Daily Practice Problem

✓ Test Your Knowledge after Each Lecture

✓ Develop Your Thinking Ability to Solve New Challenging Questions

✓ Evaluate your Concept Retention on Daily Basis

✓ Develop Speed and Accuracy to solve questions in less Time & Space

✓ Prepare yourself for Exam Environment

"Practice leads to perfection and perfection leads to succession"

DPP-1
Time Value of Money

1. Find the compound interest on Rs. 2,000 at 5% per annum, compounded yearly for $2\frac{1}{2}$ years.

   (a) Rs. 250   (b) Rs. 250.50

   (c) Rs. 260.12   (d) None of these

2. If the compound interest on a certain cum for 2 years at 3% be Rs. 101.50, that would be the S.I?

   (a) Rs. 100   (b) Rs. 200

   (c) Rs. 300   (d) None of these

3. The difference between the compound interest and the Simple Interest on a certain sum of money at 5% per annum for 2 years is Rs. 1.50. Find the sum.

   (a) Rs. 500   (b) Rs. 700

   (c) Rs. 600   (d) None of these

4. A man borrowed Rs. 20,000 from a money tender but he could not repay the amount for a period of 4 years. According the money lender's demand showed Rs. 26,500 due from him. At what rate percent annum compound interest did the money lender lend his money?

   (a) 7%   (b) 8%

   (c) 7.5%   (d) None of these

5. The compound interest earned by a money lender on Rs. 7,000 for 3 years if the rate of interest for 3 years are 7%, 8% and 8.5% respectively is

   (a) Rs. 1750   (b) Rs. 1800

   (c) Rs. 1776   (d) None of these

6. The rate of interest for the first 2 years is 3% per annum, for the next 3 years is 8% per annum and for the period beyond 5 years, 10% per annum. If a man gets Rs. 1520 as a simple interest for 6 years; how much money did he deposit?

   (a) Rs. 3800   (b) Rs. 3000

   (c) Rs. 4000   (d) None of these

7. Rs. 7500 is borrowed at compound interest at the rate of 4% per annum. What will be the amount to be paid after 6 months, if interest is compounded quarterly?

   (a) Rs. 7650.75   (b) Rs. 7600.50

   (c) Rs. 7000   (d) None of these

8. The compound interest on any sum at the rate of 5% for two years is Rs. 512.50. Find the sum.

   (a) Rs. 4000   (b) Rs. 5,000

   (c) Rs. 3,000   (d) None of these

9. In what rate per cent per annum will Rs. 1,000 amounts to Rs. 1331 in 3 years? The interest is compounded yearly is:

   (a) 10%   (b) 12%

   (c) 11%   (d) None of these

10. It simple interest on Rs. 2,000 increases by Rs. 40, when the time increases by 4 years. Find the rate percent per annum.

(a) 1% (b) 0.5%

(c) 2% (d) None of these

Answer Sheet

1	C	2	B	3	A	4	C	5	C
6	A	7	A	8	B	9	A	10	B

DPP-2
Time Value of Money

1. A sum of money is put at compound interest for 2 years at 20% p.a. It would earn Rs. 482 more, if the interest were payable half-yearly than it was payable yearly; then the sum is.
   (a) Rs. 20,000 (b) Rs. 25,000
   (c) Rs. 26,000 (d) None of these

2. A company sets aside a sum of Rs. 45,000 annually for 9 years to pay off a debenture issue of Rs. 5,00,000. If the fund accountable at 6% p.a., find the surplus after full redemption of the debenture issue.
   (a) Rs. 15,500 (b) Rs. 16,500
   (c) Rs. 17,500 (d) None of these

3. A person opened a savings bank account 4 months ago, which has now a balance of Rs. 21,315. If the bank pays 4.5% simple interest, how much money was deposited by him, initially?
   (a) Rs. 21,000 (b) Rs. 20,000
   (c) Rs. 15,000 (d) None of these

4. Mohan deposits Rs. 500 into an account paying 8% simple interest. He makes two more deposits of Rs. 1,000 each: first after 3 months and second after 6 months. How much will be in his account at the end of the year, if he makes no other deposits and withdrawals during the time?
   (a) Rs. 2,600 (b) Rs. 2,650
   (c) Rs. 2,640 (d) None of these

5. How long will it take Rs. 1,200 to amount Rs. 2,000 at 5% converted quarterly at Compound interest?
   (a) 10 years 3 months (b) 10 years 3 months
   (c) 10 years (d) None of these

6. A man deposits Rs. 2,000 in a bank at 4% per annum and Rs. 3,000 in UTI at 14% per annum. Find the rate of interest for the whole sum.
   (a) 10% (b) 5%
   (c) 15% (d) None of these

7. If the simple interest on Rs. 1,200 be more the interest on Rs. 1,000 by Rs. 30 in years. Find the rate percent per annum.
   (a) 7% (b) 6%
   (c) 5% (d) None of these

8. If Simple Interest on Rs. 2,000 increases by Rs. 40, when the rate percent increases by 2% per annum. Find the time (in years)?
   (a) 1 (b) 2
   (d) None of these (c) $1^{1/2}$

9. An amount of Rs. 950 is distributed among A, B & C in the ratio of 5:11:3, what is the difference between the share of B and A.
   (a) 300 (b) 340
   (c) 500 (d) None of these

10. At what rate; will a person who invests Rs. 2,000 will receive Rs. 2, 090 as simple interest in 9 months?
   (a) 5%
   (b) 6%
   (c) 10%
   (d) None of these

Answer Sheet

1	A	2	C	3	A	4	C	5	A
6	A	7	C	8	A	9	A	10	B

DPP-3
Time Value of Money

1. The time required for Rs. 5,400 to yield Rs. 216 at 6% simple interest.
   (a) 7 months   (b) 8 months
   (c) 10 months   (d) None of these

2. A person deposited a sum of Rs. 10,000 in a bank. After 2 years, he withdrew Rs. 4,000 and at the end of 5 years, he received an amount of Rs. 7,9000; then the rate of simple interest is:
   (a) 0%   (b) 5%
   (c) 10%   (d) None of these

3. The partners A and B together lent Rs 3,903 at 4% per annum interest compounded annually. After a span of 7 years, A gets the same amount as B gets after 9 years. The share of A in the sum of Rs 3,903 would have been:
   (a) Rs 1,875   (c) Rs 2,028
   (b) Rs 2,280   (d) Rs 2,820

4. If a sum triples in 15 years at simple rate of interest, the rate of interest per annum will be:
   (a) 13.0%   (c) 13.5%
   (b) 13.3%   (d) 18.0%

