation of a line is $5x + 2y = 17$. Mean deviation of y about mean is 5. Calculate mean deviation of x about mean.

a. -2 b. 2
c. -4 d. None

MTP March 22

(6) The deviations are minimum when taken from
a. Mean b. Median
c. Mode d. GM

MTP June 22

(7) The sum of squares of the deviations of the given values from their .....is minimum.
a. Arithmetic Mean
b. Median
c. Mode
d. None of these

MTP Dec 22 – Series I

(8) Which measure of dispersion is based on the absolute deviation only?
a. Range
b. Standard Deviation
c. Mean Deviation
d. Quartile Deviation

MTP March 21

(9) Find the mean deviation about mean for the numbers: 2, 6, 7, 4, 8, 3
a. 4 b. 6
c. 5 d. 2

Answer Key

1 c	2 d	3 c
4 c	5 b	6 b
7 a	8 c	9 d

Standard Deviation

Past Exam Questions

PYQ May 18

(1) If the S.D. of the 1st n natural numbers is $\sqrt{30}$ then the value of n is
a. 19 b. 20
c. 21 d. None of these

PYQ Nov. 18

(2) If the variance of 5, 7, 9 and 11 is 4, then the coefficient of variation is:
☆ a. 15 b. 25
c. 17 d. 19

PYQ Nov. 18

(3) Standard Deviation for the marks obtained by a student in monthly test in mathematic (out of 50) as 30, 35, 25, 20, 15 is
a. 25 b. $\sqrt{50}$
c. $\sqrt{30}$ d. 50

PYQ Nov. 18

(4) If the standard deviation for the marks obtained by a student in monthly test is 36, then the
☆ variance is
a. 6 b. 36
c. 1296 d. None of these

PYQ June 19

(5) If $\sigma^2 = 100$ and coefficient of variation = 20% then $\bar{x}$ =
a. 60 b. 70
c. 80 d. 50

PYQ June 19

(6) S.D of first five consecutive natural numbers is
a. $\sqrt{10}$ b. $\sqrt{8}$
c. $\sqrt{3}$ d. $\sqrt{2}$

PYQ June 19

(7) If the profits of a company remain some for the last ten months then the S.D. of profits of the company would be:
a. Positive b. Negative
c. Zero d. (a) or (c)

PYQ June 19

(8) The sum of mean and SD of a series is $a + b$, if we add 2 to each observation of the series then the sum of mean and SD is
a. $a + b + 2$ b. $6 - a + b$
c. $4 + a - b$ d. $a + b + 4$

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PYQ Nov. 19

(9) Origin is shifted by 5, what will happen
a. SD will increase by 5
b. QD will increase by 5
c. MD will increase by 5
d. There will be no change in SD

PYQ Nov. 19

(10) Coefficient of variation is equal to:
a. $\frac{SD}{Mean}$
b. $\frac{SD}{Mean} \times 100$
c. $\frac{Mean}{SD} \times 100$
d. $\frac{Mean}{SD}$

PYQ Nov. 19

(11) Find SD of the following
1, 2, 3, 4, 5, 6, 7, 8, 9.
☆ a. 2.58 b. 60/9
c. 60/3 d. 3.20

PYQ Nov. 19

(12) If mean = 200 and variance = 80. Find coefficient of variation.
a. 2.56 b. 4.47
c. 32 d. 0.32

PYQ Nov. 19

(13) Which of the following is affected by shifting of scale.
a. SD b. MD
c. QD d. All of these

PYQ Nov. 19

(14) Coefficient of variation is 80. Mean is 20. Find variance:
a. 640 b. 256
c. 16 d. 250

PYQ Nov. 19

(15) SD from numbers 1, 4, 5, 7, 8 is 2.45. If 10 is added to each then SD will be:
a. 12.45
b. 24.5
c. 12
d. Will not change

PYQ Jan. 21

(16) The best statistical measure used for comparing two series is
a. Mean absolute deviation
b. Range
c. Coefficient of variation
d. Standard deviation

PYQ Jan. 21

(17) It is given that the mean $(\bar{X})$ is 10 and standard deviation (s.d.) is 3.2. If the observations are increased by 4, then the new mean and standard deviations are:
a. $\bar{X} = 10, s.d. = 7.2$
b. $\bar{X} = 10, s.d. = 3.2$
c. $\bar{X} = 14, s.d. = 3.2$
d. $\bar{X} = 14, s.d. = 7.2$

PYQ July 21

(18) The SD of 1 to 9 natural number is:
a. 6.65 b. 2.58
c. 6.75 d. 5.62

PYQ July 21

(19) If the numbers are 5, 1, 8, 7, 2 then the coefficient of variation is:
a. 56.13% b. 59.13%
c. 48.13% d. 44.13%

PYQ June 22

(20) A M and Coefficient of variation of x is 10 and 40. What is the variance $30 - 2x$
a. 64 b. 56
c. 49 d. 81

PYQ June 22

(21) Following are the wages of 8 workers 82, 96, 52, 75, 70, 65, 50, 70. Find range and coefficient of range?
a. 46, 32.70 b. 43, 31.50
c. 46, 31.50 d. 43, 32.70

PYQ June 22

(22) Find the standard deviation and coefficient of variation for.
1, 9, 8, 5, 7
a. 2.828, 49.32 b. 2.828, 48.13
c. 2.828, 47.13 d. 2.828, 50.13

PYQ Dec 22

(23) If the coefficient of variation and standard deviation are 30 and 12 respectively, then the arithmetic mean of the distribution is:
a. 40 b. 36
c. 25 d. 19

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PYQ Dec 22

(24) If the sum of square of the values equals to 3390, Number of observations are 30 and Standard deviation is 7, what is the mean value of the above observations?

a. 14 b. 11
c. 8 d. 5

PYQ Dec 22

(25) If the variance of random variable 'x' is 17, then what is variance of $y = 2x + 5$?

a. 34 b. 39
c. 68 d. 78

PYQ Dec 22

(26) If the variance of given data is 12, and their mean value is 40, what is coefficient of variation (CV)?

a. 5.66% b. 6.66%
c. 7.50% d. 8.65%

PYQ Dec 22

(27) In a given set if all data are of same value then variance would be:

a. 0 b. 1
c. - 1 d. 0.5

PYQ Jun 23

(28) If the Standard Deviation of data 2, 4, 5, 6, 8, 17 is 4.47, then Standard Deviation of the data 4, 8, 10, 12, 16, 34 is

a. 4.47 b. 8.94
c. 13.41 d. 2.24

PYQ Jun 23

(29) The mean and variance of a group of 100 observations are 8 and 9, respectively. Out of 100 observations, the mean and standard deviation of 60 observations are 10 and 2 respectively. Find the variance of remaining 40 observations?

a. 4.5 b. 3.5
c. 2.5 d. 1.5

Answer Key

1 a	2 b	3 b
4 c	5 d	6 d
7 c	8 a	9 d
10 b	11 a	12 b
13 d	14 b	15 d
16 c	17 c	18 b
19 b	20 a	21 c
22 c	23 a	24 c
25 c	26 d	27 b
28 b	29 d	

Standard Deviation

Mock Test Paper Questions

MTP May 18

(1) The standard deviation of 25, 32, 43, 53, 62, 59, 48, 31, 24, 33 is

a. 13.23 b. 12.33
c. 11.33 d. None of these

MTP May 18

(2) The SD is independent of change of

a. Origin b. Scale
c. Both (a) & (b) d. None of these

MTP May 18

(3) If the mean of frequency distribution is 100 and coefficient of variation is 45% then standard deviation is

a. 45 b. 0.45
c. 4.5 d. 450

MTP May 18

(4) if the mean and SD of X are a and b respectively, then the S.D of $\frac{x-a}{b}$ is

a. a/b b. -1
c. 1 d. ab

MTP Nov 18

(5) Coefficient of Variation (CV) is calculated

a. $\frac{SD}{AM} \times 100$ b. $\frac{AM}{SD} \times 100$
c. $\frac{AM}{MD} \times 100$ d. None of these

MTP Nov 18

(6) The SD for the data 6, 9, 10, 3, 7 is

a. 2.35 b. 2.45
c. 2.55 d. 2.65

MTP May 19

(7) The standard deviation of, 10, 16, 10, 16, 10, 10, 16, 16 is

a. 4 b. 6
c. 3 d. 0

MTP May 19

(8) If all the observations are multiplied by 2, then

a. New SD would be also multiplied by 2
b. New SD would be half of the previous SD
c. New SD would be increased by 2
d. New SD would be decreased by 2

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MTP May 19 Series II

(9) If the profits of a company remain the same for the last ten months, then the standard deviation of profits for these ten months would be?
a. positive
b. negative
c. zero
d. A or C

MTP May 19 Series II

(10) If x and y are related by 2x+3y+4 = 0 and SD of x is 6, then SD of y is
a. 22 b. 4
c. 40 d. 9

ICAI SM, MTP May 19 Series II

(11) If x and y are related by y = 2x+ 5 and the SD and AM of x are known to be 5 and 10 respectively, then the coefficient of variation of y is
a. 25 b. 30
c. 40 d. 20

MTP Nov 19

(12) If the SD of x is 3, what us the variance of (5–2x)?
a. 36 b. 6
c. 1 d. 9

MTP Nov 19

(13) If the values of all observations are equal then the Standard Deviation of the given observations is
a. 0 b. 2
c. 1 d. None of these

MTP Nov 19

(14) The Standard Deviation of a set of 50 items is 10. Find the Standard Deviation if every item is increased by 5
a. 15 b. 5
c. 10 d. None of these

MTP Nov 19

(15) Find the coefficient of variation if the sum of squared deviations taken from mean 40 of 10 observations is 360.
a. 15 b. 20
c. 40 d. None of these

MTP May 20

(16) If x and y are related by 2x+3y+4 = 0 and SD of x is 9, then SD of y is
a. 22 b. 6
c. 5 d. 24

MTP May 20

(17) If x and y are related by y = 2x+ 5 and the SD and AM of x are known to be 5 and 10 respectively, then the coefficient of variation of y is
a. 25 b. 30
c. 40 d. 20

MTP Nov 20

(18) What is the coefficient of variation of the following numbers 53, 52, 61, 60, 64
a. 18.09 b. 8.09
c. 12.23 d. 15.45

MTP Nov 20

(19) The mean and SD for a, b, and 2 are 3 and 1 respectively, the value of ab would be
☆ a. 11.5 b. 5
c. 12 d. 13

MTP March 21

(20) If X and Y are two random variables then v(x+y), when x is independent of y
a. v (x) + v(y)
b. v(x) + v(y) – 2 v (x,y)
c. v(x) + v(y) + 2 v (x,y)
d. v (x) – v (y)

Note: From Probability Chapter

MTP March 21

(21) The sum of squares of deviation from mean of 10 observations is 250. Mean of the data is 10. Find the coefficient of variation
☆ a. 10% b. 25%
c. 50% d. 0%

MTP March 21

(22) If variance of is x is 5, then find the variance of (2- 3x)
☆ a. 10 b. 45
c. 5 d. -13

MTP March 21

(23) What is the standard deviation of number recoveries among 48 patients when the probability of recovering is 0.75?
a. 36 b. 81
c. 9 d. 3

Note: Theoretical Distribution Chapter

MTP Apr 21

(24) The standard deviation of 10, 16, 10, 16, 10, 10, 16, 16 is
a. 4 b. 6
c. 3 d. 0

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MTP Apr 21

(25) The variance of the data 3, 4 ,5, 8 is
a. 4.5 b. 3.5
c. 5.5 d. 6.5

MTP Apr 21

(26) If the profits of a company remains the same for the last ten months, then the standard deviation of profits for these ten months would be ?
a. Positive b. Negative
c. Zero d. A or C

MTP Apr 21

(27) Which measure of dispersion is based on all the observations?
a. Mean Deviation
b. Standard Deviation
c. Quartile Deviation
d. A and B but not C

MTP Apr 21

(28) The Sum of the squares of the deviations from mean of 10 observations is 250. Mean of the data is 10. Find coefficient of variation.
a. 10% b. 25%
c. 50% d. 0%

MTP Apr 21

(29) The Standard Deviation of a variable x is known to be 10. The Standard deviation of 50+5x
a. 50 b. 100
c. 10 d. 500

ICAI SM, MTP Apr 21

(30) The of mean and SD of a series is a + b, if we add 2 to each observation of the series then the sum of the mean and SD is
a. a+b+2 b. 6-a+b
c. 4+a-b d. a+b+4

MTP Nov 21

(31) The Standard deviation is independent of change of
a. Scale b. Origin
c. Both (a) and (b) d. None of these

MTP Nov 21

(32) If all the observations are decreased by 4, find the relation between new SD and old SD.
a. New SD = Old SD/2
b. New SD = Old SD - 2
c. New SD = Old SD - 4
d. Remains unchanged

MTP Nov 21

(33) Standard deviation of first n natural number is 2. What is the value of n?
a. 7 b. 6
c. 5 d. 8

MTP Nov 21

(34) Find the variance of 3x+2 if standard deviation of x is 4
a. 9 b. 160
c. 16 d. 144

MTP Nov 21

(35) If the variance of $x = 148.6$ and mean of $x = 40$, then the coefficient of variation is
a. 37.15 b. 30.48
c. 33.75 d. None of these

MTP Oct 21

(36) If x and y are related by $y = 2x + 5$ and the SD and AM of x are known to be 5 and 10 respec., then the coefficient of variation of y is
a. 25 b. 30
c. 40 d. 20

MTP March 22

(37) If x and y are related by $y = 2x + 5$ and the SD and AM of x are known to be 5 and 10 resp., then the coefficient of variation of y is
a. 25 b. 30
c. 40 d. 20

MTP June 22

(38) SD of first five consecutive natural numbers is:
a. $\sqrt{10}$ b. $\sqrt{8}$
c. $\sqrt{3}$ d. $\sqrt{2}$

MTP June 22

(39) If the profit of a company remains same for the last 10 months then the SD of profit of the company would be:
a. Positive b. Negative
c. Zero d. either (a) or (c

MTP June 22

(40) The Standard deviation of a variable x is to be 10. The Standard deviation of 50+5x is
a. 50 b. 100
c. 10 d. 500

MTP June 22

(41) ☆ If mean and coefficient of variation of the marks of n students is 20 and 80 respectively. What will be variance of them
a. 256 b. 16
c. 25 d. None of these

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MTP Dec 22 – Series I

(42) If the standard deviation of 1, 2, 3, 4, ... 10 is σ, then the SD of 11, 12, 13, 14, .., 20 is:

☆ a. 10σ b. $10+\sigma$
c. σ d. None of these

MTP Dec 22 – Series I

(43) What is the SD of the following series :

Meas.	0-10	10-20	20-30	30-40
Freq.	1	3	4	2

☆
a. 81 b. 7.6
c. 9 d. 2.26

MTP Dec 22 – Series I

(44) If all observations in a distribution are increased by 6, then the variance of the series will be ___
a. Increased b. Decreased
c. Unchanged d. None of these

MTP Dec 22 – Series I

(45) The arithmetic mean and coefficient of variation of data set x are respectively 10 and 30. The variance of 30-2x is
a. 28 b. 32
c. 34 d. 36

MTP Dec 22 – Series I

(46) If $2x + 3y + 4 = 0$ and $v(x) = 6$ then $v(y)$ is:
a. $\frac{8}{3}$ b. 9
c. -9 d. 6

MTP Dec 22 Series II

(47) SD of first five consecutive natural numbers is:
a. $\sqrt{10}$ b. $\sqrt{8}$
c. $\sqrt{3}$ d. $\sqrt{2}$

MTP Dec 22 Series II

(48) If the profit of a company remain same for the last 10 months then the SD of profit of the company would be:
a. Positive b. Negative
c. Zero d. Either A or C

MTP Dec 22 Series II

(49) The sum of mean and SD of a series is $a + b$, if we add 2 to each observation of the series then the sum of mean and SD is :
a. $a + b + 2$ b. $6 - a + b$
c. $4 + a - b$ d. $a + b + 4$

MTP June 2023 Series I

(50) If the coefficient of variation and standard deviation are 60 and 12 respectively, then the arithmetic mean of the distribution is
a. 40 b. 36
c. 20 d. 19

MTP June 2023 Series I

(51) If the sum of square of the value equals to 3390, Number of observation are 30 and Standard deviation is 7, what is the mean value of the above observation?
a. 14 b. 11
c. 8 d. 5

MTP June 2023 Series I

(52) If the variance of random variable 'x' is 18, then what is variance of $y = 2x + 5$?
a. 34 b. 39
c. 68 d. 72

MTP June 2023 Series I

(53) If the variance of given data is 12, and their mean value is 40, what is coefficient of variation (CV)?
a. 5.66% b. 6.66%
c. 7.50% d. 8.65%

MTP June 2023 Series I

(54) In a given set if all data are of same value then variance would be:
a. 0 b. 1
c. - 1 d. 0.5

MTP June 2023 Series II

(55) There are two startups in ecommerce sector struggling to acquire the market. Following data is for Mean and Standard Deviation of billing amount of bought items per month on their website.

Startup	A	B
No. of customers/ month	40	30
Mean billing amount	₹ 2,500	₹ 2,200
SD of billing amount	₹ 10	₹ 11

Which startup has a better consistency when it comes to sales numbers?
a. Startup A
b. Startup B
c. Both A and B
d. Need more information

MTP June 2023 Series II

(56) Which of the following is the best measure to calculate the volatility of stock market?
a. Covariance
b. Standard Deviation
c. Variance
d. All of the above

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Answer Key

1	a	2	a	3	a
4	c	5	a	6	b
7	c	8	a	9	c
10	b	11	c	12	a
13	a	14	c	15	a
16	b	17	c	18	b
19	a	20	a	21	c
22	b	23	d	24	c
25	b	26	c	27	d
28	c	29	a	30	a
31	b	32	d	33	a
34	d	35	b	36	c
37	c	38	d	39	c
40	a	41	a	42	c
43	c	44	c	45	d
46	a	47	d	48	c
49	a	50	c	51	c
52	b	53	d	54	a
55	a	56	b		

Quartile Deviation

Past Exam Questions

PYQ May 18

(1) $\frac{(Q_3 - Q_1)}{(Q_3 + Q_1)}$ is known as

a. Coefficient of Range
b. Coefficient of Q.D.
c. Coefficient of S.D.
d. Coefficient of M.D.

