

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 $B(4, 1/3)$ is equal to
- a. $3/5$ b. $8/3$
 c. $3/4$ d. $4/3$

PYQ Nov 18

- (5) The probability that a student is not a swimmer is $1/5$ 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 $p = 1/4$ 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 $> \text{mean} + 1/2$

Note: Skewness is out of syllabus

PYQ Jan. 21

- (10) A coin with probability for heads as $1/5$ 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 no. of heads is:
- a. 1 b. 2
 c. 3 d. 4

PYQ June 22

- (13) For a binomial distribution, there may be -
- a. One mode b. Two mode
 c. Multi mode d. No mode

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

PYQ Dec 23

(16) If mean and variance of a random variable which follows the Binomial Distribution are 7 and 6 respectively, then the probability of success is:

- a. $\frac{6}{7}$ b. $\frac{36}{49}$
c. $\frac{1}{7}$ d. $\frac{1}{49}$

PYQ Dec 23

(17) If six coins are tossed simultaneously. The probability of obtaining exactly two heads are.

- a. 0.2343 b. 0.9841
c. 0.1268 d. 0.0156

PYQ Dec 23

(18) For a binomial distribution the mean and standard deviation are 10 and 3 respectively. Find the value of n.

- a. 30 b. 9
c. 90 d. 100

PYQ June 24

(19) For a binomial distribution, the variance is 0.2 and the mean is 0.6. The probability of getting 3 successes out of a trial of 5 is _____

- a. $\frac{80}{3^5}$ b. $\frac{40}{3^5}$
c. $\frac{20}{3^5}$ d. $\frac{160}{3^5}$

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 |
| 16 c | 17 a | 18 d |
| 19 a | | |

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
- never symmetrical
 - never positively skewed
 - never negatively skewed
 - symmetrical when $p = 0.5$

MTP May 19 Series II

- (10) The max. value of the variance of binomial distribution with parameters n and p is
- $n/2$
 - $n/4$
 - $np(1-p)$
 - $2n$

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
- $(n_1 + n_2), p$
 - $(n_1 - n_2), p$
 - $(n_1 + n_2), 2p$
 - None of these

MTP Nov 19

- (12) Five coins tossed 3200 times. The number of times 5 heads appeared is.
- 500
 - 1200
 - 200
 - 100

MTP May 20

- (13) Find the probability of a success for the binomial distribution satisfying the following relation $4P(x=4) = P(x=2)$ and having the parameter n as six.
- $1/3$
 - $1/2$
 - $1/5$
 - $1/8$

MTP May 20

- (14) An experiment succeeds thrice as often as it fails. If the experiment is repeated 5 times, what is the probability of having no success at all?
- $1/1023$
 - $1/1024$
 - $1/1005$
 - $1/1008$

MTP Nov 20

- (15) The overall percentage of failures in a certain examination was 30. What is the probability that out of a group of 6 candidates at least four passed the examination?
- 0.747331
 - 0.757331
 - 0.76991
 - 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?
- $5/64$
 - $7/64$
 - $7/128$
 - $21/128$

MTP Nov 20

- (17) The Binomial Distribution for which mean = 15 and variance = 6.0 is
- ${}^{25}C_x (3/5)^x (2/5)^{25-x}$
 - ${}^{25}C_x (2/5)^x (3/5)^{25-x}$
 - ${}^{25}C_x (2/5)^x (3/5)^{1-x}$
 - ${}^{25}C_x (3/5)^x (2/5)^{1-x}$

MTP Nov 20

- (18) The SD of a binomial distribution with parameter n and p is
- $n(1-p)$
 - $np(1-p)$
 - np
 - $\sqrt{np(1-p)}$

MTP Nov 20

- (19) Bivariate Data are the data collected for
- Two variables
 - More than two variables
 - Two variables at the same point of time
 - 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.
- 5 and 6
 - 5.5
 - 5
 - 6