5. How much amount is required to be invested every year as to accumulate Rs 6,00,000 at the end of 10 years, if interest is compounded annually at 10% rate of interest [given: $(1.)^{10} = 2.59374$]
   (a) Rs 37,467   (c) Rs 37,647
   (b) Rs 37,476   (d) Rs 37,674

6. A sum of money invested of compound interest doubles itself in four years. It becomes 32 times of itself at the same rate of compound interest in
   (a) 12 years   (c) 20 years
   (b)16 years   (d) 24 years

7. A sum of Rs 44,000 is divided into three parts such that the corresponding interest earned after 2 years, 3 years and 6 years may be equal. If the rate of simple interest are 6% p.a, 8% p.a and 6% p.a respectively, then the smallest part of the sum will be:
   (a) Rs 4,000   (c) Rs 10,000
   (b) Rs 8,000   (d) Rs 12,000

8. A compound interest on a sum for 2 years is Rs 30 more than the simple interest at the rate of 5% per annum then the sum is:
   (a) Rs 11,000   (c) Rs 12,000
   (b) Rs 13,000   (d) Rs 15,000

Answer Sheet

1	B	2	B	3	C	4	B	5	C
6	B	7	B	8	B				

DPP-4
Time Value of Money

1. What is the amount of annuity if the size of the each payment is Rs. 3,000 payables at the end of each year for 3 years at an interest rate of 9% compounded annually?
   (a) Rs. 9,000
   (b) Rs. 9,800.50
   (c) Rs. 9,833.33
   (d) None of these

2. Find the present value of an annuity of Rs. 1,000 payable at the end of each year for 10 years, If the money is worth 5% effective.
   (a) Rs. 7,724
   (b) Rs. 7000
   (c) Rs. 8000
   (d) None of these

3. What annual payment will discharge a debt of Rs. 770 due in years, the rate of interest being 5% per annum?
   (a) Rs. 150
   (b) Rs. 140
   (c) Rs. 130
   (d) None of these

4. A man borrows Rs. 20,000 at interest rate 4% per annum compounded annually and agrees to pay both the principal and the interest in 10 equal instalments at the end of each year. Find the value of each instalment (approx.) (Given log 104 = 2.0170 and log 6761 = 3.8300).
   (a) Rs. 2,470
   (b) Rs. 3,470
   (c) Rs. 5,470
   (d) None of these

5. The future value of an annuity of Rs 1,000 made annually for 5 years at the interest of 14% compounded annually is: (given $(1.14)^5 = 1.92541$))
   (a) Rs 5,610
   (c) Rs 6,160
   (b) Rs 6,610
   (d) Rs 5,160

6. Mr. X bought an electronic item for Rs 1,000. What would be the future value of the same item after 2 years, if the value is compounded semiannually at 22% per annum?
   (a) Rs 1,488.40
   (c) Rs 2,008.07
   (b) Rs 1,518.07
   (d) Rs 2,200.00

7. The future value of an annuity of Rs 1,500 made annually for five years at interest rate 10% compounded annually is (given that $(1.1)^5 = 1.61051$):
   (a) Rs 9,517.56
   (c) Rs 9,715.56
   (b) Rs 9,157.65
   (d) Rs 9,175.65

8. How much amount is required to be invested every year as to accumulate Rs 7,96,870 at the end of 10 years, if interest compounded annually at 10% given that A(10,0.1) = 15.9374?
   (a) Rs 40,000
   (c) Rs 48,000
   (b) Rs 4,50,000
   (d) Rs 50,000

9. A man invests an amount of Rs 15,860 in the names of his three sons A, B and C in such a way that they get the same amount after 2, 3 and 4 years respectively. If the rate of interest is 5%, then the ratio of amount invested in the name of A, B and C is
   (a) 6 : 4 : 3
   (b) 3 : 4 : 6
   (c) 30 : 12 : 5
   (d) None of the above

10. If the difference between the compound interest compounded annually and simple interest on a certain amount at 10% per annum for two years is Rs 372, then the principal amount is
    (a) Rs 37,200   (b) Rs 37,000
    (c) Rs 37,500   (d) None of the above

11. How much will Rs 25,00 amount to in 2 years at compound interest if the rates for the successive years are 4% and 5% per year
    (a) Rs 27,300   (b) Rs 27,000
    (c) Rs 27,500   (d) Rs 27,900

Answer Sheet

1	C	2	A	3	B	4	A	5	B
6	B	7	B	8	D	9	A	10	A
11	A								

DPP-5
Time Value of Money

1. Earnings from a new machine after taxes (cost saving or profits) are expected to be Rs. 34,000 per year. The machine coats Rs. 1,50,000 and after 5 years, it has no resale value. A loan can be made for this amount payable in five equal annual Instalment at 5% p.a. on the unpaid balance of the loan. Should management buy the machine?
   (a) It should not be purchased
   (b) It should be purchased
   (c) Cannot determined
   (d) None of these

2. A company may obtain a machine either by leasing if for 5 years, (useful life) at an annul rent of Rs. 2,000 or by purchasing it for Rs. 8,100. If the company can borrow money at 10% p.a., which alternative is preferable?
   (a) Leasing is preferable   (b) Leasing is not preferable
   (c) Cannot say   (d) None of these

3. A sum of money compounded annually becomes Rs. 1,140 in two years and Rs. 1,710 in three years.Find the rate of interest per annum.
   (a) 30%   (b) 40%
   (c) 50%   (d) 60%

4. The partners A and B together lent Rs. 3,903 at 4% per annum interest compounded annually. After a span of 7 years, A gets the same amount as B gets after 9 years. The share of A in the sum of Rs. 3,903 would have been:
   (a) Rs. 1,875   (b) Rs. 2,280
   (c) Rs. 2,028   (d) Rs. 2,820

5. The future value of an annuity of Rs. 1,000 made annually for 5 years at the interest of 14% compounded annually is: (Given $(1.14)^5 = 1.92541$)
   (a) Rs. 5,610   (b) Rs. 6,610
   (c) Rs. 6,160   (d) Rs. 5,160

Answer Sheet

1	A	2	A	3	C	4	C	5	B

DPP-6

Logarithm

1. The value of $\log_3 \left(\frac{1}{81}\right)$ is
   (a) 4   (b) -4
   (c) 2   (d) -2

2. The value of $\log_{2\sqrt{2}} \left(\frac{1}{256}\right)$ is
   (a) $\frac{16}{3}$ (b) -4
   (c) 2   (d) $\frac{-16}{3}$