PYQ June 19

(2) The Q.D of 6 numbers 15, 8, 36, 40, 38, 41 is equal to

☆ a. 12.5 b. 25
c. 13.5 d. 37

PYQ June 19

(3) Coefficient of quartile deviation is 1/4 then Q_3 / Q_1 is

☆ a. 5/3 b. 4/3
c. 3/4 d. 3/5

PYQ Jan. 21

(4) Which of the following is a relative measure of dispersion?

a. Range
b. Mean deviation
c. Standard deviation
d. Coefficient of quartile deviation

PYQ June 22

(5) Which is not a measure of central tendency

a. Mean
b. Median
c. Quartile deviation
d. Mode

PYQ June 19

(6) Standard deviation is _____ times of $\sqrt{MD \times QD}$

☆ a. 2/3 b. 4/5
c. $\sqrt{\frac{15}{8}}$ d. $\sqrt{\frac{8}{15}}$

PYQ Nov. 19

(7) The approximate ratio of SD, MD, QD is:

a. 3 : 4 : 5 b. 2 : 3 : 4
c. 15 : 12 : 10 d. 5 : 6 : 7

PYQ Dec 22

(8) If the first quartile in 56.50 and the third quartile is 77.50, then the co-efficient of quartile deviation is:

a. 638.09 b. 15.67
c. 63.80 d. 156.71

PYQ Dec 22

(9) _____ is based on all the observations and _____ is based on the central fifty percent of the observations.

a. Mean deviation, Range
b. Mean deviation, quartile deviation
c. Range, Standard deviation
d. Quartile deviation, standard deviation

PYQ Dec 22

(10) Which one of the following is not a method of measures of dispersion?

a. Standard deviation
b. Mean deviation
c. Range
d. Concurrent deviation method

PYQ June 23

(11) For a given set of normally distributed data, the following statistical parameters are known: Mean = 6; Standard deviation = 2.6; Median = 5 and Quartile deviation = 1.5, then the coefficient of quartile deviation equals to

a. 30 b. 32
c. 25 d. 39

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PYQ June 23

(12) If the first quartile is 42.75 and the third quartile is 74.25, then the coefficient of quartile deviation is:

a. 29.62 b. 15.75
c. 17.57 d. 26.92

Answer Key

1	b	2	c	3	a
4	d	5	c	6	c
7	c	8	b	9	b
10	d	11	a	12	d

Quartile Deviation

Mock Test Paper Questions

MTP May 19

(1) The quartiles of a variable are 45, 52 and 65 respectively. Its quartile deviation is

a. 10 b. 20
c. 25 d. 8.30

MTP May 19 Series II

(2) Quartiles can be determined graphically using

a. Histogram
b. Frequency Polygon
c. Ogive
d. Pie chart

MTP May 19 Series II

(3) Which measures of dispersions is not affected by the presence of extreme observations?

a. Range
b. Mean deviation
c. Standard deviation
d. Quartile deviation

MTP May 19 Series II

(4) Which measure is based on only the central fifty percent of the observations?

a. Standard deviation
b. Quartile deviation
c. Mean deviation
d. All these measures

MTP May 20

(5) The appropriate measure of dispersion for open-end classification is

a. Standard deviation
b. Mean deviation
c. Quartile deviation
d. All these measures

MTP May 20

(6) The quartiles of a variable are 45, 52 and 75 respectively. Its quartile deviation is

a. 15 b. 20
c. 25 d. 8.30

MTP May 20

(7) If x and y are related as $3x+4y = 20$ and the quartile deviation of x is 16, then the quartile deviation of y is

a. 16 b. 14
c. 10 d. 12

MTP Nov 20

(8) The quartiles of the variables are 45, 52, and 65 respectively, its Quartile Deviation is

a. 5 b. 10
c. 25 d. 8.30

MTP Apr 21

(9) Interval Quartile Range is ____of Quartile Deviation

☆ a. Half b. Double
c. Triple d. Equal

MTP Nov 21

(10) In the equation $4x+2y = 3$, quartile deviation for y is 3. Find the quartile deviation for x

☆ a. 4.5 b. 6
c. 1.5 d. None of these

MTP Oct 21

(11) If the quartile deviation of x is 6 and $3x + 6y = 20$, what is the quartile deviation of y?

a. 3 b. 4
c. 5 d. 6

MTP March 22

(12) The quartiles of a variable are 45, 52 and 65 respectively. Its quartile deviation is

a. 10 b. 20
c. 25 d. 8.30

MTP March 22

(13) If x and y are related as $3x-4y= 20$ then the Quartile divation of x is 12 , then the Quartile deviation of y is :

a. 14 b. 15
c. 16 d. 9

MTP June 22

(14) The quartile deviation from the following observations is 10,18,20,28,15,17,22,25,29,32,34

☆ is equal to:

a. 8 b. 6
c. 10 d. 5

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MTP Dec 22 Series II

(15) The QD of six numbers 15, 8, 36, 40, 38, 41 is equal to:

a. 12.5 b. 25
c. 13.5 d. 37

MTP Dec 22 Series II

(16) Coefficient of Quartile Deviation is 1/4 then Q3/Q1 =?

a. 5/3 b. 4/3
c. 3./4 d. 3/5

MTP Nov 18

(17) If the SD of a variable X is σ then Quartile Deviation (QD) is

a. 4/5 σ b. 3/2 σ
c. 2/3 σ d. 5/4 σ

MTP May 19

(18) Which one is an absolute measure of dispersion?

a. Range
b. Mean Deviation
c. Standard Deviation
d. All these measures

MTP Nov 20

(19) A shift of origin has no impact on

a. Mean deviation
b. Standard deviation
c. Quartile deviation
d. All of these

MTP Nov 20

(20) Which measure of dispersion is based on all the observations

a. Standard deviation
b. Mean deviation
c. Quartile deviation
d. Both (a) and (b)

MTP Apr 21

(21) Which of the below is affected by shifting of scale

a. SD b. MD
c. QD d. All of these

MTP Oct 21

(22) Which one is an absolute measure of dispersion?

a. Range
b. Mean Deviation
c. Standard Deviation
d. All these measures

MTP June 22

(23) The Quartile deviation is

a. 2/3 of SD b. 4/5 of SD
c. 5/6 of SD d. None of these

MTP Dec 22 – Series I

(24) The approximate ratio of SD, MD, QD is

a. 2:3:4 b. 3:4:5
c. 15:12:10 d. 5:6:7

MTP June 2023 Series I

(25) _____ is based on all the observations and _____ is based on the central fifty percent of the observations.

a. Mean deviation, Range
b. Mean deviation, quartile deviation
c. Range, standard deviation
d. Quartile deviation, standard deviation

MTP June 2023 Series I

(26) Which one of the following is not a method of measures of dispersion?

a. Standard deviation
b. Mean deviation
c. Range
d. Concurrent deviation method

MTP June 2023 Series I

(27) If the first quartile in 56. and the third quartile is 77. then the co – efficient of quartile deviation is

a. 18.09 b. 15.79
c. 63.8 d. 56.71

MTP June 2023 Series II

(28) In case of extreme sampling fluctuations, which is the best measure of dispersion?

a. Quartile Deviation
b. Standard Deviation
c. Mean Deviation
d. Range

MTP Dec 22 – Series I

(29) If Quartile deviation is 7. Find the value of x from the arranged series: 2, x, 6, 7, 9, 16, 18.

a. 5 b. 2
c. 8 d. 6

Answer Key

1 a	2 c	3 d
4 b	5 c	6 a
7 d	8 b	9 b
10 c	11 a	12 a
13 d	14 b	15 c
16 a	17 c	18 d
19 d	20 d	21 d
22 d	23 a	24 c
25 b	26 d	27 b
28 a	29 b	

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Chapter 15 – Probability

Classical Probability

Past Year Questions

PYQ May 18

(1) Two broad divisions of probability are:
- a. Subjective probability and objective probability
- b. Deductive probability and mathematical probability
- c. Statistical probability and mathematical probability
- d. None of these

PYQ May 18

(2) The term "chance" and probability are synonyms:
- a. True
- b. False
- c. Both
- d. None of these

PYQ May 18

(3) Sum of all probabilities mutually exclusive and exhaustive events is equal to
- a. 0
- b. 1/2
- c. 1/4
- d. 1

PYQ Nov. 18

(4) The probability that a leap year has 53 Wednesday is
- a. $\frac{2}{7}$
- b. $\frac{3}{5}$
- c. $\frac{2}{3}$
- d. $\frac{1}{7}$

PYQ Nov. 18

(5) Two different dice are thrown simultaneously, then the probability, that the sum of two numbers appearing on the top of dice is 9 is:
- a. $\frac{8}{9}$
- b. $\frac{1}{9}$
- c. $\frac{7}{9}$
- d. None of these

PYQ June 19

(6) Two event A and B are such that they do not occurs simultaneously then they are called _____ events
- a. Mutually exhaustive
- b. Mutually exclusive
- c. Mutually independent
- d. Equally likely

PYQ June 19

(7) According to bayee's theorem, $P(E_K / A) = \frac{P(E_K)P(A / E_K)}{\sum_{i-1}^{n} P(E_1)P(A / E_1)}$ here
- a. $E_1, E_2 \ldots\ldots$ are mutually exclusive
- b. $P(E / A_1), P(E / A_2) \ldots\ldots$ are equal to 1
- c. $P(A_1 / E), P(A_2 / E) \ldots\ldots$ Are equal to 1
- d. A & E_1's are disjoint sets

Note: Bayes Theorem is out of syllabus

PYQ June 19

(8) When 2 – dice are thrown simultaneously then the probability of getting at least one 5 is
- a. $\frac{11}{36}$
- b. $\frac{5}{36}$
- c. $\frac{8}{15}$
- d. $\frac{1}{7}$

PYQ Nov. 19

(9) A log contains 15 one rupee coins, 25 two rupees coins and 10 five rupee coins if a coin is selected at random than probability for not selecting a one rupee coin is:
- a. 0.30
- b. 0.20
- c. 0.25
- d. 0.70

PYQ Nov. 19

(10) What is the probability of occurring 4 or more than 4 accidents.

No. of acc.	Frequency
0	36
1	27
2	33
3	29
4	24
5	27
6	18
7	9

- a. 24
- b. 69
- c. 38
- d. 80

PYQ Nov. 20

(11) When two coins are tossed simultaneously the probability of getting at least one tail?
- a. 1
- b. 0.75
- c. 0.5
- d. 0.25

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PYQ Nov. 20

(12) When 3 dice are rolled simultaneously the probability of a number on the 3rd dice is greater than the sum of the numbers on two dice.

a. 12/216 b. 36/216
c. 48/216 d. 20/216

PYQ Jan. 21

(13) An event that can be subdivided into further events is called as.

a. A composite event
b. A complex event
c. A mixed event
d. A simple event

PYQ Jan. 21

(14) Three identical and balanced dice are rolled. The probability that the same number will appear on each of them is.

a. $\frac{1}{6}$ b. $\frac{1}{18}$
c. $\frac{1}{36}$ d. $\frac{1}{24}$

PYQ Jan. 21

(15) A basket contains 15 white balls, 25 red balls and 10 blue balls. If a ball is selected at random, the probability of selecting not a white ball.

a. 0.20 b. 0.25
c. 0.60 d. 0.70

PYQ Jan. 21

(16) Two dice are thrown simultaneously. The probability of a total score of 5 from the out comes of dice is.

a. $\frac{1}{18}$ b. $\frac{1}{12}$
c. $\frac{1}{9}$ d. $\frac{2}{5}$

PYQ Jan. 21

(17) If an unbiased coin is tossed twice, then the probability of obtaining at least one tail is.

a. 1 b. 0.5
c. 0.75 d. 0.25

PYQ Jan. 21

(18) If an unbiased coin is tossed three times, what is the probability of getting more than one head?

a. $\frac{1}{2}$ b. $\frac{3}{8}$
c. $\frac{7}{8}$ d. $\frac{1}{3}$

PYQ Dec. 21

(19) Which of the following pair of events E and F are mutually exclusive?

a. E = (Ram's age is 13) and F = (Ram is studying in a college)
b. E = (Sita studies in a school) and F = (sita is a play back singer)
c. E = (Raju is an elder brother in a family) and F = (Raju's father has more than one son)
d. E = (Banu studied B.A. English literature and) F = (Banu can read English novels)

PYQ June 22

(20) What is the probability of occurrence of leap year having 53 Sunday?

a. 1/7 b. 2/7
c. 3/7 d. 4/7

PYQ June 22

(21) Two perfect dice are rolled what is the probability that one appears at least in one of the dice?

a. $\frac{7}{36}$ b. $\frac{11}{36}$
c. $\frac{9}{36}$ d. $\frac{15}{36}$

PYQ June 22

(22) If p:q are the odds in favour of an event, then the probability of that event is -

a. $\frac{p}{q}$ b. $\frac{p}{p+q}$
c. $\frac{q}{p+q}$ d. $\frac{q}{p}$

PYQ Dec 22

(23) The probability that a leap year has 53 Monday is:

a. $\frac{1}{7}$ b. $\frac{2}{3}$
c. $\frac{2}{7}$ d. $\frac{3}{5}$

PYQ Dec 22

(24) If a number is selected at random from the first 50 natural numbers, what will be the probability that the selected number is a multiple of 3 and 4?

a. 5/50 b. 2/25
c. 3/30 d. 4/25

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PYQ Dec 22

(25) If three coins are tossed simultaneously, what is the probability of getting two heads together?

a. 1/4 b. 1/8
c. 5/8 d. 3/8

PYQ Jun 23

(26) Four persons are chosen at random from a group of 3 me, 2 women and 4 children. The probability that exactly 2 of them are children, is

a. $\frac{10}{21}$ b. $\frac{1}{12}$
c. $\frac{1}{5}$ d. $\frac{1}{9}$

Answer Key

1	a	2	a	3	d
4	a	5	b	6	b
7	a	8	a	9	d
10	c	11	b	12	d
13	a	14	c	15	d
16	c	17	c	18	a
19	a	20	b	21	b
22	b	23	c	24	b
25	d	26	a		

Classical Probability

Mock Test Paper Questions

MTP May 18

(1) If p: q is the odds in favor of an event, then the probability of that event is

a. $\frac{p}{q}$
b. $\frac{q}{p+q}$
c. $\frac{p}{p+q}$
d. None of these

MTP May 18

(2) If P (A) = 4/9; then the odd against the event 'A' is

a. 4:9 b. 4:5
c. 5:4 d. 4:14

MTP Nov 18

(3) The probability of A solving a problem is $\frac{7}{12}$ the odds against solving a problem

a. 5:7 b. 4:7
c. 5:8 d. 4:5

MTP Nov 18

(4) If two letters are taken at random from the word HOME, what is the Probability that none of the letters would be vowels?

a. 1/6 b. 1/2
c. 1/3 d. 1/4

MTP Nov 18

(5) From a bag containing 10 black and 20 white balls, a ball is drawn at random. What is the probability that is black?

a. 1/2 b. 1/3
c. 1 d. 2

MTP May 19

(6) If a card is drawn at random from a pack of 52 cards, what is the chance of getting a Spade or an ace?

a. 4/13 b. 5/13
c. 0.25 d. 0.20

MTP Nov 19

(7) If one card is drawn at random from a pack of playing cards; find the probability it is neither a hearts nor a club:

a. $\frac{1}{2}$ b. $\frac{1}{4}$
c. $\frac{1}{8}$ d. None of these

MTP Nov 19

(8) Three balls are drawn at random from a bag containing 6 blue and 4 red balls. What is the chance that 2 balls are blue and 1 is red?

a. $\frac{1}{4}$ b. $\frac{3}{4}$
c. $\frac{1}{2}$ d. None of these

MTP May 20

(9) What is the chance of picking a spade or an ace not of spade from a pack of 52 cards?

a. 4/13 b. 2/13
c. 3/26 d. 3/18

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MTP Nov 20

(10) What is the probability of getting neither total of 7 nor 11 when the pair of dice is tossed?
a. 7/9 b. 2/9
c. 3/9 d. 4/9

MTP March 21

(11) In a non-leap year, the probability of getting 53 Sundays or 53 Tuesday or 53 Thursday is
a. 4/7 b. 2/7
c. 3/7 d. 1/7

MTP Apr 21

(12) If a card is drawn at random from a pack of 52 cards, what is the chance of getting a Spade or an ace?
a. 4/13 b. 5/13
c. 0.25 d. 0.20

MTP Apr 21

(13) A card is drawn from a pack of playing cards at random. What is the probability that the card drawn a king or red colour?
a. 1/4 b. 4/13
c. 7/13 d. 1/2

MTP Nov 21

(14) One card is drawn from a pack of 52 , what is the probability that is a king or queen ?
a. 11/13 b. 2/13
c. 1/13 d. None of these

Note: MTP Ans is wrong.

MTP Nov 21

(15) The probability that a leap year has 53 Wednesday is
a. 2/7 b. 5/3
c. 2/3 d. 1/7

MTP Nov 21

(16) A coin is tossed six times, then the probability of obtaining heads and tails alternatively is
a. 1/2 b. 1/64
c. 1/32 d. 1/16

MTP Nov 21

(17) Two different dice are thrown simultaneously, then the probability, that the sum of two numbers appearing on the top of dice 9 is
a. 8/9 b. 1/9
c. 7/9 d. None of these

MTP Oct 21

(18) Following are the wages of 8 workers in rupees: 50, 62, 40, 70, 45, 56, 32, 45. If one of the workers is selected at random, what is the probability that his wage would be lower than the average wage?
a. 0.625 b. 0.500
c. 0.375 d. 0.450

MTP Dec 22 – Series I

(19) Let P be a probability function on S = {X1, X2, X3) if P(X1)=1/4 and P(X3) = 1/3 then P(X2) is equal to:
a. 5/12 b. 7/12
c. 3/4 d. None of these

MTP Dec 22 – Series I

(20) In a non-leap year, the probability of getting 53 Sundays or 53 Tuesdays, or 53 Thursdays is:
a. 4/7 b. 2/7
c. 3/7 d. 1/7

MTP Dec 22 Series II

(21) When 2 dice are thrown simultaneously then the probability of getting at least one 5 is:
a. 11/36 b. 5/36
c. 8/15 d. 1/7

MTP Dec 22 Series II

(22) The probability that a leap year has 53 Wednesday is:
a. 2/7 b. 3/5
c. 1/7 d. 2/3

MTP June 2023 Series I

(23) Ticket numbered 1 to 20 are mixed up and then a ticket is drawn at random. What is the probability that the ticket drawn bears a number which is multiple of 3 or 7?
a. 1/5 b. 2/5
c. 3/5 d. None of these

MTP June 2023 Series I

(24) The probability that is leap year has 53 Sunday is:
a. 1/7 b. 2/3
c. 2/7 d. 3/5

MTP June 2023 Series I

(25) If three coins are tossed simultaneously, what is the probability of getting two heads together?
a. 1/4 b. 1/8
c. 5/8 d. 3/8

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MTP June 2023 Series II

(26) If a card is drawn randomly from a deck, the probability of the card being neither a red card nor a face card?

a. 5/13 b. 6/17
c. 12/27 d. 5/7

MTP June 2023 Series II

(27) If two dice are thrown then what is the probability that the sum of the faces of dice are square or cube number?

a. 1/4 b. 1/2
c. 1/3 d. None of these

Answer Key

1	c	2	c	3	a
4	a	5	b	6	a
7	a	8	c	9	a
10	a	11	c	12	a
13	c	14	b	15	a
16	c	17	b	18	b
19	a	20	c	21	a
22	a	23	b	24	c
25	a	26	a	27	c

Set based Probability

Past Year Questions

PYQ May 18

(1) What is the probability of having at least one 'six' in 3 throws of a project die?

a. 5/6 b. $(5/6)^3$
c. $1-(1/6)^3$ d. $1-(5/6)^3$

PYQ Nov. 18

(2) If, $P(A)=\frac{1}{2}$, $P(B)=\frac{1}{3}$, and $P(A\cap B)=\frac{1}{4}$, then $P(A\cup B)$ is equal to

a. $\frac{11}{12}$ b. $\frac{10}{12}$
c. $\frac{7}{12}$ d. $\frac{1}{6}$

PYQ Nov. 18

(3) A coin is tossed six times, then the probability of obtaining heads and tails alternatively is

a. $\frac{1}{2}$ b. $\frac{1}{64}$
c. $\frac{1}{32}$ d. $\frac{1}{16}$

PYQ Nov. 18

(4) Ram is known to hit a target in 2 out of 3 shots where as shyam is known to hit the same target in 5 out of 11 shots. What is the probability that the target would be hit if they both try?

a. $\frac{9}{11}$ b. $\frac{3}{11}$
c. $\frac{10}{33}$ d. $\frac{6}{11}$

PYQ Nov. 18

(5) If $P(A\cup B)=0.8$ and $P(A\cap B)=0.3$, then $P(\bar{A})+P(\bar{B})$ is equal to

☆ a. 0.3 b. 0.5
c. 0.7 d. 0.9

PYQ June 19

(6) If a coin is tossed 5 times then the probability of getting Tail and Head occurs alternatively is

a. $\frac{1}{8}$ b. $\frac{1}{16}$
c. $\frac{1}{32}$ d. $\frac{1}{64}$

PYQ Nov. 19

(7) Two letters are chosen from the word HOME. What is the probability that the letters chosen are not vowels.

a. ½ b. 1/6
c. 2/3 d. 0

PYQ Nov. 19

(8) If A, B, C are three mutually exclusive and exhaustive events such that:
$P(A) = 2(B) = 3P(C)$ what is $P(B)$?

a. 6/11 b. 3/11
c. 1/6 d. 1/3

PYQ Nov. 19

(9) What is the probability of getting 7 or 11 when two dices are thrown?

a. 2/9 b. 6/36
c. 10/36 d. 2/36

PYQ Nov. 20

(10) When 2 fair dice are thrown, what is the probability of getting the sum which is a multiple of 3?

a. 4/36 b. 13/36
c. 2/36 d. 12/36

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PYQ Nov. 20

(11) If A speaks 75% of truth and B speaks 60% of truth. In what percentage both of them likely contradict with each other in narrating the same questions?

a. 0.60 b. 0.45
c. 0.65 d. 0.35

PYQ July 21

(12) If there are 48 marbles market with numbers 1 to 48, then the probability of selecting a marble having the number divisible by 4 is;

a. 1/2 b. 2/3
c. 1/3 d. 1/4

PYQ July 21

(13) A bag contains 7 blue and 5 green balls. One ball is drawn at random. The probability of getting a blue ball is_____.

a. 5/12 b. 12/35
c. 7/12 d. 0

PYQ July 21

(14) The probability that a football team loosing a match at Kolkata is 3/5 and winning a match at Bengaluru is 6/7; the probability of the team winning at least one match is_____.

a. 3/35 b. 18/35
c. 32/35 d. 17/35

PYQ July 21

(15) A biased coin is such that the probability of getting a head is thrice the probability of getting a tail, if the coin is tossed 4 times, what is the probability of getting a head all the times?

a. 2/5 b. 81/128
c. 81/256 d. 81/64

PYQ July 21

(16) If there are 16 phones, 10 of them are Android and 6 of them Apple, then the probability of 4 randomly selected phones to include 2 Android and 2 Apple phone is:

a. 0.47 b. 0.51
c. 0.37 d. 0.27

PYQ June 22

(17) A dice is rolled twice. Find the probability of getting numbers multiple of 3 or 5?

a. $\frac{1}{3}$ b. $\frac{1}{4}$
c. $\frac{19}{36}$ d. $\frac{1}{6}$

PYQ June 22

(18) ☆ If in a bag of 30 balls numbered from 1 to 30. Two balls are drawn find probability of getting a ball being multiple of 2 or 5

a. $\frac{108}{465}$ b. $\frac{117}{435}$
c. $\frac{117}{300}$ d. $\frac{116}{485}$

PYQ June 22

(19) If $P(A) = 0.3$; $P(B) = 0.8$ and $P\left(\frac{B}{A}\right) = 0.5$, find $P(A \cup B)$

a. 0.85 b. 0.95
c. 0.55 d. 0.5

PYQ Dec 22

(20) If $P(A) = \frac{1}{3}$, $P(B) = \frac{3}{4}$ and $P(A \cup B) = \frac{11}{12}$ then $P\left(\frac{B}{A}\right)$ is:

a. $\frac{1}{6}$ b. $\frac{4}{9}$
c. $\frac{1}{2}$ d. $\frac{1}{8}$

PYQ Jun 23

(21) For any two events 'A' and 'B' it is known that $P(A) = 2/3$, $P(B) = 3/8$ and $P(A \cap B) = 1/4$, then the events A and B are:

a. Mutually exclusive and Independent
b. Mutually not exclusive and Independent
c. Mutually exclusive but not independent
d. Neither independent nor mutually exclusive

PYQ June 23

(22) The probability that a four digit number comprising the digits 2, 5, 6 and 7 without repetition of digits, would be divisible by 4 is

a. 1/2 b. 3/4
c. 1/4 d. 1/3

Answer Key

1 d	2 c	3 c
4 a	5 d	6 b
7 b	8 b	9 a
10 d	11 b	12 d
13 c	14 c	15 c
16 c	17 c	18 b
19 b	20 c	21 b
22 d		

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Set based Probability

Mock Test Paper Questions

MTP Nov 18

(1) Two events A& B Probabilities 0.24 and 0.52 respectively. If the probability of both A and B occurs simultaneously is 0.15. Then the probability that neither A nor B occur is 0.15, then the probabilities that neither A nor B is.

a. 0.39 b. 0.375
c. 0.61 d. 0.86

MTP May 19

(2) If $P(A \cap B) = 0$, then the two events A and B are

a. Mutually exclusive
b. Exhaustive
c. Equally likely
d. Independent.