MTP Apr 21

- (21) The mean of a binomial distribution with parameter n and p is
- $n(1-p)$
 - $np(1-p)$
 - np
 - $\sqrt{np(1-p)}$

MTP Apr 21

- (22) The Binomial distribution $n = 9$ and $p = 1/3$. What is the value of the variance?
- 8
 - 4
 - 2
 - 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
- $(n_1 + n_2), p$
 - $(n_1 - n_2), p$
 - $(n_1 + n_2), 2p$
 - None of these

MTP Nov 21

- (24) An example of a bi-parametric discrete Probability distribution is
- Binomial distribution
 - Poisson Distribution
 - Normal Distribution
 - 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
- $1/3$
 - $2/3$
 - $6/4$
 - $4/3$

MTP Oct 21

- (26) The variance of a binomial distribution with parameters n and p is
- $np^2(1-p)$
 - $\sqrt{np(1-p)}$
 - $np(1-q)$
 - $n^2p^2(1-p)^2$

MTP March 22

- (27) What is the probability of getting 3 heads if 6 unbiased coins are tossed simultaneously?
- 0.3125
 - 0.25
 - 0.6825
 - 0.50

MTP March 22

- (28) The mode of the binomial distribution for which the mean is 4 variance 3 is equal to ?
- 4
 - 4.5
 - 4.25
 - 4.1

MTP March 22

- (29) If a variate x has, mean > variance, then the distribution will be _____
- Binomial Distribution
 - Poisson Distribution
 - Normal Distribution
 - T-Distribution

MTP June 22

- (30) In a Binomial distribution $n = 9$ and $p = 1/3$. What is the value of Variance.
- 8
 - 4
 - 2
 - 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 respectively:
- Not Valid
 - Valid
 - Both A and B
 - 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 :
- $1 - \left[\frac{5}{2}\right] \left[\frac{3}{4}\right]^6$
 - $1 - \frac{15}{2} \left[\frac{3}{4}\right]^6$
 - $1 - \frac{5}{6}, 3^5$
 - $1 - \left[\frac{3}{4}\right]^6$

MTP Dec 22 Series II

- (33) If mean and variance are 5 and 3 respectively then relation between p and q is :
- $p > q$
 - $p < q$
 - $p = q$
 - p is symmetric

MTP Dec 22 Series II

- (34) If a coin is tossed 5 times then the prob. of getting Tail and Head occurs alternatively is:
- $1/8$
 - $1/16$
 - $1/32$
 - $1/64$

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:
- $\left(\frac{4}{5}\right)^5 \left(\frac{1}{5}\right)$
 - ${}^5C_1 \left(\frac{1}{5}\right)^4 \left(\frac{4}{5}\right)$
 - ${}^5C_4 \left(\frac{4}{5}\right)^4 \left(\frac{1}{5}\right)$
 - None of these

MTP June 2023 Series I

- (36) The Standard Deviation of Binomial distribution is:
- Npq
 - \sqrt{npq}
 - Np
 - \sqrt{np}

MTP Dec 2023 Series I

- (37) A random variable x follows Binomial Distribution With $E(x) = 2$ and $V(x) = 1.2$, then the value of n is
- 8
 - 2
 - 5
 - None of these

MTP Dec 2023 Series I

If x is binomial variate with parameter 15 and $1/3$, what is mode of the distribution?

- a. 5 and 6 b. 5
c. 5.50 d. 6

MTP Dec 2023 Series I

When ' p ' is large than 0.5, the Binomial Distribution is

- a. Asymmetrical b. Symmetrical
c. Both d. None of these

MTP Dec 2023 Series I

A die is thrown 100 times if getting an even number is considered a success then the variance number of success.

- a. 50 b. 25
c. 10 d. 100

MTP Dec 2023 Series II

The standard deviation of Binomial distribution is

- a. npq b. \sqrt{npq}
c. np d. \sqrt{np}

MTP Dec 2023 Series II

In Binomial distribution $n = 9$ and $P = 1/3$, what is the value of variance:

- a. 8 b. 4
c. 2 d. 16

MTP June 24 Series I

The overall percentage of failure in a certain examination is 0.30. What is the probability that out of a group of 6 candidates at least 4 passed the examination?