3. If $\log_x \sqrt{2} = \frac{1}{15}$, then value of x is
   (a) 8   (b) 32
   (c) 16   (d) 64

4. The value of $\log_a \sqrt[n]{A}$
   (a) $\frac{1}{n} \log_a A$ (b) a $\log_{y/n} A$
   (c) A $\log_N \left(\frac{1}{n}\right)$ (d) None of these

5. If $\log_{10} x = 4$, then the value of x is
   (a) 100   (b) 1000
   (c) 10000   (d) None of these

6. If $\log_x \sqrt{3} = \frac{1}{6}$ find the value of x
   (a) 9   (b) 27
   (c) 18   (d) 4374

7. If $\log_2 x + \log_4 x = 6$, then the Value of x is:
   (a) 16   (b) 32
   (c) 64   (d) 128

8. log $(1 \times 2 \times 3)$ id equal to
   (a) log 1 + log2 + log 3   (b) log 3
   (c) log 2   (d) none of these

9. If $2 \log x = 4 \log 3$, the x is equal to
   (a) -4
   (b) 9
   (c) 2
   (d) none of these

10. The value of $\log_{\sqrt{3}} 27$ is
    (a) 6
    (b) 5
    (c) 2
    (d) None

Answer Sheet

1	B	2	D	3	B	4	A	5	C
6	B	7	A	8	A	9	B	10	A

DPP-7
Logarithm

1. The value of $\log_x(0.00001) = -5$, then x is
   (a) 10
   (b) 10^2
   (c) 10^5
   (d) None of these

2. If $\log_2 x + \log_8 x + \log_{32} x = \frac{23}{15}$ then the value of x is
   (a) 8
   (b) 5
   (c) 2
   (d) None of these

3. If log 3 = 0.48 and log 7 = 0.84, then the value of the log $\frac{0.03}{0.7}$ is
   (a) -2.26
   (b) -3.36
   (c) -1.36
   (d) None of these

4. If log_{10} 12.45 = 1.0952 and log_{10} 3.79 = 0.5786, Find the value of log_{10} 124.5 + log_{10}379
   (a) 5.6738
   (b) 4.6738
   (c) 6.6738
   (d) None of these

5. If log 2 = 0.301 and log 3 = 0.477, then the value of log 225;
   (a) 2.352
   (b) 3.452
   (c) 7.452
   (d) None of these

6. If log 2 = 0.31010, log 3 = 0.04771 and log 5 = 0.6990, there log 30
   (a) 2.5717
   (b) 2.4771
   (c) 1.4771
   (d) None of these

7. If $\log_4 [\log_3 (\log_2 x)] = 0$; then value of x is
   (a) 16
   (b) 32
   (c) 4
   (d) None of these

8. If $\log_2[\log_3 \sqrt{y}] = 1$ then y =?
   (a) 27
   (b) 81
   (c) 343
   (d) none

9. If $A = \log_2 \log_2 \log_4 256 + 5 \log_{\sqrt{2}} 2$, then A equals:
   (a) 12
   (b) 13
   (c) 11
   (d) none

Answer Sheet

1	A	2	C	3	C	4	B	5	A
6	C	7	A	8	B	9	C		

DPP-8
Logarithm

1. If $\log_e 2 \times \log_x^{625} = \log_{10} 16 \times \log_e 10$, then x
   (a) 7   (b) 5
   (c) 8   (d) None of these

2. The value of $\frac{\log_{10} 4}{\log_{10} 8}$
   (a) $\frac{1}{3}$ (b) $\frac{4}{3}$
   (c) $\frac{2}{3}$ (d) None of these

3. If $a^x - b^y = c^2$ and x, y, z are in G.P. then log a, log b and log c are in
   (a) A.P.   (b) G.P.
   (c) A.P and G.P. both   (d) None of these

4. The value of $3^{2-\log_3 6}$ is
   (a) $\frac{9}{5}$ (b) $\frac{3}{2}$
   (c) $\frac{9}{4}$ (d) None of these

5. The value of $a^{\log_a x}$ is
   (a) x   (b) log,x
   (c) x^2 (d) 4374

6. The value of $\log_5 \sqrt{5\sqrt{5\sqrt{5 \dots \dots to \infty}}}$ is
   (a) 0   (b) 1
   (c) 2   (d) none

7. If $\log \frac{a+b}{2} = \frac{1}{2}(\log a + \log b)$ the value of $a^2 b^2$ is.
   (a) 6ab   (b) 8ab
   (c) $6a^2 6^2$ (d) None of these

8. $\log_7 \log_3 \sqrt{3(\sqrt{3\sqrt{3}})}$ equals:
   (a) $3 \log_2 7$ (b) $1 - 3 \log_3 7$
   (c) $1 - 3 \log_7 2$ (d) none of these

9. If $\log(a) = \frac{1}{2}\log(b) = \frac{1}{5}\log c$ loge the value of $a^4 b^3 c^{-2}$ is
   (a) 0   (b) 1
   (c) -1   (d) None

10. If abc $= 2$, then the value of $\dfrac{1}{1+a+2b^{-1}} + \dfrac{1}{1+\frac{1}{2}b+c^{-1}} + \dfrac{1}{1+c+a^{-1}}$ is:

(a) 1 (b) 2

(c) 3 (d) $\dfrac{1}{2}$

Answer Sheet

1	B	2	C	3	B	4	B	5	A
6	B	7	A	8		9	B	10	A

DPP-9
Logarithm

1. For what value of x, the equation $\left(\log_{\sqrt{x}} - 2\right)^2 = \log_x 2$ is true?

   (a) 16   (b) 32
   (c) 8   (d) 4

2. The value of $\log_4 9 . \log_3 2$ is:

   (a) 3   (b) 9
   (c) 2   (d) 1

3. Value of $\frac{1}{\log_3^{60}} + - \frac{1}{\log_4^{60}} + \frac{1}{\log_5^{60}}$ is:

   (a) 0   (b) 1
   (c) **5**   (d) 60

4. If $\log_4(x^2 + x) - \log_4(x + 1) = 2$, then the value of X is:

   (a) 2   (b) 3
   (c) 16   (d) 8

5. If $\log x = a + b$, $\log y = a - b$ then the value of $\log \frac{10x}{y^2} =$ _____.

   (a) 1 - a + 3b   (b) a -1 + 3b
   (c) a + 3b + 1   (d) 1 - b + 3a

Answer Sheet

1	A	2	D	3	B	4	C	5	A

DPP-10
Sequence & Series

1. Find the sum of n terms of the given series
   (a) $2^n - n - 1$
   (b) $1 - 2^{-n}$
   (c) $n + 2^{-n} - 1$
   (d) 2^{n-1}