MTP May 19

(3) If A, B and C are mutually exclusive and exhaustive events, then P(A) + P(B) + P(C) equals to

a. 1/3
b. 1
c. 0
d. any value between 0 and 1.

MTP May 19 Series II

(4) Addition Theorem of Probability states that for any two events A and B

a. $P(A \cup B) = P(A) + P(B)$
b. $P(A \cup B) = P(A) + P(B) + P(A \cap B)$
c. $P(A \cup B) = P(A) + P(B) - P(A \cap B)$
d. $P(A \cup B) = P(A)\,P(B)$

MTP May 20

(5) Three events A, B and C are mutually exclusive, exhaustive and equally likely. What is the probably of the complementary event of A?

a. 1/3 b. 2/3
c. 3/7 d. 1

MTP May 20

(6) ☆ Find the probability that a four-digit number comprising the digits 2, 5, 6 and 7 would be divisible by 4.

a. 1/4 b. 1/3
c. 1/2 d. 1

MTP Nov 20

(7) If A and B are two events, such that P(A) = 1/4, P(B) = 1/3 and P(AUB)=1/2, then P(B/A) is equal to

a. 3/4 b. 1/2
c. 1/4 d. 1/3

MTP March 21

(8) If A and B are two events and P (A) = 2/3, P(B) =3/5, $P(A \cup B) = 5/6$, then the value of $P\left(\frac{A'}{B'}\right)$ is :

a. 1/4. b. 5/12
c. 5/8 d. 5/4

MTP Apr 21

(9) P(A) = 0.45 , P(B) =0.36 and $P(A \cap B) = 0.25$ then P(A/B) = ?

a. 1.40 b. 1.80
c. 0.714 d. 0.556

Note: Correct Ans should be 0.6944 (all options are incorrect)

MTP JUNE 22

(10) ☆ A husband and a wife appear in an interview for two vacancies in the same post. The probability of husband's selection is 3/5 and that of wife's selection is 1/5. Then the probability that only one of them is selected is

a. 16/25 b. 17/25
c. 14/25 d. None of these

MTP Dec 22 – Series I

(11) Thirty balls are serially numbered and placed in bag. Find chance that the first ball drawn is a multiple of 3 or 5

a. 8/15 b. 2/15
c. 1/2. d. 7/15

MTP Dec 22 – Series I

(12) The odds in favor of event A in a trial is 3:1. In three independent trials, the probability of non-occurrence of event A is

a. 1/64 b. 1/32
c. 1/27 d. 1/8

MTP Dec 22 Series II

(13) Two events A and B are such that they do not occur simultaneously then they are called _____ events.

a. Mutually exhaustive
b. Mutually Exclusive
c. Mutually Independent
d. Equally Likely

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MTP June 2023 Series I

(14) If $P(A)=1/3$, $P(B)=3/4$ and $P(A \cap B)=1/6$ then $P(A/B)$ is:
- a. 1/6
- b. 2/9
- c. 1/2
- d. 1/8

MTP June 2023 Series I

(15) If a number is selected at random from the first 50 natural numbers, what will be the probability that the selected number is a multiple of 3 and 4?
- a. 5/50
- b. 2/25
- c. 3/50
- d. 4/25

MTP Jun 23 – Series II

(16) A number is selected at random from first 70 natural numbers. What is the chance that it is a multiple of either 5 or 14?
- a. 6/35
- b. 8/35
- c. 10/35
- d. None of these

MTP Jun 23 – Series II

(17) Probability of Ramesh & Deepak speaking truth is 1/4, 3/5. Find the probability of at most one of them speaks truth.
- a. 0.60
- b. 0.85
- c. 0.75
- d. None of these

Answer Key

1	a	2	a	3	b
4	c	5	b	6	b
7	d	8	b	9	c
10	c	11	d	12	a
13	b	14	b	15	b
16	d	17	b		

Conditional Probability

Past Year Exam Questions

PYQ May 18

(1) The theorem of compound probability states that for any two events A and B
- a. $P(A \cap B)=P(A)\times P(B/A)$
- b. $P(A \cup B)=P(A)\times P(B/A)$
- c. $P(A \cap B)=P(A)\times P(B)$
- d. $P(A \cup B)=P(A)+P(B)-P(A \cap B)$

PYQ July 21

(2) If in a class, 60% of the student study. Mathematics and science and 90% of the students study science, then the probability of a student studying mathematics given that he/she is already studying science is:
- a. 1/4
- b. 2/3
- c. 1
- d. 1/2

PYQ Dec. 21

(3) For any two dependent events A and B, $P(A) = 5/9$ and $P(B) = 6/11$ and $P(A \cap B)=10/33$. What are the values of $P(A/B)$ and $P(B/A)$?
- a. 5/9, 6/11
- b. 5/6, 6/11
- c. 1/9, 2/9
- d. 2/9, 4/9

PYQ Dec. 21

(4) In a group of 20 males and 15 females, 12 males and 8 females are service holders. What is the probability that a person selected at random from the group is a service holder given that the selected person is a male?
- a. 0.40
- b. 0.60
- c. 0.45
- d. 0.55

PYQ Dec. 21

(5) There are 3 boxes with the below composition:
Box 1 : 7 Red + 5 White + 4 Blue balls
☆ Box 2 : 5 Red + 6 White + 3 Blue balls
Box 3 : 4 Red + 3 White + 2 Blue balls
One of the boxes is selected at random and a ball is drawn from it. What is the probability that drawn ball is red?
- a. 1249/3024
- b. 1247/3004
- c. 1147/3024
- d. 1/2

PYQ Dec. 22

(6) A machine is made of two parts A and B. The manufacturing process of each part is such that probability of defective in part A is 0.08 and that B is 0.05. What is the probability that the assembled part will not have any defect?
- a. 0.934
- b. 0.864
- c. 0.85
- d. 0.874

PYQ Dec 22

(7) Suppose A and B are two independent events with probabilities $P(A) \neq 0$ and $P(B) \neq 0$. Let A' and B' be their complements. Which one of the following statements in FALSE?
- a. $P(A \cap B)=P(A)\times P(B)$
- b. $P(A/B)=P(A)$
- c. $P(A \cup B)=P(A)+P(B)$
- d. $P(A' \cap B')=P(A')\times P(B')$

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PYQ Dec 22

(8) The theorem of compound probability states that for any two events A and B.

a. $P(A \cap B) = P(A) \times P(B/A)$
b. $P(A \cup B) = P(A) \times P(B/A)$
c. $P(A \cap B) = P(A) \times P(B)$
d. $P(A \cup B) = P(A) + P(B) - P(A \cap B)$

PYQ Jun 23

(9) Company 'A' produces 10% defective products, company 'B' produces 20% defective products and company 'C' produces 5% defective products. If choosing a company is an equally likely event, what is probability that product chosen is free from defect?

a. 0.88
b. 0.80
c. 0.79
d. 0.78

PYQ Jun 23

(10) If $P(A) = \frac{1}{3}, P(B)\frac{1}{4}, P(A/B) = \frac{1}{6}$, the probability $P\left(\frac{B}{A}\right)$ is

a. $\frac{1}{8}$ b. $\frac{1}{4}$
c. $\frac{3}{8}$ d. $\frac{1}{2}$

Answer Key

1	a	2	b	3	a
4	b	5	a	6	d
7	c	8	a	9	a
10	a				

Conditional Probability

Mock Test Paper Questions

MTP May 18

(1) If two events A and B are independent, the probability that both will occur is given by

a. $P(A) \times P(B)$
b. $P(A) + P(B)$
c. $P(A) + P(B) - P(A \cup B)$
d. $P(A) + P(B) - P(A \cap B)$

MTP Nov 18

(2) If P(A) = 1 and P(B) = 1/3 then P(A/B) =

a. 1/3 b. 2/3
c. 1 d. ½

MTP Nov 18

(3) A probability in statistics is given to five students A, B, C, D and E. Their chances of is 1/2, 1/3,1/4, 1/5, 1/6. What's the probability that the problem will be solved.

a. 1/6 b. 5/6
c. 1 d. None

MTP May 19

(4) Given that P (A) = 1/2, P (B) = 1/3, $P(A \cap B)$ = 1/4, what is P (A'/B')

a. 1/2 b. 7/8
c. 5/8 d. 2/3

Note: Typing Mistake in MTP

MTP May 19 Series II

(5) If for two events A and B, $P(A \cap B) = P(A) \times P(B)$, then the two events A and B are

a. Independent
b. Dependent
c. Not equally likely
d. Not exhaustive

MTP May 19 Series II

(6) If an unbiased die is rolled once, odds in favour of getting a point which is a multiple of 3 is

a. 1:2 b. 2:1
c. 1:3 d. 3:1

MTP May 19 Series II

(7) A, B, C are three mutually independent with probabilities 0.3, 0.2 and 0.4 respectively. What is $P(A \cap B \cap C)$?

a. 0.400 b. 0.240
c. 0.024 d. 0.500

Note: Typing Mistake in MTP

MTP May 19 Series II

(8) What is the chance of throwing at least 7 in a single cast with 2 dice?

a. 5/12 b. 7/12
c. 1/4 d. 17/63

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MTP Nov 19

(9) The probability that a person travels by a plane is $\frac{1}{5}$ and that he travels by train is $\frac{2}{3}$. Find the probability of his traveling neither by plane nor by train?

a. $\frac{13}{15}$ b. $\frac{2}{15}$

c. $\frac{1}{15}$ d. None of these

MTP May 20

(10) The probability that an Accountant's job applicant has a B. Com. Degree is 0.85, that he is a CA is 0.30 and that he is both B. Com. and CA is 0.25 out of 500 applicants, how many would be B. Com. or CA?

a. 0.25 b. 0.30

c. 0.10 d. 0.90

Note: Number of persons are required in question and not the probability but options give probability.

MTP May 20

(11) Rupesh is known to hit a target in 5 out of 9 shots whereas David is known to hit the same target in 6 out of 11 shots. What is the probability that the target would be hit once they both try?

a. 79/99 b. 10/13

c. 14/26 d. 13/18

MTP May 20

(12) In connection with a random experiment, it is found that $P(A) = 2/3$, $P(B) = 3/5$ and $P(A \cup B) = 5/6$, find $P(A/B)$

a. 7/18 b. 1/13

c. 5/18 d. 13/18

MTP Nov 20

(13) ☆ An investment consultant predicts that the odds against the price of a certain stock going up are 2:1 and odd are in favor of the price remaining the same are 1:3. what is the probability that the price of stock will go down?

a. 5/12 b. 7/12

c. 1/3 d. 1/4

MTP Nov 20

(14) A pair of dice rolled. If the sum of the two dice is 9, find the probability that one of the dice showed is 3

a. 1/3 b. 1/4

c. 1/2 d. 1/8

MTP Nov 20

(15) ☆ What is the probability that a leap year selected at random contains either 53 Sundays or 53 Mondays

a. 2/7 b. 3/7

c. 4/7 d. 1/7

MTP March 21

(16) The odds are 9:5 against a person who is 50 years living till he is 70 and 8:6 against a person who is 60 living till he is 80. Find the probability that at least one of them will be alive after 20 years.

a. 11/14 b. 22/49

c. 31/49 d. 35/49

MTP March 21

(17) What is the chance of throwing at least 7 in a single cast with two dices?

a. 5/12 b. 7/12

c. 1/4 d. 17/36

MTP Apr 21

(18) ☆ A bag contains 12 balls of which 3 are red and 5 balls are drawn at random. Find the probability that 5 balls 3 are red

a. 3/132 b. 5/396

c. 1/36 d. 1/22

MTP Nov 21

(19) ☆ A bag contains 4 Red and 5 Black balls. Another bag contains 5 Red and 3 Black balls. If one ball is drawn at random each bag. Then the probability that one red and one black is

a. 12/72 b. 25/72

c. 37/72 d. 13/72

MTP Oct 21

(20) Given that for two events A and B, $P(A) = 3/5$, $P(B) = 2/3$ and $P(A \cup B) = 3/4$, what is $P(A/B)$?

a. 0.655 b. 13/60

c. 31/60 d. 0.775

MTP Oct 21

(21) A problem in probability was given to three CA students A, B and C whose chances of solving it are 1/3, 1/5 and 1/2 respectively. What is the probability that the problem would be solved?

a. 4/15 b. 7/8

c. 8/15 d. 11/15

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MTP Oct 21

(22) ☆ A packet of 10 electronic components is known to include 2 defectives. If a sample of 4 components is selected at random from the packet, what is the probability that the sample does not contain more than 1 defective?

a. 1/3 b. 2/3
c. 13/15 d. 3/15

MTP Oct 21

(23) The probability that there is at least one error in an account statement prepared by 3 persons A, B and C are 0.2, 0.3 and 0.1 respectively. If A, B and C prepare 60, 70 and 90 such statements, then the expected number of correct statements

a. 170 b. 176
c. 178 d. 180

MTP March 22

(24) Given that for two events A and B, $P(A) = 3/5$, $P(B) = 2/3$ and $P(A) = 3/4$, what is $P(A/B)$?

a. 0.655 b. 13/60
c. 31/60 d. 0.775

MTP June 22

(25) ☆ If $P(A)=1/2, P(B)=1/3$, and $P(A \cap B)=\frac{1}{4}$, then the value of $P(A' \cup B')$ is

a. 1/4 b. 3/4
c. 2/5 d. None of these

MTP June 22

(26) ☆ A bag contains 5Red and 4 Black balls. A ball is drawn at random from the bag and put into another bag contains 3 red and 7 black balls. A ball is drawn randomly from the second bag. What is the probability that it is red?

a. 32/99 b. 1/3
c. 74/99 d. None of these

MTP Dec 22 – Series I

(27) A speaks truth in 60% of the cases and B in 90% of the cases. In what percentage of cases are they likely to contradict each other in stating the same fact:

a. 36% b. 42%
c. 54% d. None of these

MTP Dec 22 – Series I

(28) A candidate is selected for interview for 3 posts. For the first there are 3 candidates, for second there are 4 and for third there are 2. What are the chances of his getting at least one post?

a. 3/4 b. 2/3
c. 1/10 d. 1

MTP Dec 22 – Series I

(29) ☆ A card is drawn from a pack of playing cards and then another card is drawn without the first being replaced. What is the probability of getting two kings:

a. 7/52 b. 1/221
c. 3/221 d. None of these

MTP Dec 22 Series II

(30) Ram is known to hit a target in 2 out of 3 shots whereas Shyam is known to hit the same target in 5 out of 11 shots. What is the probability that the target would be hit if they both try?

a. 9/11 b. 6/11
c. 10/33 d. 3/11

MTP June 2023 Series I

(31) A class consists of 10 boys and 20 girls of which half the boys and half the girls have blue eyes. Find the probability that a student chosen random is a boy and has blue eyes.

a. 1/6 b. 3/5
c. 1/2 d. None of these

MTP June 2023 Series I

(32) A machine is made of two parts A and B. The manufacturing process of each part is such that probability of defective in part A is 0.08 and that B is 0.05. What is the probability that the assembled part will not have any defect?

a. 0.934 b. 0.864
c. 0.85 d. 0.874

MTP June 2023 Series II

(33) From a deck of 52 cards, two cards are drawn at random. What is the probability that they are a king and a queen, if the cards are drawn one after the other without replacement?

a. $\frac{4}{52} \times \frac{4}{51}$

b. $2 \times \frac{4}{52} \times \frac{4}{51}$

c. $\frac{4}{52} \times \frac{3}{51} \times \frac{4}{52} \times \frac{3}{51}$

d. None of these

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MTP June 2023 Series II

(34) In a poker set there are 90 chips numbered from 1 to 90. Dan picks 3 chips random, one after the other, without replacement. What is the probability that the numbers on the chips, in the order that the picks them are in descending order?

a. 1/3 b. 1/30
c. 1/6 d. None

Answer Key

1	a	2	c	3	b
4	c	5	a	6	a
7	c	8	b	9	b
10	d	11	a	12	d
13	a	14	c	15	b
16	c	17	b	18	d
19	c	20	d	21	d
22	c	23	c	24	d
25	b	26	a	27	b
28	a	29	b	30	a
31	a	32	d	33	b
34	c				

Random Variable

Past Year Exam Questions

PYQ May 18

(1) Variance of a random variable x is given by

a. $E(X-\mu)^2$ b. $E\left[X-E(X)\right]^2$
c. $E(X^2-\mu)$ d. (a) or (b)

PYQ May 18

(2) If two random variables x and y are related by y = 2 – 3x, then the SD of y is

a. –3× SD of x
b. 3× SD of x
c. 9× SD of x
d. 2× SD of x

PYQ June 19

(3) If $y \geq x$ then mathematical expectation is

a. $E(X) > E(Y)$
b. $E(X) \leq E(Y)$
c. $E(X) = E(Y)$
d. $E(X).E(Y) = 1$

PYQ July 21

(4) The value of K for the probability density function of a variate X is equal to:

X	P(x)
0	5k
1	3k
2	4k
3	6k
4	7k
5	9k
6	11k

a. 39 b. $\frac{1}{40}$
c. $\frac{1}{49}$ d. $\frac{1}{45}$

PYQ Dec. 21

(5) Assume that the probability for rain on a day is 0.4. An umbrella salesman can earn ₹ 400 per day in case of rain on that day and will lose ₹ 100 per day if there is no rain. The expected earnings in (in ₹) per day of the salesman is

a. 400 b. 200
c. 100 d. 0

PYQ Dec. 21

(6) The probability distribution of a random variable x is given below:

X	P
1	0.15
2	0.25
4	0.2
5	0.3
6	0.1

What is the standard deviation of x?

a. 1.49 b. 1.56
c. 1.69 d. 1.72

PYQ Dec. 21

(7) ☆ For a probability distribution, probability is given by, $P(x_i) = \frac{x_i}{k}, x_i, = 1,2,.....9$. The value of k is

a. 55 b. 9
c. 45 d. 81

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PYQ Dec. 21

(8) ☆ If two dice are rolled and one of the dice shows 1 at a point then how many such outcome can be done where it is known that its probability is $\frac{x}{36}$, where $x =$ _____ .

a. 11 b. 7
c. 8 d. 9

PYQ Jun 23

(9) The probability distribution of x is given below:

Value of x:	Probability:
1	p
0	1-p
Total	1

Mean is equal to

a. p b. $1-p$
c. 0 d. 1

PYQ Jun 23

(10) If a random variable X has the following probability distribution, then the expected value of X is:

X	F(x)
-1	$\frac{1}{3}$
-2	$\frac{1}{6}$
0	$\frac{1}{5}$
1	$\frac{1}{6}$
2	$\frac{1}{3}$

a. $\frac{3}{2}$ b. $\frac{1}{2}$
c. $\frac{1}{6}$ d. $\frac{1}{3}$

PYQ Jun 23

(11) On a commodity exchange when booking trades with provision for stop-losses, a trader can make a profit of ₹ 50,000 or incur a loss of ₹ 20,000. The probabilities of making profit and incurring loss, from the past experience, are known to be 0.75 and 0.25 respectively. The expected profit to be made by trader should be

a. ₹ 32,500 b. ₹ 35,000
c. ₹ 30,000 d. ₹ 40,000

Answer Key

1	d	2	b	3	b
4	d	5	c	6	c
7	c	8	a	9	a
10	c	11	a		

Random Variable

Mock Test Paper Questions

MTP May 18

(1)

x	-20	-10	30	75	80
P(x)	3/20	1/5	1/2	1/10	1/20

Find the Expected value of following distribution

a. 20.5 b. 21.5
c. 22.5 d. 24.5

MTP May 19

(2) Variance of a random variable x is given by

a. $E(x-\mu)^2$ b. $E[x-E(x)]^2$
c. $E(x^2-\mu)$ d. A or B

MTP May 19

(3) If a random variable x assumes the values $x_1, x_2, x_3, x_4, \ldots$ with corresponding probabilities, $p_1, p_2, p_3, p_4, \ldots$ then the expected value of x is

a. $p_1+p_2+p_3+p_4$
b. $x_1p_1+x_2p_3+x_3p_2+x_4p_4$
c. $x_1p_1+x_2p_2+x_3p_3+x_4p_4$
d. None

MTP Nov 19

(4) Let X be a random variable with the following distribution

x	-2	4	8
P(x)	1/6	1/3	1/2

Find expected value of the random variable

a. 5 b. 6
c. 7 d. 8

MTP May 20

(5) In a business venture, a man can make a profit of ₹ 50,000 or incur a loss of ₹ 20,000. The probabilities of making profit or incurring loss, from the past experience, are known to be 0.75 and 0.25 respectively. What is his expected profit?

a. ₹ 33,500 b. ₹ 34,500
c. ₹ 35,500 d. ₹ 32,500

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MTP Apr 21

(6) From the following probability distribution table, find E(x).