- a. 0.74 b. 0.71
c. 0.59 d. 0.67

MTP June 24 Series I

For binomial distribution $E(x) = 2, V(x) = 4/3$. Find the value of n .

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

MTP June 24 Series I

Parameter is a characteristic of:

- a. Population
b. Sample
c. Probability distribution
d. Both (a) & (b)

MTP June 24 Series II

(46) If mean & 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 June 24 Series II

(47) Find the variance of binomial distribution with $n = 10, p = 0.3$

- a. 2.1 b. 3
c. 7 d. None of these

MTP June 24 Series III

(48) When $p = 0.5$, the binomial distribution is

- a. Asymmetrical. b. Symmetrical.
c. Both of above. d. None of above

MTP June 24 Series III

(49) If mean and standard deviation of a binomial distribution is 10 and 2 respectively; q will be

- a. 1 b. 0.8
c. 0.6 d. 0.4

MTP Sep 24 Series I

(50) A random variable X follows Binomial Distribution With $E(x) = 2$ and $V(x) = 1.2$, then the value of n is

- a. 8 b. 2
c. 5 d. None of these

MTP Sep 24 Series I

(51) When ' p ' is large than 0.5, the Binomial Distribution is:

- a. Asymmetrical b. Symmetrical
c. Both d. None Of these

MTP Sep 24 Series I

(52) A die is thrown 100 times if getting an even number is considered a success then the variance number of success.

- a. 50 b. 25
c. 10 d. 100

MTP Sep 24 Series II

(53) If x is a binomial variable with parameters n and p , then x can assume

- a. any value between 0 and n .
b. any value between 0 and n , both inclusive.
c. any whole number between 0 and n , both inclusive.
d. any number between 0 and infinity.

MTP Sep 24 Series II

(54) X is a binomial variable such that $2 P(X=2) = P(X=3)$ and mean of X is known to be $10/3$. What would be the probability that X assumes at most the value 2?

- a. $16/81$ b. $17/81$
c. $47/243$ d. $46/243$

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
37 c	38 b	39 a
40 b	41 b	42 c
43 a	44 d	45 a
46 b	47 a	48 b
49 d	50 c	51 a
52 b	53 c	54 b

Poisson Distribution

Past Year Questions

PYQ May 18

(1) X is a Poisson variate satisfying the following condition $9P(X=4) + 90P(X=6) = P(X=2)$. What is the value of $P(X \leq 1)$?

- 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}

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-parametric 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) For a Poisson distributed variable X , we have $P(X=7) = 8P(X=9)$, 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 $(\text{Mean} + \text{S.D.}) = 6/25$ 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?
- Poisson
 - Normal
 - Binomial
 - 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? ($e^{-2.4} = 0.0907$)
- | | |
|---------|---------|
| a. 0.49 | b. 0.39 |
| c. 0.37 | d. 0.43 |

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
- | | |
|---------------|------|
| 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 |

PYQ June 24

- (22) The mean of Poisson distribution is 4. The probability of two-successes is _____.
- | | |
|---------------------|--------------------|
| a. $\frac{8}{e^4}$ | b. $\frac{4}{e^4}$ |
| c. $\frac{16}{e^4}$ | d. $\frac{8}{e^2}$ |

PYQ June 24

- (23) A company produces 5 defective items out of 300 items. The probability distribution follows
- Binomial distribution
 - Normal distribution
 - Poisson distribution
 - Standard normal distribution

PYQ Sep 24

(24) If a random variable X follows Poisson distribution such that $P(X=1) = P(X=2)$, then the mean of the distribution is:

- a. 1
b. 2
c. 0
d. $1/2$

PYQ Sep 24

(25) The number of accidents in a year attributed to taxi drivers in a locality follows Poisson distribution with average 2. Out of 500 taxi drivers of that area, what is the number of drivers with at least 3 accidents in a year? (Given that $e = 2.718$)

- a. 180
b. 162
c. 201
d. 190

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
22 a	23 c	24 b
25 b		

Poisson Distribution

Mock Test Paper Questions

MTP May 18

- (1) Which one is not a condition of Poisson model
- the probability of having failures in a small time interval is constant
 - the probability of having success more than one in a small time interval is very small
 - the probability of having success in this time interval is independent of time 't' as well as earlier success
 - the probability of having success in a small time interval ($t, t+dt$) 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?
- Binomial
 - Poisson
 - Normal
 - 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

- Normal distribution
- Poisson distribution
- Binomial distribution
- Standard normal distribution

MTP May 20

(6) If for a Poisson variable X , $f(2) = 3f(4)$, what is the variance of X ?

- a. 2
b. 4
c. $\sqrt{2}$
d. 3

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 them is same.

- Mean and variance
- Mean and SD
- Both (a) & (b)
- None of these

MTP Nov 21

(9) Number of defects in clothes a garments showroom will form a

- Poisson distribution
- Normal distribution
- Binomial distribution
- 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, mean and standard deviation are equal
- a. mean and standard deviation are equal
b. mean and variance are equal.
c. SD 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/ RTP Sep 24

- (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

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

MTP Dec 2023 Series II

- (25) Which of the following is uni-parametric distribution
- a. Poisson
b. Normal
c. Binomial
d. Hyper geometric

MTP Dec 2023 Series II

- (26) The probability that a man aged 45 years will die within a year is 0.012. What is the probability that of 10 men, at least 9 will reach their 46th birthday? [Given $e^{-0.12} = 0.88692$]
- a. 0.0935 b. 0.9934
c. 0.9335 d. 0.9555

MTP June 24 Series I

- (27) In a certain manufacturing process, 5% of the tools produced turn out to be defective. Find the probability that in a sample of 40 tools, at most 2 will be defective: Given: $e^{-2} = 0.135$
- a. 0.555 b. 0.932
c. 0.785 d. 0.675

MTP Dec 2023 Series II

- (28) If standard deviation of a Poisson distribution is 2, then its Mode
- a. 2 b. 4
c. 3 and 4 d. 5

MTP June 24 Series II

- (29) In 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

MTP June 24 Series III

- (30) In _____ distribution, mean = variance.
- a. Normal b. Binomial
c. Poisson d. none of these

MTP June 24 Series III

- (31) 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 Sep 24 Series I

- (32) The mean of Poisson distribution is 4. The probability of two-successes in
- a. $8/e^4$ b. $4/e^4$
c. $16/e^4$ d. $8/e^2$

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
25 a	26 b	27 d
28 c	29 d	30 c
31 a	32 a	

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 $\phi(1)$ 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

If the points of inflexion of a normal curve are 40 & 60 respectively, then mean deviation is:

- a. 8
b. 45
c. 50
d. 60

PYQ Nov. 19

Area under $\mu \pm 3\sigma$

- a. 99.73%
b. 99%
c. 100%
d. 99.37%

PYQ Nov. 19

What is the mean and SD

x 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

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

PYQ Nov. 20

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

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

In normal distribution, Mean, Median and Mode are:

- a. Zero
b. Not Equal
c. Equal
d. Null

PYQ July 21

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 $\phi(1.33) = 0.9082, \phi(0) = 0.5$)?

- a. -0.4082
b. 0.5
c. 0.4082
d. -0.5

PYQ Dec. 21

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

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

Skewness of Normal Distribution is:

- a. Negative
b. Positive
c. Zero
d. Undefined

PYQ Dec 22

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 95 km/hr.?