2. The sum of n terms of an A. P. is $3n^2 + n$; then its pth term is
   (a) $6P + 2$
   (b) $6P - 2$
   (c) $6P - 1$
   (d) None of these

3. Find the sum of n terms of the series $1 + 9 + 24 + 46 + 75 + \dots\dots\dots$
   (a) $\dfrac{n(n+1)(7n-4)}{6}$
   (b) $\dfrac{n(2n+1)(4n-3)}{6}$
   (c) $\dfrac{n(2n+1)(2n-3)}{6}$
   (d) None of these

4. The sum of first n odd numbers is
   (a) n^2
   (b) $(2n-1)^2$
   (c) $(n+1)^2$
   (d) None of these

5. If the common difference of an A.P. equals to the first term, then the ratio of its mth term and nth term is:
   (a) n:m
   (b) m:n
   (c) $m^2:m^2$
   (d) None of these

6. The sum of the following series $4 + 44 + 444 + \dots\dots\dots$ In n terms is:
   (a) $\dfrac{4}{9}\left[\dfrac{10(10^n-1)}{9} - n\right]$
   (b) $\dfrac{4}{9}\left[\dfrac{10(10^n-1)}{9} - n\right]$
   (c) $\dfrac{10(10^n-1)}{9} + n$
   (d) None of these

7. If the sum of first n terms of on A.P.'s Zero, then the sum of next in terms, where a is the first term of the A.P. is
   (a) $\dfrac{-am}{(m+n)(n-1)}$
   (b) $\dfrac{-am(m+n)}{n-1}$
   (c) $\dfrac{am(m+n)}{n-1}$
   (d) None of these

8. In the sequence (x_n) where $x_n = \dfrac{195}{4n!} - \dfrac{^{n+3}P_3}{(n+1)!}$ & $n \in N$, the set of natural numbers. The number of positive terms is
   (a) 1
   (b) 2
   (c) 4
   (d) 5

9. If S_n be the sum of n terms of an A.P; the value of $S_n - 2S_{n-1} + S_{n-2}$ is
   (a) d
   (b) d^2
   (c) cannot calculated
   (d) None of these

10. If the sum of n terms of an A.P be $2n^2 + 5n$, then its 'nth' term is:
   (a) 4n – 2   (b) 3n - 4
   (c) 4n + 3   (d) 3n + 4

Answer Sheet

1	C	2	B	3	A	4	A	5	B
6	A	7	B	8	A	9	A	10	C

DPP-11
Sequence & Series

1. First, second and last terms of a finite A.P. are m, n and 2m respectively, then sum of series is
   (a) $\frac{3mn}{2(n-m)}$
   (b) $\frac{3mn}{n-1}$
   (c) $\frac{3mn}{2(n+m)}$
   (d) None of these

2. The first and fifth term of an A.P. of 40 terms are -29 & -15 respectively. Find the sum of all positive terms of this A.P.
   (a) 1605
   (b) 1705
   (c) 1805
   (d) None of these

3. If m^{th} term of an A.P. is $\frac{1}{n}$ and n^{th} term is $\frac{1}{m}$, then sum of mm terms is –
   (a) mn+1
   (b) $\frac{1}{2}$(mn-1)
   (c) $\frac{1}{2}$(mn+1)
   (d) None of these

4. If the mth term of A.P. is $\frac{1}{n}$ and the nth term is $\frac{1}{m}$, then its mn^{th} term is:
   (a) 1
   (b) -1
   (c) 0
   (d) None of these

5. Find the value of 1 + 2 + 3 .... + 105
   (a) 5000
   (b) 5560
   (c) 5565
   (d) None of these

6. The Arithmetic Mean between two numbers is 15 and their G.M. is 9; then the numbers are –
   (a) 27,3
   (b) 9,9
   (c) 16, 9
   (d) None of these

7. The first term of an A. P. is 100 and the sum of whose first 6 terms is 5 times the sum of the next 6 terms, then the c.d. is –
   (a) -10
   (b) 10
   (c) 5
   (d) None of these

8. The sum of first m terms of an A. P. is same as the sum of first n terms; where m¹ n; then the sum of first (m+n) terms is:
   (a) 0
   (b) 1
   (c) -1
   (d) None of these

9. Which term of the sequence, $\frac{-9}{4}$, -2, $\frac{-7}{4}$, ... is zero.
   (a) 9ᵗʰ term
   (b) 10ᵗʰ term
   (c) 12ᵗʰ term
   (d) None of these

10. If 6 times of 6th term of an A.P. is equal to 15 times the 15th term, then its 21st terms.

    (a) 1   (b) -1

    (c) 0   (d) None of these

Answer Sheet

1	A	2	B	3	C	4	A	5	C
6	A	7	A	A	B	9	B	10	C

DPP-12
Sequence & Series

1. The product of n G.M.s between the two given numbers is equal to the a power of the single G.M. between them. This statement is –
   (a) True
   (b) False
   (c) Cannot say
   (d) None of these

2. If x and y are positive integers such that $x + y = 1$ and $a = 1 + x + x^2 + \ldots\ldots\ldots$ to ∞, $b = 1 + y + y^2 + \ldots\ldots\ldots\ldots$ to ∞ then the value of $\frac{1}{a} + \frac{1}{b}$ is
   (a) 0
   (b) 2
   (c) 1
   (d) None of these

3. Find the sum of the series, $243 + 324 + 432 + \ldots\ldots\ldots\ldots\ldots$ In a terms
   (a) $3^6 \left(\frac{4^n}{3^n} - 1\right)$
   (b) $3^4 \left(\frac{4^n}{3^n} - 1\right)$
   (c) $3^6 \left(\frac{4^n}{3^n} - 1\right)$
   (d) None of these

4. The sum of the first eight terms of a G.P. is give times the sum of the first four terms; then the common ratio is –
   (a) $\sqrt{2}$
   (b) $-\sqrt{2}$
   (c) $\pm\sqrt{2}$
   (d) None of these

5. The 6th term from the end of the G.P. 8, 4, 2, 1, $\ldots\ldots\ldots\ldots \frac{1}{1,024}$ is
   (a) $\frac{1}{64}$
   (b) 32
   (c) $\frac{1}{32}$
   (d) None of these

6. In a finite G.P. the product of two terms equal distance from the beginning end from the end is equal to the product of the first and the last term of the G.P. This statement is
   (a) True
   (b) False
   (c) Cannot say
   (d) None of these

7. Sum the series upto n terms $\frac{1}{2.5} + \frac{1}{5.8} + \frac{1}{8.11} + \ldots\ldots\ldots$
   (a) $\frac{n}{2(3n+2)}$
   (b) $\frac{-n}{2(3n+2)}$
   (c) $\frac{n}{2(3n-2)}$
   (d) None of these