X	1	2	3
F(x)	1/2	1/3	1/6

a. 1 b. 1.50
c. 1.67 d. None of these

MTP Nov 21

(7) If X and Y are two random variables and if E(X) =3 and E(Y) = 6, then E(XY) = ?

a. 3 b. 6
c. 18 d. 24

MTP Nov 21

(8) Probability distribution may be

a. Discrete b. Continuous
c. Infinite d. (a) or (b)

MTP Nov 21

(9) The probability distribution of the demand for a commodity is given below

X	5	6	7	8	9	10
P(X)	0.05	0.10	0.30	0.40	0.10	0.05

Expected value of demand will be

a. 7.55 b. 7.85
c. 1.25 d. 8.35

MTP Nov 21

(10) An unbiased coin is tossed 6 times. Find the probability that the tosses result in heads only,

a. 1/64 b. 5/64
c. 10/64 d. None of these

MTP Oct 21

(11) A bag contains 6 white and 4 red balls. If a person draws 2 balls and receives ₹ 10 and ₹ 20 for a white and red balls respectively, then his expected amount is

a. ₹25 b. ₹26
c. ₹29 d. ₹28

MTP March 22

(12) For a probability of a random variable x is given below :

X	1	2	4	5	6
Y	0.15	0.25	0.2	0.3	0.1

What is the Standard deviation of x ?

a. 1.49 b. 1.56
c. 1.69 d. 1.72

MTP March 22

(13) If $2x + 3y + 4 = 0$ and $V(x) = 6$ then $V(y)$ is

a. 8/3 b. 9
c. 9 d. 6

MTP March 22

(14) Four unbiased coins are tossed simultaneously. The expected number of heads is :

X :	0	1	2	3	4
P(x)	1/16	4/16	6/16	4/16	1/16

a. 1 b. 2
c. 3 d. 4

MTP March 22

(15) Assume that the probability for rain on a day is 0.4 . An umbrella salesman can earn ₹400 per day in case of rain on that day will lose ₹100 per day if there is no rain . The expected earnings (in₹) per day of the salesman is

a. 400 b. 200
c. 100 d. 0

MTP June 22

(16) From the following probability distribution table, find E(x)

x:	1	2	3
f(x):	1/2	1/3	1/6

a. 1 b. 1.50
c. 1.67 d. None of these

Answer Key

1 b	2 d	3 c
4 a	5 d	6 c
7 c	8 d	9 a
10 a	11 d	12 c
13 a	14 b	15 c
16 c		

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Chapter 16 – Theoretical Distributions

Binomial Distribution

Past Year Questions

PYQ May 18

(1) The variance of a binomial distribution with parameters n and p is:

a. $np^2(1-p)$ b. $\sqrt{np-(1-p)}$

c. $nq(1-q)$ d. $n^2p^2(1-p)^2$

PYQ May 18

(2) An example of a bi-parametric discrete probability distribution is

a. Binomial distribution

b. Poisson distribution

c. Normal distribution

d. Both (a) and (b)

PYQ May 18

(3) Probability distribution may be

a. Discrete b. Continuous

c. Infinite d. (a) or (b)

PYQ Nov. 18

(4) The mean of the Binomial distribution $B\left(4, \frac{1}{3}\right)$ is equal to

a. $\frac{3}{5}$ b. $\frac{8}{3}$

c. $\frac{3}{4}$ d. $\frac{4}{3}$

PYQ Nov 18

(5) The probability that a student is not a swimmer is $\frac{1}{5}$, then the probability that out of five students four are swimmer is

a. $\left(\frac{4}{5}\right)^4\left(\frac{1}{5}\right)$

b. ${}^5C_1\left(\frac{1}{5}\right)^4\left(\frac{4}{5}\right)$

c. ${}^5C_4\left(\frac{4}{5}\right)^1\left(\frac{1}{5}\right)^4$

d. None of the above

PYQ June 19

(6) If mean and variance are 5 and 3 respectively then relation between p and q is:

a. $p > q$ b. $p < q$

c. $p = q$ d. p is symmetric

PYQ Nov. 19

(7) Find mode when $n = 15$ and $p = \frac{1}{4}$ in binominal distribution?

a. 4 b. 4 and 3

c. 4.2 d. 3.75

PYQ Nov. 19

(8) In a binomial distribution $B(n, p)$ $n = 4$, $P(x = 2) = 3\,P(x = 3)$ find p

a. 1/3 b. 2/3

c. 6/4 d. 4/3

PYQ Nov. 20

(9) If the probability of success in a binomial distribution is less than one-half, then the binomial distribution_____.

a. is skewed to left

b. is skewed to right

c. has two modes

d. has median at a point > mean + 1/2

Note: Skewness is out of syllabus

PYQ Jan. 21

(10) A coin with probability for heads as $\frac{1}{5}$ is tossed 100 times. The standard deviation of the number of head 5 turned up is.

a. 3 b. 2

c. 4 d. 6

PYQ July 21

(11) If x is a binominal variate with $p = 1/3$, for the experiment of 90 trials, then the standard deviation is equal to:

a. $-\sqrt{5}$ b. $\sqrt{5}$

c. $2\sqrt{5}$ d. $\sqrt{15}$

PYQ Dec. 21

(12) Four unbiased coins are tossed simultaneously. The expected number of heads is:

a. 1 b. 2

c. 3 d. 4

PYQ June 22

(13) For a binomial distribution, there my be -

a. One mode b. Two mode

c. Multi mode d. No mode

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PYQ Dec 22

(14) The standard deviation of binomial distribution is:

a. npq b. $\sqrt{npq}$

c. np d. $\sqrt{np}$

PYQ Jun 23

(15) The incidence of skin diseases in a chemical plant occurs in such a way that the workers have 20% chance of suffering from it. What is the probability that out of 6 workers 4 or more will have skin diseases?

a. 0.1696 b. 0.01696

c. 0.1643 d. 0.01643

Answer Key

1	c	2	a	3	d
4	d	5	d	6	b
7	b	8	a	9	a
10	c	11	c	12	b
13	c	14	b	15	b

Binomial Distribution

Mock Test Paper Questions

MTP May 18

(1) When 'p' = 0.5, the

a. Asymmetrical. b. Symmetrical

c. Both of above. d. None of these

MTP May 18

(2) If mean and standard deviation of a binomial distribution is 10 and 4 respectively; q will be

a. 0.4 b. 0.44

c. 40 d. 0.16

MTP May 18

(3) The mean of Binomial Distribution is 4 and the Standard Deviation $\sqrt{3}$ what is the value of p.

a. 1/3 b. 1/4

c. 1/5 d. 3/4

MTP Nov 18

(4) The mean of binomial distribution is

a. Always more than its variance

b. always equal to variance

c. less than its variance

d. always equal to Standard deviation

MTP Nov 18

(5) In Binomial Distribution the trails are ~~statistics~~

a. dependent

b. independent

c. either independent or dependent

d. none of these

MTP Nov 18

(6) If p is increased for a fixed n; the Binomial distribution shifts to the

a. Right b. Left

c. Above d. Below

Note: Skewness Topic not in syllabus.

MTP May 19

(7) A binomial distribution is

a. never symmetrical.

b. never positively skewed

c. never negatively skewed.

d. symmetrical when p = 0.5.

MTP May 19

(8) The maximum value of the variance of binomial distribution with parameters n and p is

a. n/2 b. n/4

c. np(1-p) d. 2n

MTP May 19 Series II

(9) A binomial distribution is

a. never symmetrical

b. never positively skewed

c. never negatively skewed

d. symmetrical when p = 0.5

MTP May 19 Series II

(10) The maximum value of the variance of binomial distribution with parameters n and p is

a. n/2 b. n/4

c. np(1-p) d. 2n

MTP Nov 19

(11) If x & y are two independent variables such that $x \sim B(n_1, p)$ and $y \sim B(n_2, p)$ then the parameter of $z = x+y$ is

a. $(n_1+n_2), p$ b. $(n_1-n_2), p$

c. $(n_1+n_2), 2p$ d. None of these

MTP Nov 19

(12) Five coins tossed 3200 times. The number of times 5 heads appeared is.

a. 500 b. 1200

c. 200 d. 100

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MTP May 20

(13) Find the probability of a success for the binomial distribution satisfying the following relation 4 P (x = 4) = P (x = 2) and having the parameter n as six.

a. 1/3 b. 1/2
c. 1/5 d. 1/8

MTP May 20

(14) An experiment succeeds thrice as after it fails. If the experiment is repeated 5times, what is the probability of having no success at all?

a. 1/1023 b. 1/1024
c. 1/1005 d. 1/1008

MTP Nov 20

(15) The overall percentage of failures in a certain examination was 30. What is the probability that out of a group 6 candidates at least four passed the examination?

a. 0.747331
b. 0.757331
c. 0.76991
d. 0.72339

Note: Exact Ans is 0.74431

MTP Nov 20

(16) What is the probability of getting exactly 2 head in 7 tosses of a fair coin?

a. 5/64 b. 7/64
c. 7/128 d. 21/128

MTP Nov 20

(17) The Binomial Distribution for which mean = 15 and variance = 6.0 is

a. ${}^{25}C_x (3/5)^x (2/5)^{25-x}$
b. ${}^{25}C_x (2/5)^x (3/5)^{25-x}$
c. ${}^{25}C_x (2/5)^x (3/5)^{1-x}$
d. ${}^{25}C_x (3/5)^x (2/5)^{1-x}$

MTP Nov 20

(18) The SD of a binomial distribution with parameter n and p is

a. n(1-p)
b. np(1-p)
c. np
d. $\sqrt{np(1-p)}$

MTP Nov 20

(19) Bivariate Data are the data collected for

a. Two variables
b. More than to variables
c. Two variables at the same point of time
d. Two variables at different points of time

Note: From correlation regression chapter.

MTP March 21

(20) If x is binomial variate with parameter 15 and 1/3 what is the value of mode of the distribution.

a. 5 and 6 b. 5.5
c. 5 d. 6

MTP Apr 21

(21) The mean of a binomial distribution with parameter n and p is

a. n(1-p) b. np(1-p)
c. np d. $\sqrt{np(1-p)}$

MTP Apr 21

(22) The Binomial distribution n = 9 and p = 1/3 . What is the value of the variance?

a. 8 b. 4
c. 2 d. 16

MTP Apr 21

(23) If x & y are two independent variables such that $x \sim B(n_1, p)$ and $y \sim B(n_2, p)$ then the parameter of z = x+y is

a. $(n_1+n_2), p$ b. $(n_1-n_2), p$
c. $(n_1+n_2), 2p$ d. None of these

MTP Nov 21

(24) An example of a bi-parametric discrete Probability distribution is

a. Binomial distribution
b. Poisson Distribution
c. Normal Distribution
d. branch accounting

PYQ Nov 19, MTP Nov 21

(25) In a Binomial Distribution B (n, p), n= 4, then P (x=2) = 3 P (x= 3) find P

a. 1/3 b. 2/3
c. 6/4 d. 4/3

MTP Oct 21

(26) The variance of a binomial distribution with parameters n and p is

a. $np^2(1-p)$ b. $\sqrt{np\ (1-p)}$
c. $np\ (1-q)$ d. $n^2p^2(1-p)^2$

MTP March 22

(27) What is the probability of getting 3 heads if 6 unbiased coins are tossed simultaneously?

a. 0.3125 b. 0.25
c. 0.6825 d. 0.50

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MTP March 22

(28) The mode of the binomial distribution for which the mean is 4 variance 3 is equal to ?

a. 4 b. 4.5
c. 4.25 d. 4.1

MTP March 22

(29) If a variate x has , mean>variance , then the distribution will be ____

a. Binomial Distribution
b. Poisson Distribution
c. Normal Distribution
d. T-Distribution

MTP June 22

(30) In a Binomial distribution $n = 9$ and $p = 1/3$. What is the value of Variance.

a. 8 b. 4
c. 2 d. 16

MTP Dec 22 – Series I

(31) ☆ Examine the validity of the following: Mean and standard deviation of a binomial distribution are 10 and 4 respective:

a. Not Valid b. Valid
c. Both A and B d. Neither A nor B

MTP Dec 22 – Series I

(32) ☆ The probability of a man hitting the target is 1/4. If he fires 7 times, the probability of hitting the target at least twice is :

a. $1-\left[\frac{5}{2}\right]\left[\frac{3}{4}\right]^6$ b. $1-\frac{15}{2}\left[\frac{3}{4}\right]^6$
c. $1-\frac{5}{6},3^5$ d. $1-\left[\frac{3}{4}\right]^6$

MTP Dec 22 Series II

(33) If mean and variance are 5 and 3 respectively then relation between p and q is :

a. $p > q$ b. $p < q$
c. $p = q$ d. p is symmetric

MTP Dec 22 Series II

(34) If a coin is tossed 5 times then the probability of getting Tail and Head occurs alternatively is:

a. 1/8 b. 1/16
c. 1/32 d. 1/64

MTP Dec 22 Series II

(35) The probability that a student is not a swimmer is 1/5 , then the probability that out of five students four are swimmers is:

a. $\left(\frac{4}{5}\right)^5\left(\frac{1}{5}\right)$ b. ${}^5C_1\left(\frac{1}{5}\right)^4\left(\frac{4}{5}\right)$
c. ${}^5C_4\left(\frac{4}{5}\right)^4\left(\frac{1}{5}\right)$ d. None of these

MTP June 2023 Series I

(36) The Standard Deviation of Binomial distribution is:

a. npq b. $\sqrt{npq}$
c. np d. $\sqrt{np}$

Answer Key

1	b	2	a	3	b
4	a	5	b	6	a
7	d	8	b	9	d
10	b	11	a	12	d
13	a	14	b	15	a
16	d	17	a	18	d
19	c	20	c	21	c
22	c	23	a	24	a
25	a	26	c	27	a
28	a	29	a	30	c
31	a	32	a	33	b
34	b	35	c	36	b

Poisson Distribution

Past Year Questions

PYQ May 18

(1) ☆ X is a Poisson variate satisfying the following condition $9P(X = 4) + 90(X = 6) = P(X = 2)$. What is the value of $P(X \le 1)$?

a. 0.5655 b. 0.6559
c. 0.7358 d. 0.8201

Note: Extra lengthy

PYQ Nov. 18

(2) For a Poisson variate X, $P(X = 2) = 3P(X = 4)$, then the standard deviation of X is

a. 2 b. 4
c. $\sqrt{2}$ d. 3

PYQ June 19

(3) ☆ 4 coins were tossed 1600 times. What is the probability that all 4 coins do not turn head upward at a time?

a. $1600\ e^{-100}$ b. $1000\ e^{-100}$
c. $100\ e^{-1600}$ d. e^{-100}

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PYQ June 19

(4) In a Poisson distribution if $P(x = 4) = P(x = 5)$ then the parameter of Poisson distribution is:

a. $\frac{4}{5}$ b. $\frac{5}{4}$

c. 4 d. 5

PYQ Nov. 19

(5) For a poisson distribution:

a. mean and SD are equal

b. mean and variance are equal

c. SD and variance

d. Both (a) and (b)

PYQ Nov. 19

(6) In poisson distribution, if $P(x = 2) = \frac{1}{2} P(x = 3)$ find m?

a. 3 b. 1/6

c. 6 d. 1/3

PYQ Nov. 20

(7) Which of the following is uni-parametic distribution?

a. Poisson

b. Normal

c. Binominal

d. Hyper geometric

PYQ Nov. 20

(8) Which one of the following has Poisson distribution?

a. The number of days to get a complete cure.

b. The number of defects per meter on long roll of coated polythene sheet.

c. The errors obtained in repeated measuring of the length of a rod.

d. The number of claims rejected by an insurance agency.

PYQ Nov. 20

(9) Far a Poisson distributed variable X, we have $P(X = 7) = 8\ P(X = 9)$, the mean of the distribution is:

a. 3 b. 4

c. 7 d. 9

PYQ Nov. 20

(10) If the parameter of Poisson distribution is m and (Mean + S.D.) = 6/25 then find m:

a. 3/25 b. 1/25

c. 4/25 d. 3/5

PYQ Jan. 21

(11) If x is a Poisson variable and $P(x = 1) = P(x = 2)$, then $P(x = 4)$ is

a. $\frac{2}{3}e^{-2}$ b. $\frac{2}{3}e^{4}$

c. $\frac{3}{2}e^{-2}$ d. $\frac{3}{2}e^{4}$

PYQ Jan. 21

(12) Which one of the following is an uniparametric distribution?

a. Poisson

b. Normal

c. Binomial

d. Hyper geometric

PYQ July 21

(13) It is Poisson variate such that $P(x = 1) = 0.7$, $P(x = 2) = 0.3$, then $P(x = 0) =$

☆ a. $e^{6/7}$ b. $e^{-6/7}$

c. $e^{-2/3}$ d. $e^{-1/3}$

PYQ Dec. 21

(14) The average number of advertisements per page appearing in a newspaper is 3. What is the probability that in a particular page zero number of advertisements are there?

a. e^{-3} b. e^{0}

c. e^{+3} d. e^{-1}

PYQ Dec. 21

(15) If, for a Poisson distributed random variable x, the probability for x taking value 2 is 3 times the probability for x taking value 4, then the variance of x is

a. 4 b. 3

c. 2 d. 5

PYQ Dec. 21

(16) The manufacturer of a certain electronic component is certain that 2% of his product is defective. He sells the components in boxes of 120 and guarantees that not more than 2% in any box will be defective. Find the probability that a box, selected at random would fail to meet the guarantee? (Given that $e^{-2.4} = 0.0907$)

a. 0.49 b. 0.39

c. 0.37 d. 0.43

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PYQ Dec. 21

(17) A renowned hospital usually admits 200 patients everyday. One percent patients, on an average, require special room facilities. On one particular morning, it was found that only one special room is available. What is the probability that more than 3 patients would require special room facilities?

a. 0.1428 b. 0.1732
c. 0.2235 d. 0.3450

PYQ June 22

(18) If Standard Deviation is 1.732 then what is the value of poisson distribution. The P (-2.48 < x < 3.54) is

a. 0.73 b. 0.65
c. 0.86 d. 0.81

PYQ Dec 22

(19) If a poisson distribution is such that P(X = 2) = P(X = 3) then the variance of the distribution is:

a. $\sqrt{3}$ b. 3
c. 6 d. 9

PYQ Jun 23

(20) Between 9 AM and 10 AM, the average number of phone calls per minute coming into the switchboard of a company is 4. Find the probability that during one particular minute, there will be either 2 phone calls or no phone calls (given $e^{-4} = 0.018316$)

a. 0.156 b. 0.165
c. 0.149 d. 0.194

PYQ Jun 23

(21) If a Poisson distribution is such that $P(X = 2) = \frac{1}{3}P(X = 3)$, then the standard deviation of the distribution is:

a. $\sqrt{3}$ b. 3
c. 2 d. 1

Answer Key

1	c	2	c	3	d
4	d	5	b	6	c
7	a	8	b	9	a
10	b	11	a	12	a
13	b	14	a	15	c
16	d	17	a	18	b
19	b	20	b	21	b

Poisson Distribution

Mock Test Paper Questions

MTP May 18

(1) Which one is not a condition of Poisson model

a. the probability of having failures in a small time interval is constant
b. the probability of having success more than one in a small time interval is very small
c. the probability of having success in this time interval is independent of time 't' as well as earlier success
d. the probability of having success in a small time interval (t, t+td) is Kt for a positive constant k.