Given $P(Z > 1.28) = 0.1003$

- a. 0.1003
b. 0.38
c. 0.49
d. 0.278

PYQ Dec 23

In a Standard Normal distribution, then the value of the mean (μ) and SD (σ) is:

- a. $\mu = 0, \sigma = 0$
b. $\mu = 0, \sigma = 1$
c. $\mu = 1, \sigma = 0$
d. $\mu = 1, \sigma = 1$

PYQ Dec 23

If 'x' and 'y' are independent normal variate with mean and SD μ_1, μ_2 and σ_1, σ_2 respectively, then for $z = x + y$ which also follows normal distribution mean and SD are:

- a. Mean = $\mu_1 + \mu_2, SD = \sqrt{\sigma_1^2 + \sigma_2^2}$
b. Mean = $(\mu_1 + \mu_2) / 2, SD = \sqrt{\sigma_1^2 + \sigma_2^2} / 2$
c. Mean = $\mu_1 - \mu_2, SD = \sqrt{\sigma_1^2 + \sigma_2^2}$
d. Mean = $(\mu_1 - \mu_2) / 2, SD = \sqrt{\sigma_1^2 + \sigma_2^2} / 2$

PYQ June 24

- (20) For a normal distribution, the ratio of mean deviation to the standard deviation is ____
- a. 0.4 b. 0.6
c. 0.8 d. 1.0

PYQ Sep 24

- (21) In a class of 100 students, the mean marks was 50 with Standard deviation 14.9. Assuming the distribution of marks to be normal, find the number of students who obtained more than 70% marks (at $Z = 1.34$, area = 0.4099).
- a. 9 b. 10
c. 8 d. 7

PYQ Sep 24

- (22) Quartile deviation of a normal distribution with Mean of 10 and SD of 4 is:
- a. 3.20 b. 2.70
c. 0.675 d. 6.75

PYQ Sep 24

- (23) If X and Y are 2 independent normal variables with mean as 10 and 12 and Standard Deviation (S.D) as 3 and 4 respectively, then $(X + Y)$ is normally distributed with:
- a. Mean = 22 and S.D = 25
b. Mean = 22 and S.D = 7
c. Mean = 22 and S.D = 5
d. Mean = 22 and S.D = 49

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	18 b
19 a	20 c	21 a
22 b	23 c	

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.

MTP Nov 18

- (6) If X is normal variate with mean 6 and variance 16 then the value of the probability. $P(2 \leq x \leq 10)$ is equal to.
- a. $2P(2 \leq x \leq 10)$
b. $2P(6 \leq X \leq 10)$
c. $P(0 \leq x \leq 6)$
d. $3P(6 \leq x \leq 10)$

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 & 60 respectively, then its mean deviation
- a. 8 b. 45

d. 60

50

MTP May 19

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

The mean deviation about median of a standard normal variate is

- a. 0.675σ b. 0.675
 c. 0.80σ d. 0.80

MTP May 19 Series II

If the points of inflexion of a normal curve are 40 and 60 respectively, then its mean deviation

- a. 8 b. 45
 c. 50 d. 60

MTP May 19 Series II

What is the first quartile of X having the following probability density function?

$$f(x) = \frac{1}{4\sqrt{72\pi}} e^{-\frac{(x-10)^2}{72}} \text{ for } -\infty < x < \infty$$

- a. 4 b. 5
 c. 5.95 d. 6.75

MTP Nov 19

For the normal distribution density function

$$f(x) = k.e^{-\frac{(x^2-6x+9)}{8}}, \text{ the mean and variance are.}$$

- a. 2:3 b. 3:2
 c. 4:5 d. 3:4

MTP Nov 19

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

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 $P(x \geq 60)$? [Given $\phi(1) = 0.8413$]

- a. 0.20 b. 0.40
 c. 0.16 d. 0.30

MTP May 20

(20) 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 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
- One
 - 50%
 - 0.50
 - 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
- 119.35, 190.65
 - 119.65, 180.35
 - 180.35, 119.65
 - 123.45, 183.65