8. Which term of the series $0.004 + 0.02 + 0.1 + \ldots\ldots\ldots$ is 12.5
   (a) 5
   (b) 10
   (c) 6
   (d) None of these

9. In a G.P. the sixth term is 729 and the common difference is 3, then the first term of G.P. is:
   (a) 2   (b) 3
   (c) 4   (d) 7

10. If (p+1)th term of A.P. is twice the (q+1)th term; then the ratio of (p+q+1)th term and (3p+1)th term is:
    (a) 1:2   (b) 2:1
    (c) 1:3   (d) None of these

Answer Sheet

1	A	2	C	3	A	4	C	5	B
6	C	7	A	8	C	9	B	10	A

DPP-13
Sequence & Series

1. Let f(x) be a polynomial function of second degree and a_1, a_2, a_3 are in A.P. then $f'(a_3)$ and $f'(a_3)$ are in
   (a) A.P.
   (b) G.P.
   (c) Either A.P. or G.P.
   (d) None of these

2. If a, b, c are in G.P., a, x, b and b, y, c are both in A.P., then $\frac{a}{x} + \frac{c}{y}$ is equal to
   (a) 1
   (b) 0
   (c) 2
   (d) None of these

3. If a, b, c are in G.P., a, x, b and b, y, c are both in A.P., the value of $\frac{1}{x} + \frac{1}{y}$ is
   (a) $\frac{1}{b}$
   (b) $\frac{2}{b}$
   (c) $-\frac{2}{b}$
   (d) None of these

4. If $\frac{1}{x+y}, \frac{1}{2y}, \frac{1}{y+z}$ are in A.P., then x, y, z are in
   (a) A.P.
   (b) G.P.
   (c) Cannot determined
   (d) None of these

5. The sum of n terms of two A.P.s are in the ratio (7n+1) : (3n+2); find the sum of their 13th terms
   (a) 6:7
   (b) 16:7
   (c) 7:16
   (d) None of these

6. If one Arithmetic Mean A and G.M.s G_1 and G_2 be Inserted between any two number then $G_1^3 + G_2^3$ is equal to –
   (a) $2G_1G_2$
   (b) $2A\,G_1G_2$
   (c) $2AG_1$
   (d) None of these

7. If $\frac{a^{m+1}+a^{m+1}}{a^m+b^m}$ is the G.M. between the numbers a and b, then the value of m is
   (a) $-\frac{1}{2}$
   (b) $\frac{1}{2}$
   (c) 1
   (d) 0

8. If the pth, q^{th}, r^{th} and s^{th} terms of an A.P. are in G.P.; terms p-q, q-r and r-s are in
   (a) A.P.
   (b) G.P.
   (c) Cannot determine
   (d) None of these

9. Here are n ARITHMETIC MEANs between 3 and 31 such that the ratio of 3rd mean to (n-1) in mean is 1:3 then the value of n is
   (a) 12
   (b) 15
   (c) 13
   (d) None of these

10. How many numbers between 100 and 200 are available by 2 & 8?

(a) 12   (b) 13

(c) 9   (d) 16

Answer Sheet

1	A	2	A	3	C	4	C	5	B
6	B	7	A	8	B	9	C	10	B

DPP-14
Sequence & Series

1. Find the value of $1^3 + 2^3 + 3^3 + \ldots\ldots\ldots + 12^3$
    (a) 6804
    (b) 6048
    (c) 6084
    (d) None of these

2. The value of $3^3 + 4^3 + 5^3 + \ldots\ldots\ldots\ldots + 11^3$
    (a) 4356
    (b) 4348
    (c) 4347
    (d) 4374

3. The sum up to infinity of the series $(1 + 2^{-2}) + (2^{-1} + 2^{-4}) + (2^{-2} + 2^{-6}) + \ldots\ldots$
    (a) 7/3
    (b) 3/7
    (c) 4/7
    (d) none of these

4. The sum up to infinity of the series $4/7 – 5/7^2 + 4/7^3 – 5/7^4 + \ldots\ldots$ is
    (a) 23/48
    (b) 25/48
    (c) ½
    (d) none of these

5. If S_1, S_2, S_3 be the respectively the sum of terms of n, 2n, 3n an A.P. the value of $S_3 \div (S_2 – S_1)$ is given by _____.
    (a) 1
    (b) 2
    (c) 3
    (d) None

6. If S_1, S_2 S_3 be the sums of n terms of three A.P.s the first term of each being unity and the respective common differences 1, 2, 3 then $(S_1 + S_3) / S_2$ is _____.
    (a) 1
    (b) 2
    (c) -1
    (d) None

7. The sum of n terms of $(x + y)^2, (x^2 + y^2), (x - y)^2, \ldots\ldots$ is
    (a) $(x + y)^2 -2(n - 1)xy$
    (b) $n(x + y)^2-n(n - 1)xy$
    (c) both the above
    (d) None

8. If 'S' be the sum, 'P' the product and 'R' the sum of the reciprocals of n terms in a G.P. then 'P' is the _____ of S^n and R^{-n}.
    (a) Arithmetic Mean
    (b) Geometric Mean
    (c) Harmonic Mean
    (d) None

9. If S_1, S_2, S_3 are S_n of 3 A. P., where 'a' of all is 1 & 'd' is 1, 2, 3 resp. then $\frac{(s_1 + s_2)}{s_2}$ is.
    (a) 1
    (b) 2
    (c) 3
    (d) none of these

10. The sum of all-natural numbers from 100 to 300 which are exactly divisible by 4 or 5 is
    (a) 10200
    (b) 15200
    (c) 16200
    (d) None

Answer Sheet

1	C	2	C	3	A	4	A	5	C
6	B	7	B	8	B	9	B	10	B

DPP-15
Equations

1. If $\dfrac{x}{x+y} - \dfrac{17}{23}$, what is $\dfrac{x+y}{x-y}$ equal to
   (a) $\dfrac{11}{23}$ (b) $\dfrac{17}{32}$
   (c) $\dfrac{23}{11}$ (d) Equivalence relation

2. If $(4)^3 \times \left(\sqrt{2}\right)^8 = 2^n$, then n is
   (a) 10   (b) 12
   (c) 13   (d) None of these

3. If $\sqrt{1 + \dfrac{25}{144}} - 1 + \dfrac{x}{12}$, then x is
   (a) 1   (b) 2
   (c) 3   (d) Equivalence relation

4. Solving equation $z + \sqrt{z} = \dfrac{6}{25}$ the value of z works out to
   (a) $\dfrac{1}{5}$ (b) $\dfrac{2}{5}$
   (c) $\dfrac{1}{25}$ (d) $\dfrac{2}{25}$