MTP May 18

(2) In _____ distribution, mean = variance.

a. Normal b. Binomial
c. Poisson d. None of these

MTP May 19 Series II

(3) Which one is uniparametric distribution?

a. Binomial b. Poisson
c. Normal d. Hyper Geometric

MTP Nov 19

(4) Find the probability that at least 5 defective bolts will be found in a box of 200 bolts. If it is known that 2% of such bolts are expected to be defective (Given: $e^{-4} = 0.0183$)

a. 0.4717 b. 0.3717
c. 0.3017 d. None of these

MTP May 20

(5) Number of misprints per page of a thick book follows

a. Normal distribution
b. Poisson distribution
c. Binomial distribution
d. Standard normal distribution

MTP May 20

(6) If for a Poisson variable X, f(2) = 3 f(4), what is the variance of X?

a. 2 b. 4
c. $\sqrt{2}$. d. 3

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MTP Nov 20

(7) If P(X=2) = P(X=3) for a Poisson Variate X, then E(x) is

☆ a. 2 b. 3
c. 1 d. None of these

MTP March 21

(8) In Poisson distribution which of the following is same.

a. Mean and variance
b. Mean and SD
c. Both (a) & (b)
d. None of these

MTP Nov 21

(9) Number of defects in clothes a garments showroom will form a

a. Poisson distribution
b. Normal distribution
c. Binomial distribution
d. Cannot be determined

MTP Nov 21

(10) In a certain Poisson frequency distribution, the probability corresponding to two success is half the probability corresponding to three successes. The mean of the distribution is

a. 6 b. 12
c. 3 d. 2.45

MTP Oct 21

(11) For a Poisson variate X, P (X = 1) = P (X = 2). What is the mean of X?

a. 1.00 b. 1.50
c. 2.00 d. 2.50

MTP Oct 21

(12) For a Poisson distribution,

a. mean and standard deviation are equal
b. mean and variance are equal.
c. standard deviation and variance are equal.
d. both (a) and (b).

MTP March 22

(13) For Poisson Distribution :

a. Mean and Standard Deviation are equal
b. Mean and Variance are equal
c. Standard Deviation and Variance are equal
d. Both (a) and (b) are equal

MTP March 22

(14) For a Poisson variate X, P(x=2) =3 P(x=4), then the standard deviation of X is

a. 2 b. 4
c. $\sqrt{2}$ d. 3

MTP June 22

(15) If x be a poisson variates with parameter 1, then find P(3<X<5) (Given $e^{-1} = 0.36783$)

a. 0.015326 b. 0.15326
c. 0.012326 d. None of these

MTP June 22

(16) In a Poisson Distribution P(x=0) =P(x=2). Find E(x)

a. $\sqrt{2}$ b. 2
c. -1 d. 0

MTP June 22

(17) Name of the distribution which has Mean= Variance

a. Binomial b. Poisson
c. Normal d. (a) and (b)

MTP Dec 22 – Series I

(18) If 5% of the electric bulbs manufactured by a company are defective, use Poisson distribution to find the probability that in a sample of 100 bulbs, 5 bulbs will be defective. [Given : $e^{-5} = 0.007$]

a. 0.1823 b. 0.1723
c. 0.1623 d. 0.1923

MTP Dec 22 – Series I

(19) For a Poisson variate X, P(x=1) =P(x=2), what is the mean of x?

a. 1 b. 3/2
c. 2 d. 5/2

MTP Dec 22 Series II

(20) In a Poisson distribution if P(x=4) = P(x= 5) then the parameter of Poisson distribution is:

a. 4/5 b. 5/4
c. 4 d. 5

MTP June 2023 Series I

(21) If Poisson distribution is such that P(X = 2) = P(X = 3) then the Standard Deviation of the distribution is

a. $\sqrt{3}$ b. 3
c. 6 d. 9

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MTP June 2023 Series II

(22) To find the distribution of number of airplanes crashing every hour in the world, which of the following distribution is appropriate to apply:
a. Normal distribution
b. Binomial distribution
c. Poisson distribution
d. Using any of the above will yield the same output

MTP June 2023 Series II

(23) The mean and variance are equal for which of the following:
a. Poisson Distribution
b. Normal Distribution
c. Gaussian Distribution
d. None of these

MTP June 2023 Series II

(24) For the Poisson distribution:
a. Events are independent of each other
b. Average rate (events per time period) is constant
c. Two events cannot occur simultaneously
d. All of the above

Answer Key

1	a	2	c	3	b
4	b	5	b	6	a
7	b	8	a	9	a
10	a	11	c	12	b
13	b	14	c	15	a
16	a	17	b	18	a
19	c	20	d	21	a
22	c	23	a	24	d

Normal Distribution

Past Exam Papers

PYQ May 18

(1) What is the first quartile of x having the following probability density function?

$$f(X)=\frac{1}{\sqrt{72\pi}}e^{-(x-10)^2/72} \text{ for } -\alpha<x<\alpha$$

a. 4 b. 5
c. 5.95 d. 6.75

PYQ May 18

(2) If the area of standard normal curve between z = 0 to z = 1 is 0.3412, then the value of ϕ (1) is

a. 0.5000 b. 0.8413
c. - 0.5000 d. 1

PYQ Nov. 18

(3) If for a normal distribution $Q_1 = 54.52$ and $Q_3 = 78.86$, then the median of the distribution is

a. 12.17 b. 39.43
c. 66.69 d. None of these

PYQ Nov. 18

(4) What is the mean of X having the following density function?

$$f(x)=\frac{1}{4\sqrt{2\pi}}.e^{\frac{-(x-10)^2}{32}} \text{ for } -\infty<x<\infty$$

a. 10 b. 4
c. 40 d. None of these

PYQ June 19

(5) Area between = 1.96 to + 1.96 in a normal distribution is:

☆ a. 95.45% b. 95%
c. 96% d. 99%

PYQ June 19

(6) If the points of inflextion of a normal curve are 40 and 60 respectively, then its mean deviation is:

a. 8 b. 45
c. 50 d. 60

PYQ Nov. 19

(7) Area under $\mu \pm 3\sigma$

a. 99.73% b. 99%
c. 100% d. 99.37%

PYQ Nov. 19

(8) What is the mean and SD

$$x \text{ if } f(x)=\frac{\sqrt{2}}{\sqrt{\pi}}e^{-2(x-3)^2}, -\infty<x<\infty.$$

a. $3,\frac{1}{2}$ b. $3,\frac{1}{4}$
c. $2,\frac{1}{2}$ d. $2,\sqrt{2}$

PYQ Nov. 20

(9) If we change the parameter(s) of a _____ distribution the shape of probability curve does not change.
a. Normal
b. Binominal
c. Poisson
d. Non-Gaussian

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PYQ Nov. 20

(10) The quartile deviation of a normal distribution with mean 10 and standard deviation 4 is_____.

a. 54.24 b. 23.20
c. 0.275 d. 2.70

PYQ Jan. 21

(11) For a normal distribution, the value of third moment about mean is.

a. 0 b. 1
c. 2 d. 3

Note: Not in syllabus

PYQ July 21

(12) In normal distribution, Mean, Median and Mode are:

a. Zero b. Not Equal
c. Equal d. Null

PYQ July 21

(13) For a certain type of mobile, the length of time between charges of the battery is normally distributed with a mean of 50 hours and a standard deviation of 15 hours. A person owns one of these mobiles and want to know the probability that the length of time will be between 50 and 70 hours is (given $\varphi(1.33)) = 0.9082, \varphi(0) = 0.5$)?

a. - 0.4082 b. 0.5
c. 0.4082 d. - 0.5

PYQ Dec. 21

(14) Let x be normal distribution with mean 2.5 and variance 1. If $P(a < x < 2.5) = 0.4772$ and that the cumulative normal probability value at 2 is 0.9772, then a = ?

a. 0.5 b. 3
c. - 3.5 d. - 4.5

PYQ June 22

(15) In a normal distribution, variance is 16 then the value of mean deviation is.

a. 4.2 b. 3.2
c. 4.5 d. 2.5

PYQ Dec 22

(16) Skewness of Normal Distribution is:

a. Negative b. Positive
c. Zero d. Undefined

PYQ Dec 22

(17) The speeds of a number of bikes follow a normal distribution model with a mean of 83 km/hr and a standard deviation of 9.4 km/hr. Find the probability that a bike picked at random is travelling at more than 95km/hr.? Given $P(Z>1.28)=0.1003$

a. 0.1003 b. 0.38
c. 0.49 d. 0.278

Answer Key

1 c	2 b	3 c
4 a	5 b	6 a
7 a	8 a	9 a
10 d	11 a	12 c
13 c	14 a	15 b
16 c	17 a	

Normal Distribution

Mock Test Paper Questions

MTP May 18

(1) The quartile deviation of a normal distribution with mean 10 and standard deviation 4 is

a. 0.675 b. 67.50
c. 2.70 d. 3.20

MTP May 18

(2) If the quartile deviation of a normal curve is 4.05, then its mean deviation is

a. 5.26 b. 6.24
c. 4.24 d. 4.80

MTP May 18

(3) In a normal distribution skewness is ___

a. 0 b. > 3
c. < 3 d. < 1

MTP May 18

(4) The points of inflexion of the normal curve $f(t) = \frac{1}{4\sqrt{2x}} e^{\frac{-(t-10)^2}{32}}$ are

a. 6, 14 b. 5, 15
c. 4, 16 d. None of these

MTP Nov 18

(5) If X and Y are independent normal Variables with mean 100 and 80 respectively and standard deviation as 4 and 3 respectively. What is the distribution of (X+Y)?

a. 180, 5 b. 180, 25
c. 90, 5 d. 180, 0

Note: Que is silent about finding SD or Variance – ideally it should be Variance but answer as per the ICAI MTP is of SD.

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MTP Nov 18

(6) If X is normal variate with mean 6 and variance 16 then the value of the probability, $P(2 \le x \le 10)$ is equal to.

☆
a. $2P(2 \le x \le 10)$
b. $2P(6 \le X \le 10)$
c. $P(0 \le x \le 6)$
d. $3P(6 \le x \le 10)$

MTP May 19

(7) The total area of the normal curve is
a. One
b. 50 percent
c. 0.50
d. Any value between 0 and 1

MTP May 19

(8) If the mean deviation of a normal variable is 16, what is its quartile deviation?
a. 10.00 b. 13.50
c. 15.00 d. 12.05

MTP May 19

(9) If the points of inflexion of a normal curve are 40 and 60 respectively, then its mean deviation is
a. 40 b. 45
c. 50 d. 60

Note: Correct Ans is 8

MTP May 19

(10) For Poisson fitting to an observed frequency distribution
a. we equate the Poisson parameter to the mean of the frequency distribution
b. we equate the Poisson parameter to the median of the distribution.
c. we equate the Poisson parameter to the mode of the distribution
d. none of these

MTP May 19 Series II

(11) The mean deviation about median of a standard normal variate is
a. $0.675\,\sigma$ b. 0.675
c. $0.80\,\sigma$ d. 0.80

MTP May 19 Series II

(12) If the points of inflexion of a normal curve are 40 and 60 respectively, then its mean deviation is
a. 8 b. 45
c. 50 d. 60

MTP May 19 Series II

(13) What is the first quartile of X having the following probability density function?

$$f(t) = \frac{1}{4\sqrt{72\pi}} e^{\frac{-(x-10)^2}{72}} \quad \text{for } -\infty < x < \infty$$

a. 4 b. 5
c. 5.95 d. 6.75

MTP Nov 19

(14) For the normal distribution density function $f(x) = k.e^{\frac{(x^2-6x+9)}{8}}$, the mean and variance are.
a. 2:3 b. 3:2
c. 4:5 d. 3:4

Note: Ans in ICAI MTP is wrong

MTP Nov 19

(15) The mean deviation of normal distribution is 16. The Quartile Deviation is

☆
a. 40/3 b. 20/3
c. 100/3 d. 50/3

MTP Nov 19

(16) The Quartile Deviation of the normal distribution $f(x) = \frac{1}{\sqrt{18\pi}} e^{\frac{-(x-10)^2}{18}}, -\infty < x < \infty$

☆
a. 3 b. 4/3
c. 2 d. 3/4

MTP Nov 19

(17) If x and y are two independent normal random distributions with mean and SD's are (10, 5) and (15, 12) these mean and SD of (x+y) is.
a. (27, 15) b. (10, 27)
c. (25,13) d. (12,25)

MTP May 20

(18) If the two quartiles of a normal distribution are 47.30 and 52.70 respectively, what is the mode of the distribution? Also find the mean deviation about median of this distribution.
a. 3.80 b. 3.40
c. 3.20 d. 4.20

MTP May 20

(19) X follows normal distribution with mean as 50 and variance as 100. What is $P(x \ge 60)$? [Given $\varphi(1) = 0.8413$]
a. 0.20 b. 0.40
c. 0.16 d. 0.30

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MTP May 20

(20) If the points of inflexion of a normal curve are 40 and 60 respectively, then its mean deviation is

a. 40 b. 45
c. 50 d. 60

Note: Correct Ans is 8

MTP Nov 20

(21) The total area of the normal curve is

a. One
b. 50 per cent
c. 0.50
d. Any value between 0 and 1

MTP Nov 20

(22) The mean and mode of the normal distribution

a. May be equal
b. May be different
c. Are always equal
d. (a) or (b)

MTP March 21

(23) Area covered normal curve by $\mu \pm 3\sigma$

a. 68.28% b. 95.96%
c. 99.73% d. 99.23%

MTP March 21

(24) The Quartile Deviation of Normal Distribution with mean is 10 and variance is 16 is

a. 54.24 b. 23.20
c. 0.275 d. 2.70

MTP Apr 21

(25) The total area of the normal curve is

a. One
b. 50%
c. 0.50
d. Any value between 0 and 1

MTP Apr 21

(26) For a normal distribution with mean 150 and SD is 45, Find Q1 and Q3

a. 119.35,190.65 b. 119.65,180.35
c. 180.35,119.65 d. 123.45,183.65

MTP Nov 21

(27) The normal curve is

a. Positively skewed
b. Negatively skewed
c. Symmetrical
d. All these

MTP Nov 21

(28) For a normal distribution Q1 = 54.32 and Q3 = 78.86, then the median of the distribution is

a. 12.17 b. 39.43
c. 66.59 d. None of these

MTP Nov 21

(29) What is the mean of X having the following density function $f(x) = \frac{1}{4\sqrt{2\pi}} e^{\frac{(x-10)^2}{32}}$ for $-\infty < x < \infty$

a. 10 b. 4
c. 40 d. None of these

MTP Oct 21

(30) What is the first quartile of X having the following probability density function?

$F(x) = \frac{1}{\sqrt{72\pi}} e^{\frac{-(x-10)^2}{72}}$ for $-\infty < x < \infty$

a. 4 b. 5
c. 5.95 d. 6.75

MTP Oct 21

(31) If the points of inflexion of a normal curve are 40 and 60 respectively, then its mean deviation is

a. 40 b. 45
c. 50 d. 60

Note: Correct ans is 8

MTP Oct 21

(32) If X follows normal distribution with $\mu = 50$ and $\sigma = 10$, what is the value of

☆ $P(x \leq 60 / x > 50)$?

a. 0.8413 b. 0.6828
c. 0.1587 d. 0.7256

MTP Oct 21

(33) For a normal distribution with mean as 500 and SD as 120, what is the value of k so that the interval [500, k] covers 40.32 per cent area of the normal curve? [Given $\varphi(1.30) = 0.9032$.]

a. 740 b. 750
c. 656 d. 800

MTP Oct 21

(34) If the mean deviation of a normal variable is 16, what is its quartile deviation?

a. 10.00. b. 13.50
c. 15.00. d. 12.05.

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MTP March 22

(35) An example of a bi-parametric continuous probability distribution
- a. Binomial
- b. Poisson
- c. Normal
- d. Chi-square

MTP March 22

(36) What is the mean of X having the following density function ?

$$f(x)=\frac{1}{4\sqrt{2\pi}}e^{\frac{(x-10)^2}{32}} \quad for -\infty < x < \infty$$

- a. 10
- b. 4
- c. 40
- d. None of these

MTP June 22

(37) The variance of standard normal distribution is
- a. 1
- b. 0
- c. $.\sigma^2$
- d. 0

MTP Dec 22 – Series I

(38) For a normal distribution, the first and third quartile are given to be 37 and 49, the mode of the distribution is.
- a. 37
- b. 49
- c. 43
- d. 45

MTP Dec 22 – Series II

(39) What is the mean of X having the following density function?

$$f(x)=\frac{1}{\sqrt{2\pi}}e^{\frac{(x-10)^2}{32}} \quad for -\infty < x < \infty$$

- a. 4
- b. 10
- c. 40
- d. None of these

Note: Ans is wrong in ICAI MTP

MTP Dec 22 Series II

(40) Area between -1.96 to +1.96 in a normal distribution is :
- a. 95.45%
- b. 95%
- c. 96%
- d. 99%

MTP June 2023 Series I

(41) Skewness of Normal Distribution is –
- a. Negative
- b. Positive
- c. Zero
- d. Undefined

MTP June 2023 Series I

(42) The speeds of bikes follow a normal distribution model with a mean of 80 km/hr. and a standard deviation of 9.4 km/hr. Find the probability that a bike picked at random is travelling at more than 95 km/hr.?