MTP Nov 21

- (27) The normal curve is
- Positively skewed
 - Negatively skewed
 - Symmetrical
 - All these

MTP Nov 21

- (28) For a normal distribution $Q_1 = 54.32$ and $Q_3 = 78.86$, then the median of the distribution is
- 12.17
 - 39.43
 - 66.59
 - None of these

MTP Nov 21

- (29) What is the mean of X having the following

$$\text{density function } f(x) = \frac{1}{4\sqrt{2\pi}} e^{-\frac{(x-10)^2}{32}} \text{ for}$$

$$-\infty < x < \infty$$

- 10
- 4
- 40
- None of these

MTP Oct 21/ MTP Sep 24 II

- (30) What is the first quartile of X having the following probability density function?

$$f(x) = \frac{1}{\sqrt{72\pi}} e^{-\frac{(x-10)^2}{72}} \text{ for } -\infty < x < \infty$$

- 4
- 5
- 5.95
- 6.75

MTP Oct 21

- (31) If the points of inflexion of a normal curve are 40 and 60 respectively, then its mean deviation

- 8
- 45
- 50
- 60

MTP Oct 21

- (32) If X follows normal distribution with $\mu = 50$ and $\sigma = 10$, what is value of $P(x \leq 60 / x > 50)$?

- 0.8413
- 0.6828
- 0.1587
- 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 $\phi(1.30) = 0.9032$]
- 740
 - 750
 - 656
 - 800

MTP Oct 21

- (34) If the mean deviation of a normal variable is 16, what is its quartile deviation?
- 10.00
 - 13.50
 - 15.00
 - 12.05

MTP March 22

- (35) An example of a bi-parametric continuous probability distribution
- Binomial
 - Poisson
 - Normal
 - Chi-square

MTP March 22

- (36) What is the mean of X having the following density function?

$$f(x) = \frac{1}{4\sqrt{2\pi}} e^{-\frac{(x-10)^2}{32}} \text{ for } -\infty < x < \infty$$

- 10
- 4
- 40
- None of these

MTP June 22

- (37) The variance of standard normal distribution

- 1
- 0
- σ^2
- 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.

- 37
- 49
- 43
- 45

MTP Dec 22 - Series II

- (39) What is the mean of X having the following density function?

$$f(x) = \frac{1}{4\sqrt{2\pi}} e^{-\frac{(x-10)^2}{32}} \text{ for } -\infty < x < \infty$$

- 4
- 10
- 40
- None of these

MTP Dec 22 Series II

- (40) Area between -1.96 to +1.96 in a normal distribution is:

- 95.45%
- 95%
- 96%
- 99%

MTP June 2023 Series I

Skewness of Normal Distribution is –

- a. Negative b. Positive
c. Zero d. Undefined

MTP June 2023 Series I

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 SD

- 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

MTP Dec 2023 Series I

(47) The mean deviation about median of standard normal variate is

- a. 0.675σ b. 0.675
c. 0.80σ d. 0.80

MTP Dec 2023 Series I

(48) If the Quartile Deviation of a normal distribution with mean 10 and SD 4 is

- a. 0.675 b. 67.50
c. 2.70 d. 3.20

MTP Dec 2023 Series I

(49) If the two Quartiles $N(\mu, \sigma^2)$ are 14.6 and 25.4 respectively. What is the standard deviation of the distribution?

- a. 9 b. 6
c. 10 d. 8

MTP Dec 2023 Series II

(50) The wages of workers of a factory follows

- a. Binomial distribution
b. Poisson distribution
c. Normal distribution
d. Chi-square distribution

MTP Dec 2023 Series II

(51) If the inflexion points of a Normal Distribution are 6 and 14. Find its SD?

- a. 4 b. 6
c. 10 d. 12

MTP Dec 2023 Series II

(52) 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

MTP Dec 2023 Series II

(53) An approximate relation between quartile deviation (QD) and standard deviation (S.D.) of normal distribution is:

- a. $5QD = 4SD$ b. $4QD = 5SD$
c. $2QD = SD$ d. $3QD = 2SD$

MTP Dec 2023 Series II

(54) Which of the following is not a characteristic of a normal probability distribution?