5. Solving $6x + 5y - 16 = 0$ and $3x - y - 1 = 0$ we get values of x and y as
   (a) $1, 1$ (b) $1, 2$
   (c) $-1, 2$ (d) $0, 2$

6. Solving $x^2 + y^2 - 25 = 0$ and $x - y - 1 = 0$ we get the roots as under
   (a) $\pm 3 \pm 4$ (b) $\pm 2 \pm 3$
   (c) $0, 3, 4$ (d) $0, -3, -4$

7. Solving $\sqrt{\dfrac{x}{y}} + \sqrt{\dfrac{y}{x}} - \dfrac{5}{2} = 0$ and $x + y - 5 = 0$ we get the roots as under
   (a) $1, 4$ (b) $1, 2$
   (c) $1, 3$ (d) $1, 5$

8. Solving $\dfrac{1}{x^2} + \dfrac{1}{y^2} - 13 = 0$ and $\dfrac{1}{x} + \dfrac{1}{y} - 5 = 0$ we get the roots as under
   (a) $\dfrac{1}{8}, \dfrac{1}{5}$ (b) $\dfrac{1}{2}, \dfrac{1}{3}$
   (c) $\dfrac{1}{13}, \dfrac{1}{5}$ (d) $\dfrac{1}{4}, \dfrac{1}{5}$

9. Solving $x^2 + xy - 21 = 0$ and $xy - 2y^2 + 20 = 0$ we get the roots as under

    (a) $\pm 1, \pm 2$ (b) $\pm 2, \pm 3$

    (c) $\pm 3, \pm 4$ (d) None

10. Solving $x^2 + xy + y^2 = 37$ and $3xy + 2y^2 = 68$ we get the following roots

    (a) $\pm 3, \pm 4$ (b) $\pm 4, \pm 5$

    (c) $\pm 2, \pm 3$ (d) None

11. Solving $4^x . 2^y = 128$ and $3^{3x+2y} = 9^{xy}$ we get the following roots

    (a) $\dfrac{7}{4}, \dfrac{7}{2}$ (b) $2, 3$

    (c) $1, 2$ (d) $1, 3$

Answer Sheet

1	C	2	C	3	A	4	A	5	C
6	B	7	B	8	B	9	B	10	B

DPP-16
Equations

1. The sum of the digits of a two-digit number is 12. If the digits are reversed, the number is decreased by 18. Find the number.
   (a) 75
   (b) 93
   (c) 84
   (d) 57

2. One third of a number is greater then one fourth of its successor by I. find the number
   (a) 17
   (b) 16
   (c) 15
   (d) None of these

3. The sum of two numbers is 14 and their difference is 10. Find the product of the two numbers.
   (a) 24
   (b) 30
   (c) 36
   (d) None of these

4. The difference of two numbers is 11 and $\frac{1}{5}$ the of their sum is 9. The numbers are:
   (a) 31,20
   (b) 30,19
   (c) 29,18
   (d) 28,17

5. What must be subtracted from each term of the ratio 27:43 to make it equal to 7:15?
   (a) 13
   (b) 15
   (c) 17
   (d) None of these

6. Seven times a two digit number is equal to four time the number obtained by reversing the order of digits, and the sum of the digits of number is 3. Then the number is:
   (a) 13
   (b) 15
   (c) 12
   (d) None of these

7. A two-digit number is obtained by either multiplying sum of the digits by 8 and adding 1 or by multiplying the difference of the digits by 13 and adding 3. Then the number is:
   (a) 82
   (b) 41
   (c) 47
   (d) None of these

8. Find the number which when multiplied by 36 is increased by 1050.
   (a) 40
   (b) 30
   (c) 50
   (d) None of these

9. A, B and C have to distribute Rs. 1,000 between them, A and C together have Rs. 400 and B and C Rs. 700. How much does C have?
   (a) Rs. 100
   (b) Rs. 200
   (c) Rs. 150
   (d) None of these

10. The sum of two numbers is 75 and their difference is 20. Find the difference of their squares.
    (a) 1500   (b) 1600
    (c) 1550   (d) 4374

11. The sum of two numbers is 13 and the sum of their squares is 85. Find the numbers.
    (a) 7,6   (b) 8,10
    (c) 5,4   (d) 4374

12. The difference between the squares of two consecutive numbers is 37. Find the numbers.
    (a) 19, 18   (b) 20, 19
    (c) 10, 9   (d) 4374

13. The denominator of a fraction is 3 more than its numerator. If the numerator is increased by 7 and the denominator is decreased by 2, we obtain 2. The fraction is –
    (a) $\frac{3}{8}$ (b) $\frac{5}{8}$
    (c) $\frac{7}{8}$ (d) None of these

14. The numerator of the fraction is 4 less then is denominator. If the numerator is decreased by 2 and the denominator is increased by 1, then the denominator is eight times numerator. Then the fraction is.
    (a) 3/7   (b) 4/7
    (c) 9/7   (d) None of these

15. Father is six times as old as his son. Four years hence he will be four times as old as his son. Then the present ages are
    (a) 42, 8   (b) 36, 6
    (c) 40, 10   (d) None of these

16. Five years ago, I was thrice as old as my son and ten years later I shall be twice as old as my son. How old are we now?
    (a) 50,20   (b) 45,15
    (c) 65,25   (d) None of these

Answer Sheet

1	A	2	C	3	A	4	D	5	A
6	C	7	B	8	B	9	A	10	A
11	A	12	A	13	B	14	A	15	B
16	A								

DPP-17
Sequence & Series

1. Solving equation $3x^2 - 14x + 16 = 0$ we get roots as

   (a) ± 1 (b) $2 \, and \, \dfrac{8}{3}$ (c) 0 (d) None

2. Solving $9^x = 3^y$ and $5^{x+y+1} = 25^{xy}$ we get the following roots

   (a) $1, 2$ (b) $0, 1$ (c) $0, 3$ (d) $1, 3$

3. Solving equation $(b-c)x^2(c-a)x + (a-b) = 0$ following roots are obtained

   (a) $\dfrac{a-b}{b-c}, 1$ (b) $(a-b)(a-c), 1$ (c) $\dfrac{b-c}{a-b}, 1$ (d) None

4. Solving equation $7\sqrt{\dfrac{x}{1-x}} + 8\sqrt{\dfrac{1-x}{x}} = 15$ following roots are obtained

   (a) $\dfrac{64}{113}, \dfrac{1}{2}$ (b) $\dfrac{1}{50}, \dfrac{1}{65}$ (c) $\dfrac{49}{50}, \dfrac{1}{65}$ (d) $\dfrac{1}{50}, \dfrac{64}{65}$