$[P(z) = P(1.60) = 0.4452]$
- a. 0.0548
- b. 0.38
- c. 0.49
- d. 0.278

MTP June 2023 Series II

(43) Which of the following is not a property of normal distribution?
- a. There are two points of inflexion.
- b. Mean, median and mode coincide for normal distribution
- c. Skewness is zero
- d. All the above

MTP June 2023 Series I

(44) For a continuous random variable following standard normal distribution, what is the value of standard deviation?
- a. 1
- b. 0
- c. - 1
- d. More than 1

MTP June 2023 Series I

(45) If the inflexion points of a normal distribution are 6 and 14. Find its Standard Deviation
- a. 4
- b. 6
- c. 10
- d. 12

MTP June 2023 Series II

(46) Normal distribution is also known as
- a. Gaussian distribution
- b. Binomial distribution
- c. Poisson distribution
- d. None of these

Answer Key

1	c	2	d	3	a
4	a	5	a	6	b
7	a	8	b	9	a
10	a	11	d	12	a
13	c	14	d	15	a
16	c	17	c	18	c
19	c	20	a	21	a
22	c	23	c	24	d
25	a	26	b	27	c
28	c	29	a	30	c
31	a	32	b	33	c
34	b	35	c	36	a
37	a	38	c	39	b
40	b	41	c	42	a
43	d	44	a	45	a
46	a				

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Chapter 17 – Correlation and Regression

Correlation – Scatter Diagram

Past Year Questions

PYQ May 18

(1) If the plotted points in a scatter diagram are evenly distributed, then the correlation is
a. Zero b. Negative
c. Positive d. (a) or (b)

PYQ May 18

(2) Speed of an automobile and the distance required to stop the car after applying brakes correlation is
☆ a. Positive b. Negative
c. Zero d. None of these

Note: Confusing question but ans is taken as per ICAI Study Material

PYQ May 18

(3) A relationship $r^2 = 1 - \frac{500}{300}$ is not possible
a. True b. False
c. Both (a) & (b) d. None of these

PYQ Nov. 19

(4) If the plotted points in a scatter diagram lie from upper left to lower right, then correlation is
a. Positive b. Negative
c. Zero d. None of these

PYQ Nov. 20

(5) Scatter diagram does not help us to?
a. Find the type of correlation
b. Identify whether variables correlated or not
c. Determine the linear or non-linear correlation
d. Find the numerical value of correlation coefficient

PYQ July 21

(6) If the data points of (X, Y) series on a scatter diagram lie along a straight line that goes downwards as X- values move from left to right, then the data exhibit - - - - - - - - - - - - - - - - - - correlation.
a. Direct
b. Imperfect indirect
c. Indirect
d. Imperfect direct

PYQ June 22

(7) If the plotted point in a scatter diagram lie from lower left to upper right then correction is:
a. Positive
b. Negative
c. Perfectively negative
d. Zero

PYQ June 22

(8) Scattered diagram is used to plot
a. Quantitative data
b. Qualitative data
c. Discrete data
d. Continuous data

Answer Key

1 a	2 b	3 a
4 b	5 d	6 c
7 a	8 a	

Correlation – Scatter Diagram

Mock Test Paper Questions

MTP May 19

(1) The covariance between two variables is
a. Strictly positive
b. Strictly negative
c. Always 0
d. Either positive or negative or zero.

MTP May 19 Series II

(2) Correlation analysis aims a
a. Predicting one variable for a given value of the other variable
b. Establishing relation between two variables
c. Measuring the extent of relation between two variables
d. Both (b) and (c).

MTP May 20

(3) When r = 1, all the points in a scatter diagram would lie
a. On a straight line directed from lower left to upper right
b. On a straight line directed from upper left to lower right
c. On a straight line
d. Both (a) and (b)

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MTP Apr 21

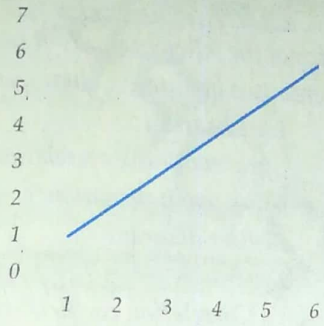
(4) Price and Demand are the example of
a. No correlation
b. Positive correlation
c. Negative correlation
d. None of these

MTP Nov 21

(5) For a 4 x 7 classification of bivariate data, the maximum number of conditional distributions is:
a. 11 b. 28
c. 35 d. None of these

MTP Nov 21

(6) Below scatter diagram shows what type of correlation



a. Perfect negative correlation
b. Negative correlation
c. Positive correlation
d. Perfect positive correlation

MTP Oct 21

(7) For a p x q classification of bivariate data, the maximum number of conditional distributions is
a. p b. p+q
c. pq d. P or q

MTP Oct 21

(8) For a p x q bivariate frequency table, the maximum number of marginal distributions is
a. p b. p+q
c. 1 d. 2

MTP March 22

(9) If the plotted points in a scatter diagram lie from upper left to lower right, then the correlation is
a. Positive b. Zero
c. Negative d. none of these.

MTP June 22

(10) For a m×n two way or bivariate frequency table, the maximum number of marginal distributions is
a. 1 b. 2
c. m+n d. mn

MTP June 2023 Series II

(11) A scatter diagram of two variables developing a pattern of multiple circular rings represents which kind of correlation?
a. Positive
b. Negative
c. Curvilinear
d. No correlation

Answer Key

1	d	2	d	3	a
4	c	5	a	6	d
7	b	8	d	9	c
10	b	11	d		

Karl Pearson Product Moment Correlation

Past Year Questions

PYQ May 18

(1) The covariance between two variables is
a. Strictly positive
b. Strictly negative
c. Always zero
d. Either positive or negative or zero

PYQ May 18

(2) Correlation coefficient is _____ of the units of measurements.
a. dependent b. independent
c. both d. none of these

PYQ Nov. 18

(3) If the correlation coefficient between the variables X and Y is 0.5, then the correlation coefficient between the variables $2x - 4$ and $3 - 2y$ is
a. 1 b. 0.5
c. - 0.5 d. 0

PYQ June 19

(4) Given that

X	Y
-3	9
-3/2	9/4
0	0
3/2	9/4
3	9

Then Karl Pearson's coefficient of correlation is
a. Positive b. Zero
c. Negative d. None of these

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PYQ June 19

(5) If the regression line of y on x is given by $y = x + 2$ and Karl Pearson's coefficient of correlation is 0.5 then $\frac{\sigma_y^2}{\sigma_x^2} =$ _____

a. 3 b. 2
c. 4 d. None of these

PYQ Nov. 19

(6) What is the coefficient of correlation from the following data?

X	Y
1	5
2	4
3	3
4	2
5	6

a. 0 b. - 0.75
c. - 0.85 d. 0.82

PYQ Nov. 20

(7) The covariance between two variables is
a. Strictly positive
b. Strictly negative
c. Always zero
d. Either positive or negative or zero

PYQ Jan. 21

(8) For the set of observations $\{(1,2),(2,5),(3,7),(4,8),(5,10)\}$ the value of Karl-person's coefficient of correlation is approximately given by

a. 0.755 b. 0.655
c. 0.525 d. 0.985

PYQ Jan. 21

(9) The coefficient of correlation between x and y is 0.5 the covariance is 16, variance of x is 16 then standard deviation of y is

a. 4 b. 8
c. 16 d. 64

PYQ July 21

(10) ☆ If the sum of the product of the deviations of X and Y from their means is zero the correlation coefficient between X and Y is:

a. Zero b. Positive
c. Negative d. 10

PYQ July 21

(11) ☆ The sum of square of any real positive quantities and its reciprocal is never less than:

a. 4 b. 2
c. 3 d. 4

Note: Remember this as a property

PYQ June 22

(12) ☆ Karl Pearson Correlation Coefficient method is used for -
a. Any data
b. Scattered data
c. Grouped data
d. Ungrouped data

PYQ June 22

(13) Which of the following is used to find correlation between two qualitative characteristics
a. Karl Pearson
b. Spearman rank correlation
c. Concurrent deviation
d. Scatter diagram

PYQ Dec 22

(14) Pearson's Correlation coefficient between x and y is :-

a. $\frac{cov(x,y)}{S_x S_y}$ b. $\frac{cov^2(x,y)}{S_x S_y}$
c. $\frac{(S_x S_y)^2}{cov(x,y)}$ d. $\frac{S_x S_y}{cov(x,y)}$

Answer Key

1	d	2	b	3	c
4	b	5	c	6	a
7	d	8	d	9	b
10	a	11	b	12	a
13	b	14	a		

Karl Pearson Product Moment Correlation

Mock Test Paper Questions

MTP May 18

(1) Correlation Co-efficient is _____ of the units of measurements
a. Independent b. Dependent
c. Both d. none of these

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MTP May 18

(2) If for two variable x and y, the covariance, variance of x and variance of y are 40, 16 and 256 respectively, what is the value of the correlation coefficient?

a. 0.01 b. 0.625
c. 0.4 d. 0.5

MTP Nov 18

(3) The correlation coefficient between x and y is 0.8, the correlation coefficient between u and v are $2u + x + 4 = 0$ and $4v + 16y + 11 = 0$

a. $r = 0.8$ b. $r = -0.8$
c. $r = 0$ d. $r = \pm 1$

MTP Nov 18

(4) If the relation between two variables x and y in given by $2x+3y+4=0$, then the Value of the correlation coefficient between x and y is

a. 0 b. 1
c. -1 d. Negative

MTP May 20

(5) If for two variable x and y, the covariance, variance of x and variance of y are 40, 16 and 256 respectively, what is the value of the correlation coefficient?

a. 0.01 b. 0.625
c. 0.4 d. 0.5

MTP May 20

(6) If the relation between x and u is $3x + 4u + 7 = 0$ and the correlation coefficient between x and y is – 0.6, then what is the correlation coefficient between u and y?

a. –0.6 b. 0.8
c. 0.6 d. –0.8

MTP Nov 20

(7) When $r = 0$ then $cov(x,y)$ is equal to

☆ a. + 1
b. - 1
c. 0
d. None

MTP March 2021

(8) Correlation coefficient r, b_{xy} and b_{yx} are all have ___ signs

a. Different b. Same
c. Both d. None

MTP March 2021

(9) The covariance between two variables is

a. Strictly positive
b. Strictly negative
c. Always zero
d. Either positive or negative or zero

MTP Apr 21

(10) The correlation coefficient (r) is the _____of the two regression coefficients

a. AM b. GM
c. HM d. Median

MTP Apr 21

(11) The coefficient of correlation between x and y is 0.6. If x and y values are multiplied by -1, then coefficient of correlation will be

a. -0.6 b. 1/0.6
c. 0.6 d. 0.4

MTP Nov 21

(12) There are two equations: $m + 3p = 2$ and $6n + 2q = 1$. Correlation coefficients for p and q is 0.5. Find the correlation coefficients of m and n

a. 0.6 b. 0.5
c. -0.5 d None of these

MTP Oct 21

(13) If the covariance between two variables is 20 and the variance of one of the variables is 16, what would be the variance of the other variable?

a. $s_y^2 \geq 25$ b. More than 10
c. Less than 10 d. More than 1.25

MTP March 22

(14) The covariance between two variables is

a. Strictly positive
b. Strictly negative
c. Always 0
d. Either positive or negative or zero.

MTP March 22

(15) The covariance between two variables X and Y is 8.4 and their variances are 25 and 36 respectively. Calculate Karl Pearson's coefficient of correlation between them.

a. 0.82 b. 0.28
c. 0.01 d. 0.09

MTP Dec 22 – Series I

(16) If correlation co-efficient r between x and y is 0.5 then r between x and –y is

☆ a. 1 b. 0.5
c. -0.5 d. 0

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MTP Dec 22 Series II

(17) The covariance between two variables is
- a. Strictly positive
- b. Strictly negative
- c. Always 0
- d. Either positive or negative or zero.

Answer Key

1 a	2 b	3 a
4 c	5 b	6 c
7 c	8 b	9 d
10 b	11 c	12 b
13 a	14 d	15 b
16 c	17 d	

Spearman Rank Correlation

Past Exam Paper Questions

PYQ May 18

(1) Rank correlation coefficient lies between
- a. 0 to 1
- b. -1 to +1 inclusive of these value
- c. -1 to 0
- d. Both

PYQ June 19

(2) ☆ Given the following series:

X	10	13	12	15	8	15
Y	12	16	18	16	7	18

The rank correlation coefficient r =
- a. $1-\frac{6\sum d^2+\sum_{i-1}^{2}\frac{m_1(m_i^2-1)}{12}}{n(n^2-1)}$
- b. $1-\frac{6\left[\sum d^2+\sum_{i-1}^{2}\frac{m_1(m_i^2-1)}{12}\right]}{n(n^2-1)}$
- c. $1-6\sum d^2+\sum_{i=1}^{2}\frac{\frac{m_1(m_i^2-1)}{12}}{n(n^2-1)}$
- d. $1-6\sum d^2+\sum_{i=1}^{3}\frac{\frac{m_1(m_i^2-1)}{12}}{n(n^2-1)}$

PYQ June 19

(3) Determine Spearman's rank correlation coefficient from the given data $\sum d^2=30, n=10$:
- a. r = 0.82
- b. r = 0.32
- c. r = 0.40
- d. None of these

PYQ Dec 22

(4) The coefficient of rank correlation between the ranking of following 6 students in two subjects Mathematics and Statistics is:

Mathematics	Statistics
3	6
5	4
8	9
4	8
7	1
10	2

- a. - 0.25
- b. - 0.35
- c. - 0.38
- d. - 0.20

PYQ Jun 23

(5) Spearman's rank correlation coefficient r_R is given by
- a. $1-\frac{6\sum d_i^2}{n(n^2+1)}$
- b. $1+\frac{6\sum d_i^2}{n(n^2-1)}$
- c. $1+\frac{6\sum d_i^2}{n(n^2+1)}$
- d. $1-\frac{6\sum d_i^2}{n(n^2-1)}$

Answer Key

1 b	2 b	3 a
4 a	5 d	

Spearman Rank Correlation

Mock Test Paper Questions

MTP May 19

(1) If the sum of squares of difference of ranks, given by two judges A and B of 8 students in 21, what is the value of rank correlation coefficient?
- a. 0.7
- b. 0.65
- c. 0.75
- d. 0.8

MTP Nov 18

(2) ☆ If three Judges appointed for a beauty competition, then how many different rank correlation coefficients are required to analyse the judge competition.
- a. 3
- b. 1

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c. 2 d. 6

MTP March 21

(3) If the sum of squares in difference of ranks, given by two judges A and B of 8 students is 21, What is the value of rank correlation coefficient?

a. 0.7 b. 0.65
c. 0.75 d. 0.8

MTP June 22

(4) In a bivariate distribution if the rank correlation coefficient $r = 0.12$; $\Sigma d^2 = 146$; Then the no. of observed pairs (N) is

a. 9 b. 8
c. 7 d. 10

MTP June 2023 Series I

(5) The coefficient of rank correlation between the ranking of following 6 students in two subjects Mathematics and Statistics is:

Mathematics	Statistics
3	6
5	4
8	9
4	8
7	1
10	2

a. - 0.26 b. 0.35
c. 0.38 d. 0.20

Answer Key

1 c 2 a 3 c
4 d 5 a

Correlation: Concurrent Deviation

Past Exam Paper Questions

PYQ May 18

(1) In the method of Concurrent Deviations, only the directions of change (Positive direction/Negative direction) in the variables are taken into account for calculation of

a. Coefficient of SD
b. Coefficient of regression
c. Coefficient of correlation
d. None of these

PYQ June 22

(2) ☆ If concurrent coefficient is $1/\sqrt{3}$ and number of concurrent deviation is 6 for n pairs of data. Find total number of pairs?

a. 9 b. 8
c. 10 d. 11

Answer Key

1 c 2 c

Correlation: Concurrent Deviation

Mock Test Paper Questions

MTP May 18

(1) Standard Error of Correlation coefficient

☆ a. $\frac{1-r^2}{\sqrt{N}}$

b. $\frac{1+r^2}{\sqrt{N}}$

c. $\frac{1+r^2}{N}$

d. $\frac{1-r}{N}$

MTP May 18

(2) Probable Error can be obtained using Correlation coefficient as

a. $0.675 \times \frac{1-r^2}{\sqrt{N}}$

b. $\frac{2}{3} \times \frac{1+r^2}{\sqrt{N}}$

c. $\frac{1+r^2}{N}$

d. $\frac{1-r^2}{N}$

MTP May 19

(3) What is spurious correlation?

a. It is a bad relation between two variables.
b. It is very low correlation between two variables.
c. It is the correlation between two variables having no causal relation.
d. It is a negative correlation

MTP Oct 21

(4) If the coefficient of correlation between two variables is 0.7 then the percentage of variation unaccounted for is

a. 70% b. 30%
c. 51% d. 49%

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MTP March 22

(5) If the coefficient of correlation between two variables is –0.9, then the coefficient of determination is
a. 0.9 b. 0.81
c. 0.1 d. 0.19.

MTP June 22

(6) For 10 pairs of observations, number of concurrent deviations was found to be 4. What is the value of the coefficient of concurrent deviation?
a. $\sqrt{0.2}$ b. 1/3
c. -1/3 d. $-\sqrt{0.2}$

MTP Dec 22 – Series I

(7) For n pairs of observations, the coefficient of concurrent deviation is calculated as $\frac{1}{\sqrt{3}}$. If there are six concurrent deviations, n=
a. 11 b. 10
c. 9 d. 8

Answer Key

1 a	2 a	3 c
4 c	5 b	6 c
7 b		

Regression

Past Exam Paper Questions

PYQ Nov. 18

(1) The two line of regression intersect at the point
a. Mean b. Mode
c. Median d. None of these

PYQ Nov. 18

(2) If the two lines of regression are $x + 2y - 5 = 0$ and $2x + 3y - 8 = 0$, then the regression line of y on x is:
a. $x + 2y - 5 = 0$
b. $2x + 3y - 8 = 0$
c. $x + 2y = 0$
d. $2x + 3y = 0$

PYQ Nov. 18

(3) If the two regression lines are $3X = Y$ and $8Y = 6X$, then the value of correlation coefficient is
☆ a. 0.5 b. - 0.5
c. 0.75 d. - 0.80

PYQ Nov. 18

(4) The regression coefficient is independent of the change of:
a. Scale b. Origin
c. Both (a) & (b) d. None of these

PYQ June 19

(5) A.M. of regression coefficient is
☆ a. Equal to r
b. Greater than or equal to r
c. Half of r
d. None of these

PYQ Nov. 19

(6) If two line of regression are $x + 2y - 5 = 0$ and $2x + 3y - 8 = 0$. So $x + 2y - 5 = 0$ is
a. y on x b. x on y
c. Both (a) & (b) d. None of these

PYQ Nov. 19

(7) Find the coefficient of correlation.
$2x + 3y = 2$
☆ $4x + 3y = 4$
a. - 0.71 b. 0.71
c. - 0.5 d. 0.5

PYQ Jan. 21

(8) The interesting point of the two regression lines: y on x and x on y is
a. (0,0) b. $(\bar{x}, \bar{y})$
c. (b_{yx}, b_{xy}) d. (1, 1)

PYQ Jan. 21

(9) Given that the variance of x is equal to the twice of square of standard deviation of y and the ☆ regression line of y on x is $y = 40 + 0.5(x - 30)$. Then regression line of x on y is
a. $y = 40 + 4(x - 30)$
b. $y = 40 + (x - 30)$
c. $y = 40 + 2(x - 30)$
d. $x = 30 + 2(x - 40)$

Note: Inadequate data to complete problem but by observing option only option d is of the format of X on Y

PYQ Jan. 21

(10) The regression coefficients remain unchanged due to
a. A shift to scale
b. A shift to origin
c. Replacing x – values by $\frac{1}{x}$

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d. Replacing y values by $\frac{1}{y}$

PYQ July 21

(11) If $y = 9x$ and $x = 0.01y$ then r is equal to:
a. - 0.1 b. 0.1
☆ c. + 0.3 d. - 0.3

PYQ July 21

(12) The straight – line graph of the linear equation $y = a + bx$, slope is horizontal if:
a. $b = 1$ b. $b \neq 0$
c. $b = 0$ d. $a = b \neq 0$

PYQ July 21

(13) If $b_{yx} = -1.6, b_{xy} = -0.4$ then r_{xy} will be:
a. 0.4 b. - 0.8
c. 0.64 d. 0.8

PYQ July 21

(14) If the slope of the regression line is calculated to be 5.5 and the intercept 15 then the value of Y if X is 6 is:
a. 88 b. 48
c. 18 d. 78

PYQ July 21

(15) For any two variables x and y the regression equations are given as $2x + 5y - 9 = 0$ and $3x - y - 5 = 0$. What are the A.M. of x and y?
a. 2, 1 b. 1, 2
c. 4, 2 d. 2, 4

PYQ July 21

(16) The intersecting point of two regression lines falls at X-axis. If the mean of X-values is 16, the
☆ standard deviations of X and Y are respectively, 3 and 4, then the mean of Y-value is
a. 16/3 b. 4
c. 0 d. 1

PYQ July 21

(17) The regression coefficients remain unchanged due
a. Shift to origin b. Shift to scale
c. Always d. Never

PYQ Dec 22

(18) The equations of the two lines of regression are $4x + 3y + 7 = 0$ and $3x + 4y + 8 = 0$. Find the correlation coefficient between x and y?
a. - 0.75 b. 0.25
c. - 0.92 d. 1.25

PYQ Dec 22

(19) The regression equations are $2x + 3y + 1 = 0$ and $5x + 6y + 1 = 0$, then Mean of x and y respectively are:
a. -1, -1 b. -1, 1
c. 1, -1 d. 2, 3

PYQ Dec 22

(20) If $b_{yx} = 0.5, b_{xy} = 0.46$ then the value of correlation coefficient r is:
a. 0.23 b. 0.25
c. 0.39 d. 0.48

PYQ Jun 23

(21) For variables X and Y, we collect the four observations with
$\sum x = 10; \sum y = 14; \sum x^2 = 65; \sum y^2 = 5$ and $\sum xy = 3$. What is the regression line of Y on X?
a. $y = -0.8x - 5.5$
b. $y = 0.8x - 5.5$
c. $y = -0.8x + 5.5$
d. $y = 0.8x + 5.5$

PYQ Jun 23

(22) The regression lines will be perpendicular to each other when the value of r is
a. 1 b. -1
c. 1/2 d. 0

PYQ Jun 23

(23) If the regression equations are $x + 2y - 5 = 0$ and $2x + 3y - 8 = 0$, then the mean of x and the mean of y are _____, respectively.
a. - 3 and 4 b. 2 and 4
c. 1 and 2 d. 2 and 1

Answer Key

1	a	2	a	3	a
4	b	5	b	6	a
7	a	8	b	9	d
10	b	11	c	12	c
13	b	14	b	15	a
16	c	17	a	18	a
19	c	20	d	21	c
22	d	23	c		

Regression

Mock Test Paper Questions

MTP May 18

(1) Equations of two lines of regression are $4x+3y+7 = 0$ and $3x+ 4y + 8 = 0$, the mean of x and y are
a. 5/7 & 6/7 b. -4/7 & -11/7
c. 2 & 4 d. none

MTP May 18

(2) If two variables are uncorrelated then regression lines are

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☆ a. Parallel b. Perpendicular
c. Coincident d. Inclined at 450

MTP Nov 18

(3) If the two regression co-efficient are 4 and 0.16 the percentage of unexplained variation is:
a. 64 b. 36
c. 54 d. 46

MTP Nov 18

(4) For two variables x and y with the same mean the regression equation are $y = 2x-\alpha$ and $x = 2y-\beta$; ☆ what is the value of common mean
a. $-\alpha$ b. β
c. 0 d. $-\beta$

MTP Nov 18

(5) . In a bivariate population, the linear regression lines $3x+y-2=0$ and $y+x = 0$ then the coefficient of correlation is
a. 0 b. 1/3
c. -1/3 d. $-1/\sqrt{3}$

MTP May 19

(6) If $r = 0.6$ then the coefficient of non-determination
a. 0.4 b. -0.6
c. 0.36 d. 0.64

MTP May 19 Series II

(7) The two lines of regression become identical when
a. $r = 1$ b. $r = -1$
c. $r = 0$ d. (a) or (b).