- a. Mean of the normally distributed population lies at the centre of its normal curve.
b. It is multi-modal
c. The mean, median and mode are equal
d. It is a symmetric curve.

MTP June 24 Series I

(55) The Interval $(\mu - 3\sigma, \mu + 3\sigma)$ covers

- a. 95% area of normal distribution
b. 96% area of normal distribution
c. 99% area of normal distribution
d. All but not 0.27% area of a normal distribution

MTP June 24 Series II

(56) 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. 4 b. 10
c. 40 d. None of these

MTP June 24 Series II

- (57) If the mean deviation of a normal variable is 16, what is its quartile deviation?
a. 10 b. 13.50
c. 15 d. 12.50

MTP June 24 Series III

- (58) 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 June 24 Series III

- (59) 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 June 24 Series III

- (60) In a normal distribution skewness is ____
a. 0 b. > 3
c. < 3 d. < 1

MTP June 24 Series III

- (61) The wages of workers of a factory follows
a. One
b. 50 percent
c. 0.50
d. any value between 0 and 1

MTP June 24 Series III

- (62) The points of inflexion of the normal curve
 $f(t) = \frac{1}{4\sqrt{2\pi}} e^{-\frac{(t-10)^2}{32}}$ are
a. 6, 14 b. 5, 15
c. 4, 16 d. none of these

MTP Sep 24 Series I

- (63) The mean deviation about median of standard normal variate is
a. 0.675σ b. 0.675
c. 0.80σ d. 0.80

MTP Sep 24 Series I

- (64) If the Quartile Deviation of a normal distribution with mean 10 and SD 4 is
a. 0.675 b. 67.50
c. 2.70 d. 3.20

MTP Sep 24 Series I

- (65) If the two Quartiles $N(\mu, \sigma^2)$ are 14.6 and 25.4 respectively. What is the standard deviation of the distribution?
a. 9 b. 6
c. 10 d. 8

MTP Sep 24 Series II

- (81) The probability density function of a normal variable x is given by

a. $f(x) = \frac{1}{\sqrt{2\pi}} e^{-\frac{1}{2}\left(\frac{x-\mu}{\sigma}\right)^2}$ for $-\mu < x < \mu$.

b. $f(x) = \frac{1}{\sigma\sqrt{2\pi}} e^{-\frac{(x-\mu)^2}{2\sigma^2}}$ for $-\mu < x < \mu$.

c. $f(x) = \frac{1}{\sqrt{2\pi}} e^{-\frac{(x-\mu)^2}{2\sigma^2}}$ for $-\mu < x < \mu$

- d. None of these

MTP Sep 24 Series II

- (83) ☆ The average weekly food expenditure of a group of families has a normal distribution with mean ₹ 1,800 and standard deviation ₹ 300. What is the probability that out of 5 families belonging to this group, at least one family has weekly food expenditure in excess of ₹ 2,100? Given $f(1) = 0.84$.

- a. 0.418 b. 0.582
c. 0.386 d. 0.614

MTP Sep 24 Series II

- (84) For a standard normal distribution, the points of inflexion are given by
a. $\mu - \sigma$ & $\mu + \sigma$
b. $-s$ and s .
c. -1 and 1 .
d. 0 and 1 .

MTP Sep 24 Series II

- (85) The interval $\mu - 3\sigma$ & $\mu + 3\sigma$ covers
a. 95% area of a normal distribution.
b. 96% area of a normal distribution.
c. 99% area of a normal distribution.
d. all but 0.27% area of a normal distribution

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	47 c	48 c
49 d	50 c	51 a
52 d	53 d	54 b
55 d	56 b	57 b
58 c	59 d	60 a
61 a	62 a	63 d
64 c	65 d	

CA. PRANAV POPAT