5. Solving equation $z^2 - 6z + 9 = 4\sqrt{z^2 - 6z + 6}$ following roots are obtained

   (a) $3 + 2\sqrt{3}, 3 - 2\sqrt{3}$ (b) $5, 1$
   (c) all of above (d) None

6. Solving equation $(1+x)^{2/3} + (1-x)^{2/3} = 4(1-x^2)^{1/3}$ are, values of x

   (a) $\dfrac{5}{\sqrt{3}}$ (b) $-\dfrac{5}{\sqrt{3}}$ (c) $\pm\dfrac{5}{3\sqrt{3}}$ (d) $\pm\dfrac{15}{\sqrt{3}}$

7. Solving equation $(2x+1) + (2x+3)(x-1)(x-2) = 150$ the roots available are

   (a) $\dfrac{1 \pm \sqrt{129}}{4}$ (b) $\dfrac{7}{2}, -3$ (c) $-\dfrac{7}{2}, 3$ (d) None

8. Solving equation $z^{10} - 33z^5 + 32 = 0$ the following value of z are obtained

   (a) $1, 2$ (b) $2, 3$ (c) $2, 4$ (d) $1, 2, 3$

9. When $\sqrt{2z+1} + \sqrt{3z+4} = 7$ the value of z is given by

   (a) 1 (b) 2 (c) 3 (d) 4

10. If $\dfrac{x-bc}{d+c} + \dfrac{x-ca}{c+a} + \dfrac{x-ab}{a+b} = a+b+c$ the value of x is

    (a) $a^2 + b^2 + c^2$ (b) $a + (a+b+c)$
    (c) $(a+b)(b+c)$ (d) $ab + bc + ca$

Answer Sheet

1	B	2	A	3	A	4	A	5	
6	C	7	A	8	A	9	D	10	

DPP-18
Equations

1. If α, β are the roots of equation $x^2 - 5x + 6 = 0$ and $\alpha > \beta$ then the equation with roots $(\alpha + \beta)$ and $(\alpha - \beta)$ is
   (a) $x^2 - 6x + 5 = 0$
   (b) $2x^2 - 6x + 5 = 0$
   (c) $2x^2 - 5x + 6 = 0$
   (d) $x^2 - 5x + 6 = 0$

2. If α, β are the roots of equation $x^2 - 5x + 6 = 0$ and $\alpha > \beta$ then the equation with roots $(\alpha^2 + \beta)$ and $(\alpha + \beta^2)$ is
   (a) $x^2 - 9x + 99 = 0$
   (b) $x^2 - 18x + 90 = 0$
   (c) $x^2 - 18x + 77 = 0$
   (d) None

3. If α, β are the roots of equation $x^2 - 5x + 6 = 0$ and $\alpha > \beta$ then the equation with roots $(\alpha\beta + \alpha + \beta)$ and $(\alpha\beta - \alpha - \beta)$ is
   (a) $x^2 - 12x + 11 = 0$
   (b) $2x^2 - 6x + 12 = 0$
   (c) $x^2 - 12x + 12 = 0$
   (d) None

4. The condition that one of $ax^2 + bx + c = 0$ the roots of is twice the other is
   (a) $b^2 = 4ca$
   (b) $2b^2 = 9(c + a)$
   (c) $2x^2 = 9ca$
   (d) $2b^2 = 9(c - a)$

5. The condition that one of $ax^2 + bx + c = 0$ the roots of is thrice the other is
   (a) $3b^2 = 16ca$
   (b) $b^2 = 9ca$
   (c) $3b^2 = -16ca$
   (d) $b^2 = -9ca$

6. If the roots of $ax^2 + bx + c = 0$ are in the ratio $\dfrac{p}{q}$ then the value of $\dfrac{b^2}{(ca)}$ is
   (a) $\dfrac{(p+q)^2}{(pq)}$
   (b) $\dfrac{(p+q)}{(pq)}$
   (c) $\dfrac{(p-q)^2}{(pq)}$
   (d) $\dfrac{(p-q)}{(pq)}$

7. Roots of equation $2x^2 + 3x + 7 = 0$ are α and β. The value of $\alpha\beta^{-1} + \beta\alpha^{-1}$ is
   (a) 2
   (c) 7/2
   (b) 3/7
   (d) -19/14

8. If roots of equation $x^2 + x + r = 0$ are 'α' and 'β' and $\alpha^3 + \beta^3 = -6$. Find the value of 'r'?
   (a) $\dfrac{-5}{3}$
   (c) $\dfrac{-4}{3}$
   (b) $\dfrac{7}{3}$
   (d) 1

9. If one root of the equation $px^2 + qx + r = 0$ is r then other root of the equation will be:
   (a) 1/q   (c) 1/p
   (b) 1/r   (d) $\frac{1}{p+q}$

10. If $\alpha + \beta = -2$ and $\alpha \beta = -3$, then α, β are the roots of the equation, which is:
    (a) $x^2 - 2x - 3 = 0$ (c) $x^2 + 2x + 3 = 0$
    (b) $x^2 + 2x - 3 = 0$ (d) $x^2 - 2x + 3 = 0$

11. If α, β are the roots of the equation $x^2 + x + 5 = 0$ then $\frac{\alpha^2}{\beta} + \frac{\beta^2}{\alpha}$ is equal to

   (a) $\frac{16}{5}$ (c) 3

   (b) 2   (d) $\frac{14}{5}$

Answer Sheet

1	A	2	C	3	A	4	C	5	A
6	A	7	D	8	A	9	C	10	B
11	D								

DPP-19
Equations

1. Solving $x^3 - 6x^2 + 11x - 6 = 0$ get the following roots
   (a) $-1, -2, 3$ (b) $1, 2, -3$ (c) $1, 2, 3$ (d) $-1, -2, -3$

2. Solving $x^3 + 9x^2 - x - 9 = 0$ get the following roots
   (a) $\pm 1, -9$ (b) $\pm 1, \pm 9$ (c) $\pm 1, 9$ (d) None

3. It is being given that one of the roots is half the sum of the order two solving $x^3 - 12x^2 + 47x - 60 = 0$ get the following roots :
   (a) $1, 2, 3$ (b) $3, 4, 5$ (c) $2, 3, 4$ (d) $-3, -4, -5$