MTP May 19 Series II

(8) If the regression coefficient of y on x is 2.5, the correlation coefficient 0.6 and the SD is y of is 4, the SD of x is
a. 0.64 b. 0.24
c. 0.96 d. 1.44

MTP May 19 Series II

(9) If the regression coefficient of y on x is 1.5 and the variances of x and y is 4 and 9 respectively then the correlation coefficient is
a. 1 b. -1
c. 2.25 d. 1

MTP May 19 Series II

10) If the coefficient of determination is 0.64 and the regression coefficient of x on y is 4 then then the regression coefficient of y on x is
a. 0.32 b. 0.16
c. 0.48 d. 0.96

MTP Nov 19

(11) If two regression coefficients are 4 and 0.16, the percentage of unexplained variation is.
a. 64 b. 36
c. 54 d. 46

MTP Nov 19

(12) If the coefficient of determination is 0.64 and the regression coefficient of x on y is 4 then the regression coefficient y on x is.
a. 0.32 b. 0.16
c. 0.48 d. 0.96

MTP Nov 19

(13) If two variables are independent their covariance is.
a. 1 b. -1
c. 0 d. None of these

MTP Nov 19

(14) The covariance between two variables x and y is 72. The variances of x and y are 144 and 81. The coefficient of correlation is
a. 1/3 b. 4/5
c. 2/3 d. 3/5

MTP Nov 20

(15) The two lines of regression become identical when
a. $r = 1$ b. $r = -1$
c. $r = 0$ d. Both (a) & (b)

MTP Nov 20

(16) The regression coefficients remain unchanged due to a
a. Shift of origin
b. Shift of scale
c. Both (a) and (b)
d. (a) or (b)

MTP March 21

(17) If $u+5x = 6$ and $3y-7v = 20$ and correlation coefficient between x and y is 0.58 then what be the correlation coefficient between U and V ?
a. 0.58 b. -0.58
c. -0.84 d. 0.84

MTP March 21

(18) If $y = 3x+4$ is the regression line y on x and the arithmetic mean of x is -1, what is the arithmetic mean of y
a. 1 b. -1
c. 7 d. None of these

MTP Apr 21

(19) The regression equation x and y is $3x+2y = 100$, the value of b_{xy}
a. -2/3 b. 100/3
c. 3/2 d. 2/3

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MTP Nov 21

(20) The coefficients of correlation between two variables x and y is the simple _____ of two regression coefficients.
a. Harmonic Mean
b. Arithmetic Mean
c. Geometric Mean
d. None of the above

MTP Nov 21

(21) If r=0, regression lines are:
a. Perpendicular
b. Parallel
c. They coincide
d. Cannot be determined

MTP Oct 21

(22) If the regression line of y on x and of x on y are given by $2x + 3y = -1$ and $5x + 6y = -1$ then the arithmetic means of x and y are given by
a. (1, –1) b. (–1, 1)
c. (–1, –1) d. (2, 3)

MTP March 22

(23) The regression coefficients remain unchanged due to
a. Shift to origin b. Shift to scale
c. Always d. Never

MTP June 22

(24) Consider the two regression lines $3x + 2y = 26$ & $6x + y = 31$, Find the mean values of x and y.
a. $\bar{x} = 4$ and $\bar{y} = 7$
b. $\bar{x} = 7$ and $\bar{y} = 4$
c. $\bar{x} = 5$ and $\bar{y} = 6$
d. None of these

MTP June 22

(25) If the regression line of Y on X is given by $Y = X + 2$ and Karl Pearson's coefficient of correlation is 0.5 then $\frac{\sigma_y^2}{\sigma_X^2} =$ _____.
a. 3 b. 2
c. 4 d. None of these

MTP Dec 22 – Series I

(26) If $4y - 5x = 15$ is the regression line of y on x and the coefficient of correlation between x and y is 0.75, what is the value of the regression coefficient of x on y?
a. 0.45 b. 0.9375
c. 0.6 d. None of these

MTP Dec 22 – Series I

(27) If the regression line of y on x and of x on y are given by $2x + 3y = -1$ and $5x + 6y = -1$ then the arithmetic means of x and y are given by.
a. (1,-1) b. (-1,1)
c. (-1,-1) d. (2,3)

MTP Dec 22 – Series I

(28) For a positive and perfectly correlated random variables, regression coefficient of x on y is 1.4 and the standard deviation of X is 2, the variance of Y is
a. 2.37 b. 6.76
c. 6.56 d. 3.16
Note: There is some error in que given in MTP, we have modified as per correct option.

MTP Dec 22 Series II

(29) If the two lines of regression are $x + 2y - 5 = 0$ and $2x + 3y - 8 = 0$, then the regression line of y on x is:
a. $x + 2y - 5 = 0$ b. $x + 2y = 0$
c. $2x + 3y - 8 = 0$ d. $2x + 3y = 0$

MTP Dec 22 Series II

(30) If the two regression lines are $3X = Y$ and $8Y = 6X$ then the value of correlation coefficient is:
a. -0.5 b. 0.5
c. 0.75 d. -0.80

MTP Dec 22 Series II

(31) AM of regression coefficient is:
a. Equal to r
b. Greater than or equal to r
c. half of r
d. None of these

MTP Dec 22 Series II

(32) If the regression line of y on x is given by $y = x + 2$ and Karl Pearson's coefficient of correlation is 0.5 then $\frac{\sigma_y^2}{\sigma_X^2} =$
a. 3 b. 2
c. 4 d. None of these

MTP Dec 22 Series II

(33) When two lines of regression become identical when
a. R = 1 b. R= -1
c. R = 0 d. a or b

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MTP June 2023 Series I

(34) The equations of the two lines of regression are $4x + 3y + 7 = 0$ and $3x + 4y + 8 = 0$. Find the correlation coefficient between x and y.

a. - 0.75 b. 0.25
c. - 0.92 d. 1.25

MTP June 2023 Series I

(35) The regression equation are $2x + 3y + 1 = 0$ and $5x + 6y + 1 = 0$, then Mean of x and y respectively are

a. - 1, -1 b. - 1, 1
c. 1, - 1 d. 2, 3

MTP June 2023 Series I

(36) If byx = 0.5, bxy = 0.45 then the value of correlation coefficient is:

a. 0.23 b. 0.25
c. 0.39 d. 0.47

MTP June 2023 Series I

(37) If Y is dependent variable and X is independent variable and the S.D. of X and Y are 5 and 8 respectively and co-efficient of co-relation between X and Y is 0.8. Find the Regression coefficient of Y on X:

a. 0.78 b. 1.28
c. 6.8 d. 0.32

MTP Dec 22 Series II

(38) In regression analysis, which of the following can be in the form of an index number?

a. Only dependent variable
b. Only independent variable
c. Both A and B
d. Need more information

MTP Dec 22 Series II

(39) If both the regression coefficients are negative, what will be coefficient of correlation?

a. Negative
b. Positive
c. Can be either positive of negative
d. Cannot be determined

MTP Dec 22 Series II

(40) If the regression equation of two variables are $5x - y = 4$ and $3x - 2y = 1$. Find the arithmetic means of x and y

a. 2, 1
b. 2, 2
c. 1, 1
d. Cannot be determined

Answer Key

1	b	2	b	3	b
4	b	5	d	6	d
7	d	8	c	9	d
10	b	11	b	12	b
13	c	14	c	15	d
16	a	17	b	18	a
19	a	20	c	21	a
22	a	23	a	24	a
25	c	26	a	27	a
28	a	29	a	30	b
31	b	32	c	33	d
34	a	35	c	36	d
37	b	38	c	39	a
40	c				

Other Topics

Past Exam Paper Questions

PYQ May 18

(1) The coefficient of determination is defined by the formula

a. $r^2 = \frac{1 - unexplained\ variance}{total\ variance}$

b. $r^2 = \frac{explained\ variance}{total\ variance}$

c. both (a) and (b)
d. None of these

PYQ June 19

(2) Find the probable error if $r = 2/\sqrt{10}$ and $n = 36$

a. 0.6745 b. 0.067
c. 0.5287 d. None of these

PYQ Nov. 20

(3) Which of the following is spurious correlation?

a. Correlation between two variables having no casual relationship
b. Negative correlation
c. Bad relation between two variables
d. Very low correlation between two variables

PYQ Jun 23

(4) Given that r = 0.4 and n = 81, determine the limits for the population correlation coefficient.

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a. (0.333, 0.466) b. (0.367, 0.433)
c. (0.337, 0.463) d. (0.373, 0.427)

Answer Key

1 c 2 b 3 a
4 c

Other Topics

Mock Test Paper Questions

MTP May 19 Series II

(1) If the coefficient of correlation between two variables is 0.7 then the percentage of variation unaccounted for is
a. 70% b. 30%
c. 51% d. 49%

MTP May 20

(2) What is spurious correlation?
a. It is a bad relation between two variables
b. It is very low correlation between two variables.
c. It is the correlation between two variables having no causal relation.
d. It is a negative correlation.

MTP May 20

(3) If the coefficient of correlation between two variables is 0.8 then the percentage of variation unaccounted for is
a. 70% b. 30%
c. 51% d. 36%

MTP Nov 20

(4) If the coefficient of correlation between two variables is –0.9, then the coefficient of determination is
a. 0.9
b. 0.81
c. 0.1
d. 0.19

MTP March 2021

(5) The coefficient of two variables is 0.9, then coefficient of non-determination is
a. 0.9 b. 0.19
c. 0.81 d. 0.1

MTP Apr 21

(6) If the coefficient of correlation between two variables is 0.8 then the percentage of variation unaccounted for is
a. 70% b. 30%
c. 51% d. 36%

MTP June 2023 Series II

(7) Correlation between unrelated variables is not because of:
a. Coefficient of non-determination
b. Existence of third variable related to both the variables
c. Spurious correlation
d. None of the above

Answer Key

1 c 2 c 3 d
4 b 5 b 6 d
7 c

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Chapter 18: Index Numbers

Index Numbers Theory Questions

Past Year Questions

PYQ May 18

(1) Time reversal and factor reversal are:
- a. Quantity Index
- b. Ideal Index
- c. Price Index
- d. Test of consistency

PYQ May 18

(2) A series of numerical figures which show the relative position is called
- a. Index number
- b. Relative number
- c. Absolute number
- d. None of these

PYQ May 18

(3) The number of test of Adequacy is:
- a. 2
- b. 5
- c. 3
- d. 4

PYQ May 18

(4) P_{01} is the index for time
- a. 1 on 0
- b. 0 on 1
- c. 1 on 1
- d. 0 on 0

PYQ May 18

(5) The circular test is an extension of
- a. The time reversal test
- b. The factor reversal test
- c. The unit test
- d. None of these

PYQ May 18

(6) Price – relative is expressed in term of
- a. $P=\frac{P_n}{P_o}$
- b. $P=\frac{P_o}{P_n}$
- c. $P=\frac{P_n}{P_o}\times 100$
- d. $P=\frac{P_o}{P_n}\times 100$

PYQ May 18

(7) Circular test is satisfied by
- a. Lespeyre's Index Number
- b. Paasche's Index Number
- c. The simple geometric mean of price relatives and the weighted aggregative with fixed weights
- d. None of these

PYQ May 18

(8) TS The multiplicative time series model is
- a. $y=T+S+C+I$
- b. $y=T\&C$
- c. $y=a+bx$
- d. $y=a+bx+cx^2$

PYQ Nov. 18

(9) Which of the following statement is true?
- a. Paache's Index Number is based on the base year quantity
- b. Fisher's Index Number is the Arithmetic Mean of Laspeye's Index Number and Paache's Index Number
- c. Arithmetic Mean is the most appropriate average for constructing the index number
- d. Fisher's Index Number is an Ideal Index Number

PYQ Nov. 18

(10) TS The simple average method is used to calculate
- a. Trend Variation
- b. Cyclical Variation
- c. Seasonal Variation
- d. Irregular Variation

PYQ Nov. 18

(11) The sale of Cold Drink would go up in summers and go down in the winters is an example of
- a. Trend Variation
- b. Cyclical Variation
- c. Seasonal Variation
- d. Irregular Variation

PYQ June 19

(12) Which is called an ideal index numbers
- a. Laspeyre's index number
- b. Passche's index number
- c. Fisher's index number
- d. Marshall Edgeworth index number

PYQ June 19

(13) TS In semi averages method, if the number of values is odd then we drop:
- a. First value
- b. Last value
- c. Middle value
- d. Middle two value

PYQ June 19

(14) Which is not satisfied by Fisher's ideal index number?
- a. Factor Reversal Test
- b. Time Reversal Test
- c. Circular Test

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d. None of these

PYQ June 19

(15) Trend in semi average is:
TS a. Linear b. Parabola
c. Exponential d. None of these

PYQ June 19

(16) The most commonly used mathematical method for finding secular trend is
TS a. Moving average
b. Simple average
c. Exponential
d. None of these

PYQ Nov. 19

(17) When sale of cold drink increases in summer and decreases in winters is an example of?
a. Seasonal variations
b. Cyclic variations
c. Secular variations
d. None of these

PYQ Nov. 19

(18) Seasonal variations take place within:
TS a. One year b. Two years
c. Half year d. Five years

PYQ Nov. 19

(19) Fisher's index number does not satisfy:
a. Circular test
b. Time reversal test
c. Factor reversal test
d. Unit test

PYQ Nov. 19

(20) In semi-average method if the no. of values is odd, we exclude:
TS a. First value b. Last value
c. Middle value d. None of these

PYQ Nov. 20

(21) Fisher's ideal index number does not satisfy _____ test
a. Circular
b. Time reversal
c. Factor reversal
d. Unit

PYQ Nov. 20

(22) Index numbers are expressed as
a. Squares b. Ratio
c. Percentages d. Combinations

PYQ Jan. 21

(23) The cost of living index is always
a. Price index number
b. Quantity index number
c. Weighted index number
d. Value index number

PYQ Jan. 21

(24) Fisher's index number does not satisfy
a. Unit test
b. Circular test
c. Time reversal test
d. Factor reversal test

PYQ Jan. 21

(25) When the prices for quantities consumed of all commodities are changing in the same ratio,
☆ then the index numbers due to Laspeyre's and Paasche's will be:
a. Equal
b. Unequal
c. Reciprocal of Marshall Edge worth Index Number
d. Reciprocal of Fisher Index Number

PYQ Dec. 21

(26) If P_{10} and P_{01} are index for 1 on 0 and 0 on 1 respec. then formula $P_{01} \times P_{10} = 1$ is used for
a. Unit test
b. Time Reversal Test
c. Factor Reversal Test
d. Circular Test

PYQ Dec. 21

(27) The weighted averaged of price relatives of commodities, when the weights are equal to the
☆ value of commodities in the current year, yields_____ index number.
a. Fisher's ideal
b. Lasperey's
c. Paasche's
d. Marshall-Edgeworth

PYQ Dec. 21

(28) Index numbers are not helpful in
a. Framing economics policies
b. Revealing trend
c. Forecasting
d. Identifying errors

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PYQ Dec. 21

(29) The three index numbers, namely, Laspeyre, Paasche and Fisher do not satisfy_____ test.
a. Time reversal b. Factor reversal
c. Unit d. Circular

PYQ June 22

(30) Geometric mean method used in which index number to find it out
a. Laspeyre's
b. Paasche's
c. Fishers index number
d. None of these

PYQ June 22

(31) Which test is known for shift base index no.
a. Factor test
b. Unit test
c. Circular test
d. Time reversal test

PYQ June 22

(32) Laspeyre and Paasche do not satisfy -
a. Unit test
b. Factor test
c. Time reversal test
d. Bowley's test

PYQ June 22

(33) Lasspeyer's index number is based on?
a. Last year weight
b. Present year weight
c. Last year value
d. Present year value

PYQ June 22

(34) Price relative is-
a. $\frac{P_1}{P_0} \times 100$ b. P_0
c. P_0 d. P_1 / P_0

PYQ June 22

(35) Which one of the following is not appropriate for calculation of index number?
a. Unit test
b. Price relative test
c. Circular test
d. Time reversal test

PYQ Dec 22

(36) ☆ Which of the following index measures the change from month to month in the cost of a representative basket of goods and services of the type which are bought by a typical household?
a. Retail Price Index
b. Laspeyre's Index
c. Fisher's Index
d. Paasche's Index

PYQ Dec 22

(37) Fisher's index number is called as ideal index number because it is satisfying
a. Factor reversal test
b. Time reversal test
c. Both factor and time reversal test
d. Circular test

PYQ Dec 22

(38) In price index, when a new commodity is required to be added, which of the following index is used?
a. Shifted price index
b. Splicing price index
c. Deflating price index
d. Value price index

PYQ Jun 23

(39) Which of the below index is computed by taking the average of base year and current year?
a. Marshall-Edgeworth index
b. Paasche's Index
c. Laspeyre's Index
d. Fisher's Index

PYQ Jun 23

(40) Weighted geometric mean of relative formula satisfies _____ test while Factor Reversal test is satisfied by_____.
a. Time Reversal, Fisher's Ideal Index
b. Time Reversal, Laspeyre's Index
c. Factor Reversal, Paasche's Index
d. Factor Reversal, Fisher's Ideal Index

Answer Key

1 d	2 a	3 d
4 a	5 a	6 c
7 c	8 b	9 d
10 c	11 c	12 c
13 c	14 c	15 a
16 b	17 a	18 a
19 a	20 c	21 a
22 c	23 c	24 b
25 a	26 b	27 c
28 d	29 d	30 c
31 c	32 c	33 a
34 a	35 b	36 a
37 c	38 a	39 a
40 a		

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Index Numbers Theory Questions

Mock Test Paper Questions

MTP May 18

(1) The _____ is satisfied when $P_{ab} \times P_{bc} \times P_{ca} = 1$

a. Time reversal test
b. Factor reversal test
c. Circular Test
d. none of these

MTP May 18

(2) The number of tests of Adequacy

a. 2 b. 3
c. 4 d. 5

MTP Nov 18

(3) Fishers' Ideal Index number is

a. The median of Laspyre's and Paasches Index numbers
b. The Arithmetic mean of Laspyres and Paasche's Index numbers
c. The geometric mean of Laspyres and Paasche's Index Numbers
d. None of these

MTP Nov 18

(4) Fishers Ideal Formula satisfies

(1) Unit Test
(2) Circular Test
(3) Factor Reversal Test
(4) Time Reversal Test

a. 1 and 2 b. 1, 3 and 4
c. 1 and 3 d. 1, 2 and 3

MTP Nov 18

(5) While construction of Index numbers which of the following has to be considered as point of reference in company various data describing individual behaviour

a. Selection of weights
b. Base Period
c. Selection of Formulae
d. Choice of variables

MTP Nov 18

(6) ☆ Which of the options does not contain the proper use of Index numbers

a. Helpful in policy determination
b. Useful in Forecasting
c. Equally useful in all condition for different purpose
d. Helpful in comparison

MTP May 19

(7) Weighted G.M. of relative formula satisfy _____ test

a. Time Reversal Test
b. Circular test
c. Factor Reversal Test
d. None of these

MTP May 19

(8) Laspyre's method and Paasche's method do not satisfy

a. Unit Test
b. Time Reversal Test
c. Factor Reversal Test
d. (b) and (c)

MTP May 19

(9) Fisher's index number is based on

a. The Arithmetic mean of Laspeyre's and Paasche's index numbers.
b. The Median of Laspeyre's and Paasche's index numbers
c. The Mode of Laspeyre's and Paasche's index numbers.
d. The GM of Laspeyre's and Paasche's index numbers.

MTP May 19

(10) Purchasing Power of Money is

a. Reciprocal of price index number
b. Equal to price index number.
c. Unequal to price index number.
d. None of these.

MTP May 19 Series II

(11) Chain index is equal to

a. $\frac{\text{Link relative of current year}}{\text{Chain index of the current year}} \times 100$
b. $\frac{\text{Link relative of PY}}{100} \times \text{Chain index of CY}$
c. $\frac{\text{Link relative of CY}}{100} \times \text{Chain index of PY}$
d. $\frac{\text{Link relative of PY}}{100} \times \text{Chain index of PY}$

MTP May 19 Series II

(12) The formula should be independent of the unit in which or for which price and quantities are quoted in

a. Unit test
b. Time Reversal Test
c. Factor Reversal Test
d. None of these

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MTP May 19 Series II

(13) The formula for conversion to current value

a. Deflated value = $\frac{\text{Price Index of the current year}}{\text{previous value}}$

b. Deflated value = $\frac{\text{current value}}{\text{Price Index of current year}}$

c. Deflated value = $\frac{\text{Price Index of the previous year}}{\text{previous value}}$

d. Deflated value = $\frac{\text{Price Index of the previous year}}{\text{previous value}}$

MTP Nov 19

(14) Circular test is the extension of
- a. Unit test
- b. Factor reversal test
- c. Time reversal test
- d. None of these

MTP Nov 19

(15) Unit test is not satisfied by
- a. Fishers Index number
- b. Laspyers Index number
- c. Simple Aggregative
- d. Bowleys Index number

MTP Nov 19

(16) The best average for construction of Index Number is
- a. AM
- b. GM
- c. HM
- d. None of these

MTP May 20

(17) Fisher's index number satisfies the _____ tests
- a. Time Reversal Test
- b. Factor Reversal Test
- c. Both (a) & (b)
- d. None of these

MTP May 20

(18) Fisher's ideal index number is
- a. The Median of Laspeyre's and Paasche's index numbers
- b. The Arithmetic Mean of Laspeyre's and Paasche's index numbers
- c. The Geometric Mean of Laspeyre's and Paasche's index numbers
- d. None of these

MTP Nov 20

(19) Purchasing Power of Money is
- a. Reciprocal of price index number
- b. Equal to price index number
- c. Unequal to price index number
- d. None of these

MTP Nov 20

(20) Factor reversal test is satisfied by
- a. Fisher's ideal index number
- b. Laspeyre's index number
- c. Paasche's index number
- d. All of the above

MTP Nov 20

(21) The number of tests adequacy is
- a. 2
- b. 5
- c. 3
- d. 4

MTP March 21

(22) Fishers Price Index number is equal is
- a. G. M of Kelly's Price Index number and Paasche's Price Index number
- b. G.M of Laspyres and Paaches Price Index number
- c. G.M of Bowley's price index number and Paasche's Index number.
- d. None of these

MTP Apr 21

(23) Purchasing power of money is
- a. Reciprocal of price index
- b. Equal to price index
- c. Unequal to price index
- d. None of these

MTP Nov 21

(24) Which is called an ideal index number
- a. Laspyres Index number
- b. Pasches Index number
- c. Fishers Index number
- d. Marshall- Edgeworth Index number

MTP Nov 21

(25) The circular test is an extension of
- a. The time reversal test
- b. The factor reversal test
- c. The Unit test
- d. None of these

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MTP Nov 21

(26) Circular test is satisfied by
a. Laspeyre's Index number
b. Paasche's index number
c. The simple geometric mean of price relatives and price relatives and weighted aggregative with fixed weights.
d. None of these

MTP Oct 21

(27) _____ satisfies circular test
a. G.M. of price relatives or the weighted aggregate with fixed weights
b. A.M. of price relatives or the weighted aggregate with fixed weights
c. H.M. of price relatives or the weighted aggregate with fixed weights
d. none

MTP Oct 21

(28) Laspyres formula does not satisfy
a. Factor Reversal Test
b. Time Reversal Test
c. Circular Test
d. All the above

MTP March 22

(29) Index numbers are not helpful in
a. Framing Economic Policies
b. Revealing Trend
c. Forecasting
d. Identifying errors

MTP March 22

(30) The weighted average of price relatives of commodities when the weight is equal to the value of commodities in base year yields _____index number
a. Fisher's Ideal
b. Laspyres
c. Paasches
d. Marshall-Edgeworth

MTP June 22

(31) The number of tests of Adequacy is
a. 2 b. 3
c. 4 d. 5

MTP June 22

(32) Fishers Ideal formula for calculating Index number satisfies the
a. Unit Test
b. Factor Reversal Test
c. Time reversal Test
d. All of these

MTP June 22

(33) Purchasing power of money is
a. Reciprocal of Price index number
b. Equal to Price Index number
c. Unequal to Price Index number
d. None of these

MTP Dec 22 – Series I

(34) The Circular Test is known as:
a. $P_{01} \times P_{12} \times P_{20} = 1$
b. $P_{12} \times P_{01} \times P_{20} = 1$
c. $P_{20} \times P_{12} \times P_{01} = 1$
d. $P_{02} \times P_{21} \times P_{12} = 1$

MTP Dec 22 – Series I

(35) Laspeyres index number is a weighted aggregate method by taking _____ as weights.
a. The quantity consumed in the base year
b. The quantity consumed in the current year
c. Value of items consumed in the base year
d. Value of items consumed in the current year

MTP Dec 22 – Series II

(36) Which is not satisfied by Fisher's Ideal Index Number?
a. Factor Reversal Test
b. Time Reversal Test
c. Circular Test
d. None of these

MTP Dec 22 Series II

(37) The number of test adequacy is
a. 2 b. 5
c. 3 d. 4

MTP Dec 22 Series II

(38) Laspyers method and Paasches method do not satisfy
a. Unit Test
b. Time Reversal Test
c. Factor Reversal Test
d. Both (b) & (c)

MTP Dec 22 Series II

(39) Fisher's index number is called as ideal index number because is in satisfies.
a. Factor reversal test
b. Time reversal test
c. Both factor and time reversal test
d. Circular test

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MTP June 2023 Series I

(40) Which index measures the change from month to month in the cost of a representative basket of goods and services of the type bought by a typical household?

a. Retail Price Index
b. Laspeyre's Index
c. Fisher's Index
d. Paasche's Index

MTP June 2023 Series I

(41) In price index, when a new commodity is required to be added, which of the following index is used?

a. Shifted price index
b. Splicing price index
c. Deflating price index
d. Value price index

MTP June 2023 Series II

(42) Which test should be considered necessarily to verify the consistency while we select an appropriate index formula

a. Circular test
b. Time reversal test
c. Factor reversal test
d. Both b and c

MTP June 2023 Series II

(43) Circular test is satisfied by which of the following index?

a. Laspeyres index
b. Paasche's index
c. Fisher's index
d. Simple geometric mean of price relatives

MTP June 2023 Series II

(44) The purchasing power of money is_____

a. Not equal to the price index number
b. Reciprocal of the price index number
c. Equal to the price index number
d. None of these

MTP June 2023 Series II

(45) Fisher's method of calculating the index number is based on the _____

a. Geometric mean
b. Arithmetic mean
c. Harmonic mean
d. None of these

Answer Key

1 c	2 c	3 c
4 b	5 b	6 c
7 a	8 d	9 d
10 a	11 c	12 a
13 b	14 c	15 c
16 b	17 c	18 c
19 a	20 a	21 d
22 b	23 a	24 c
25 a	26 c	27 a
28 d	29 d	30 b
31 c	32 d	33 a
34 a	35 a	36 c
37 d	38 d	39 c
40 a	41 a	42 d
43 d	44 b	45 a

Index Numbers Practical Questions

Past Year Questions

PYQ May 18

(1) If $\sum P_0Q_0 = 1360, \sum P_nQ_0 = 1900$ $\sum P_0Q_n = 1344$ $\sum P_nQ_n = 1880$ then Lasperey's Index number is

a. 0.71 b. 1.39
c. 1.75 d. None of these

PYQ May 18

(2) ☆ If the 1970 index with base 1965 is 200 and 1965 index with base 1960 is 150, what will be the index of 1970 on base 1960?

a. 700 b. 300
c. 500 d. 600

PYQ Nov. 18

(3) If Laspeyre's Index Number is 250 and Paache's Index Number is 160, then Fisher's Index number is

a. 40,000 b. $\frac{25}{16}$
c. 200 d. $\frac{16}{25}$

PYQ Nov. 18

(4) If $\sum p_0q_0 = 240, \sum p_1q_1 = 480, \sum p_1q_0 = 600$ and $\sum p_0q_1 = 192$, then Laspeyre's Index Number is

a. 250 b. 300
c. 350 d. 200

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PYQ June 19

(5) The prices and quantities of 3 commodities in base and current years are as follows:

p_0	p_1	q_0	q_1
12	14	10	20
10	8	20	30
8	10	30	10

The Laspeyre price index is

a. 118.13 b. 107.14
c. 120.10 d. None of these

PYQ June 19

(6) ☆ The cost of living index numbers in years 2015 and 2018 were 97.5 and 115 respectively. The salary of a worker in 2015 was ₹ 19500. How much additional salary was required for him in 2018 to maintain the some standard of living as in 2015?

a. 3000 b. 4000
c. 3500 d. 4500

PYQ Nov. 19

(7) The index number of prices at place in the year 2008 is 225 with 2004 as the base then there is:

a. 125% increase b. 225% increase
c. 110% increase d. 25% increase

PYQ Nov. 20

(8) In Laspeyre's index number is 110 and Fisher's ideal index number is 109. Then Paasche's index number is

a. 118 b. 110
c. 109 d. 108

PYQ July 21

(9) The weighted aggregative price index turnover for 2001 with 2000 as the base year using Fisher's Index Number is:

Commodity	Price (In ₹)		Quantity	
	2000	2001	2000	2001
A	10	12	20	22
B	8	8	16	18
C	5	6	10	11
D	4	4	7	8

a. 112.26 b. 112.20
c. 112.32 d. 126.01

PYQ July 21

(10) The weighted aggregative price index turnover for 2001 with 2000 as the base year using Paasche's Index Number is:

Commodity	Price (In ₹)		Quantities	
	2000	2001	2000	2001
A	10	12	20	22
B	8	8	16	18
C	5	6	10	11
D	4	4	7	8

a. 112.32 b. 112.38
c. 112.26 d. 112.20

PYQ July 21

(11) TS If in an additive model O refers to original data as 875, T refers to trend 700, S refers to seasonal variations -200, C refers to cyclical variations 75 then the value of I which refers to irregular variation is:

a. -100 b. - 170
c. - 140 d. - 150

PYQ July 21

(12) The weighted aggregative price index turnover for 2001 with 2000 as the base year using Marshall Edgeworth Index Number is:

Commodity	Price In (₹)		Quantities	
	2000	2001	2000	2001
A	10	12	20	22
B	8	8	16	18
C	5	6	10	11
D	4	4	7	8

a. 112.26 b. 112.20
c. 112.32 d. 112.38

PYQ July 21

(13) ☆ The consumer price index goes up from 120 to 180 when salary goes up from 240 to 540, what is the increase in real terms?

a. 80 b. 150
c. 100 d. 240

PYQ Dec. 21

(14) From the following data base year:

Commodity	Base Year		Current Year	
	Price	Qty	Price	Qty
A	4	3	6	2
B	5	4	6	4
C	7	2	9	2
D	2	3	1	5

Fisher's Ideal Index is

a. 117.30 b. 115.43
c. 118.35 d. 116.48

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PYQ Jun 23

(15) Consider the data

Year	Base year		Current year	
Commodities	Price	Quantity	Price	Quantity
A	10	5	20	2
B	15	4	25	8
C	40	2	60	6
D	25	3	40	4

Laspeyre's index is

a. 166.04 b. 166.40
c. 164.04 d. 164.4

PYQ Jun 23

(16) The index number of prices for a country at a given data is 250. In comparison to the base period price, the price of all commodities in the country has increased by ____ times.

a. 1.25 b. 1.5
c. 2 d. 2.5

PYQ Jun 23

(17) If Fisher's index number is 160 and Paasche's index number is 140, then Laspeyre's index number is

a. 147.77 b. 182.85
c. 183.35 d. 146.25

Answer Key

1	b	2	b	3	c
4	a	5	b	6	c
7	a	8	d	9	a
10	d	11	a	12	a
13	c	14	a	15	a
16	b	17	b		

Index Numbers Practical Questions

Mock Test Paper Questions

MTP May 18

(1) The index number of prices at a place in 2008 is 355 with 2003 as base. This means

a. There has been on the average a 255% increase in prices
b. There has been on the average a 355% increase in price.
c. There has been on the average a 250% increase in price.
d. None of these.

MTP Nov 19

(2) The Paasches and Fishers index numbers are 169 and 156 respectively, then Laspyre's Index number is

a. 144 b. 152
c. 148 d. 151.5

MTP May 20

(3) The Paasches and Fishers index numbers are 169 and 156 respectively, then Laspyre's Index number is

a. 144 b. 152
c. 148 d. 151.5

MTP May 20

(4) The whole sale price index number or agricultural commodities in a given region at a given date is 280. The percentage increase in prices of agricultural commodities over the base year is:

a. 380 b. 280
c. 180 d. 80

MTP Nov 20

(5) ☆ During the certain period the C.L.I. goes up from 110 to 200 and the Salary of a worker is also raised from 330 to 500, then the change in real terms is

a. Loss by ₹ 50
b. Loss by ₹ 75
c. Loss by ₹ 90
d. None of these

MTP Nov 20

(6) In year 2005, the whole sale price index number is 286 with 1985 as base year, then how much the prices have increased in 2005 in comparison to 1995?

a. 286% b. 386%
c. 86% d. 186%

MTP March 21

(7) The prices of commodity in the year 2015 and 2020 were 25 and 30 respectively taking 2020 as base year the price relative is

a. 109.8 b. 110.25
c. 113.25 d. 83.33

MTP March 21

(8) For year 2015, price index was 267% with base year 2005. The percentage increase in price index over base year 2005 is:

a. 267% b. 67%
c. 167% d. None of these

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MTP Apr 21

(9) If an increase of 10% in prices. The rise in wages is 20% then the real wage has increased
☆ by an index time series is a list of _____ numbers for two or more periods of time.

a. 20% b. 10%
c. Less than 10% d. More than 20%

MTP Apr 21

(10) The cost of living index numbers in years 2015 and 2021 were 97.5 and 115 respectively. The salary of a worker in 2015 was ₹ 19,500. How much additional salary is required for him in 2021 to maintain living standard of 2015?

a. ₹ 3000 b. ₹ 4000
c. ₹ 3500 d. ₹ 4500

MTP Nov 21

(11) If Laspyres index number is 250 and Paschees index number is 160, them Fishers Index number is

a. 200 b. 120
c. 150 d. 170

MTP Nov 21

(12) If the price of a commodity in a place have decreased by 30% over the based period places, then the index number of that place is

a. 30 b. 60
c. 70 d. 80

MTP Oct 21

(13) From the following data for the 5 groups combined

Group	Weights	Index no
Food	35	425
cloth	15	235
Power&fuel	20	215
Rent&rates	8	115
miscellaneous	22	150

The general Index number is

a. 270 b. 269.2
c. 268.5 d. 272.5

MTP Oct 21

(14) If $\sum P_0Q_0 = 1360$, $\sum P_nQ_0 = 1900$, $\sum P_nQ_n = 1880$ then the Lasperey's Index number is

a. 71 b. 139
c. 175 d. None of these

MTP Oct 21

(15) The consumer price Index for April 1985 was 125. The food price index was 120 and other
☆ items index was 135. The percentage of food out of the total weight of the index is

a. 66.67 b. 68.28
c. 90.25 d. None of these

MTP Oct 21

(16) Net monthly salary of an employee was ₹ 3000 in 1980. The consumer price index number in 1985 is 250 with 1980 as base year. If the has to be rightly compensated then, 7th dearness allowances to be paid to the employee is:

a. ₹4.800.00 b. ₹4,700.00
c. ₹4,500.0 d. None of these.

MTP Mar 22

(17) The index number for the year 2012 taking 2011 as the base year from the data given below by using simple average of price relative method is

Commodity	A	B	C	D	E
Price in 2011	115	108	95	85	90
Price in 2012	125	117	108	95	95

a. 112 b. 117
c. 120 d. 111

MTP March 22

(18) Suppose a business executive was earning F₹ 2,050 in the base period. What should be his salary in the current period if his standard of living is to remain the same? Given $\sum W = 25$ and $\sum IW = 3544$:

a. ₹ 2096 b. ₹ 2906
c. ₹ 2106 d. ₹ 2306

MTP March 22

(19) Find the Paasche's Index number for prices from the following

Commodity	Base Year		Current Year	
	P	Q	P	Q
A	1	6	3	5
B	3	5	8	5
C	4	8	10	6

a. 261.36 b. 265.48
c. 274.32 d. 282

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MTP June 22

(20) The simple index number for the current year using simple aggregate method for the following ☆ data

Commodity base	Base year Price (P0)	Current Year Price (P1)
Wheat	80	100
Rice	100	150
Gram	120	250
Pulses	200	300

a. 200 b. 150
c. 240 d. 160

MTP June 22

(21) The cost-of-living index number in year 2015 and 2018 were 97.5 and 115 respectively. The salary of CA Jitendra in 2015 was 195000. How much additional salary was required for him in 2018 to maintain the same standard of living as in 2015?

a. 35,000
b. 40,000
c. 35,000
d. 45,000

MTP Dec 22 – Series I

(22) Consumer Price Index Number goes up from 100 to 200 and salary of a worker is also raised ☆ from 300 to 500, then Real Wage is

a. 300 b. 250
c. 600 d. 350

MTP Dec 22 – Series I

(23) In the data group, Bowley's and Laspyre's index ☆ number is as follows. Bowley's index number is 150, Laspyre's index number is 180 then Paasche's index number is

a. 120 b. 30
c. 165 d. None of these

MTP Dec 22 – Series I

(24) The prices and quantities of 3 commodities in base and current years are as follows:

P_0	P_1	Q_0	Q_1
12	14	10	20
10	8	20	30
8	10	30	10

The Laspyre's Price Index Number is:

a. 118.13 b. 107.14
c. 120.10 d. None of these

MTP Dec 22 Series II

(25) The cost of living index number in year 2015 and 2018 were 97.5 and 115 respectively. The salary of a worker in 2015 was 19500. How much additional salary was required for him in 2018 to maintain the same standard of living as in 2015?

a. 3000 b. 4000
c. 3500 d. 4500

MTP June 2023 Series I

(26) From the following data constructed the index number by Laspeyre's method

$\sum P_1Q_1 = 100, \sum P_0Q_1 = 86,$
$\sum P_0Q_0 = 83, \sum P_1Q_0 = 106$

a. 130.36 b. 131.51
c. 130.59 d. 127.71

MTP June 2023 Series I

(27) If Fisher's index = 150 and Paasche's Index = 144, then Laspeyre's index is _____

a. 147 b. 156.25
c. 104.17 d. 138

MTP June 2023 Series I

(28) If Laspeyers index is A and Fisher's index is B. Find the value of Passche's index

a. B^2 / A b. A^2 / B
c. $A / 2B$ d. $2B / A$

Answer Key

1 a	2 a	3 a
4 c	5 a	6 d
7 d	8 c	9 c
10 c	11 a	12 c
13 b	14 b	15 a
16 c	17 d	18 b
19 a	20 d	21 a
22 b	23 a	24 b
25 c	26 d	27 b
28 a		

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