4. Solve $x^3 + 3x^2 - x - 3 = 0$ given that the roots are in arithmetical progression
   (a) $-1, 1, 3$ (b) $1, 2, 3$ (c) $-3, -1, 1$ (d) $-3, -2, -1$

5. Solve $x^3 - 7x^2 + 14x - 8 = 0$ given that the roots are in geometrical progression
   (a) ½, 1, 2   (b) $1, 2, 4$ (c) $\frac{1}{2}, -1, 2$ (d) $-1, 2, -4$

6. Solve $x^3 - 6x^2 + 5x + 12 = 0$ given that the product of the two roots is 12
   (a) $1, 3, 4$ (b) $-1, 3, 4$ (c) $1, 6, 2$ (d) $1, -6, -2$

7. Solve $x^3 - 5x^2 - 2x + 24 = 0$ given that two of its roots being in the ratio of 3:4
   (a) $-2, 4, 3$ (b) $-1, 4, 3$ (c) $2, 4, 3$ (d) $-2, -4, -3$

8. Solving $9x + 3y - 4z = 3$, $x + y = 0$ and $2x - 5y - 4z = 0$ following roots are obtained
   (a) $2, 3, 4$ (b) $1, 3, 4$ (c) $1, 2, 3$ (d) None

9. Solving $x + 2y + 2z = 0$, $3x - 4y + z = 0$ and $x^2 + 3y^2 + z^2 = 11$ following roots are obtained
   (a) $2, 1, -2$ and $-2, -1, 2$ (b) $2, 1, 2$ and $-2, -1, -2$
   (c) only $2, 1, -2$ (d) only $-2, -1, 2$

Answer Sheet

1	C	2	A	3	B	4	C	5	B
6	B	7	A	8	C	9	A		

DPP-20
Ratios

1. The sub duplicate ratio of 16:49 is
   (a) 4:7   (b) 256:2401
   (c) 4:9   (d) None of these

2. Duplicate ratio of 4:5 is
   (a) 16:25   (b) $2:\sqrt{5}$
   (c) 64:125   (d) None of these

3. Triplicate ratio of 3:5 is
   (a) 27:125   (b) 9:25
   (c) $3^{\frac{1}{5}}; 5^{\frac{1}{3}}$ (d) 125:27

4. The sub-triplicate ratio 8:125 is
   (a) 2:6   (b) 2:5
   (c) 5:2   (d) None of these

5. The value of 1.4 is
   (a) $\frac{13}{9}$ (b) $\frac{10}{9}$
   (c) $\frac{4}{9}$ (d) None of these

6. The value of 0.356 is
   (a) $\frac{256}{999}$ (b) $\frac{353}{999}$
   (c) $\frac{353}{990}$ (d) None of these

7. Find the ratio x: y: z from 2x + 3y – 5z = 0 and -3x + 2y + 7z = 0.
   (a) 10:12:13   (b) 30:2:12
   (c) 31:1:13   (d) None of these

8. Evaluate $\sqrt[4]{0.5173}$
   (a) 0.8480   (b) 0.8210
   (c) 0.6480   (d) None of these

9. The compound ratio of 4 : 3, 9 :13, 26 : 5 and 2 : 15 is
   (a) $\frac{4}{25}$ (b) $\frac{16}{25}$
   (a) $\frac{13}{9}$ (b) $\frac{10}{9}$

10. The ratio of the incomes of two persons is 9:7 and the ratio of their expenditures is
    4:3. If each of them saves Rs. 200 per month, then their monthly incomes.
    (a) Rs. 1,800, Rs. 1,400   (b) Rs. 1,600, Rs. 1,200
    (c) Rs. 1,400, Rs. 1,200   (d) None of these

11. When a number is added to another number the total becomes 150 percent of the second number. What is the ratio between the first and the second number?
    (a) 1:2   (b) 1:3
    (c) 2:3   (d) None of these

Answer Sheet

| 1	A	2	A	3	A	4	B	5	A
6	C	7	C	8	A	9	B	10	A
11	A								

DPP-21
Ratios

1. The ratio of the number of boys and girls in a school is 2:5. If there are 280 students in the school, find the number of girls in the school.
   (a) 200   (b) 250
   (c) 150   (d) None of these

2. A bag contains an equal number of one rupee, 50 paise and 25 paise coins respectively. If the total value is Rs. 35, how many coins of each type are there.
   (a) 30   (b) 20
   (c) 25   (d) None of these

3. One-third of a number is greater than one fourth of its successors by 1. Find the number.
   (a) 51   (b) 21
   (c) 15   (d) None of these

4. 1230 baskets of mangoes were loaded in three trucks. When unloaded, it was found that 5, 10 and 15 baskets were rotten in the trucks respectively, but the remaining baskets were in the ratio of 3:4:5. How many baskets were loaded initially in each truck?
   (a) 575   (b) 515
   (c) 565   (d) None of these

5. This ratio of the sum and the difference of two number is 7:1. Find the ratio of those two numbers.
   (a) 5:3   (b) 4:3
   (c) 4:5   (d) None of these

6. Two vessels contain equal quantity of mixtures of milk and water in the ratio 5:2 and 6:1 respectively. Both the mixtures are now mixed thoroughly. Find the ratio of milk to water in the new mixture so obtained.
   (a) 3:11   (b) 11:3
   (c) 12:13   (d) None of these

7. The vessels contain water and milk in the ratio 1:2 and 2:5 are mixed in the ratio 1:4. The resulting mixture will have water and milk in the ration.
   (a) 31:74   (b) 31:75
   (c) 30:77   (d) None of these

8. The ratio of two numbers is 4:1. If 5 is added to both the numbers, the ratio of the new numbers obtained becomes 3:1. Then the numbers are
   (a) 30, 20   (b) 40, 10
   (c) 20, 10   (d) None of these

9. The ratio of the money with A and B is 3:4 and that with B and C is 4:5. If A has Rs. 300, how much money does C have?
    (a) 400   (b) 300
    (c) 500   (d) None of these

10. The numbers are in the Ratio 5:6. If 5 is subtracted from each number, the ratio becomes 4:5. Then the number are:
    (a) 20, 30   (b) 20, 25
    (c) 25, 30   (d) None of these

11. If 1 add 1 to each of the two given numbers their ratio is 1:2. If 1 subtract 5 from each the ratio to 5:11. Then the number are
    (a) 71, 25   (b) 35, 71
    (c) 35, 51   (d) None of these

12. An employer reduces the number of employees in the ratio of 9:8 and increases their wages in the ratio of 14:15. In what ratio is the wages bill decreased?
    (a) 20:22   (b) 20:33
    (c) 21:20   (d) None of these
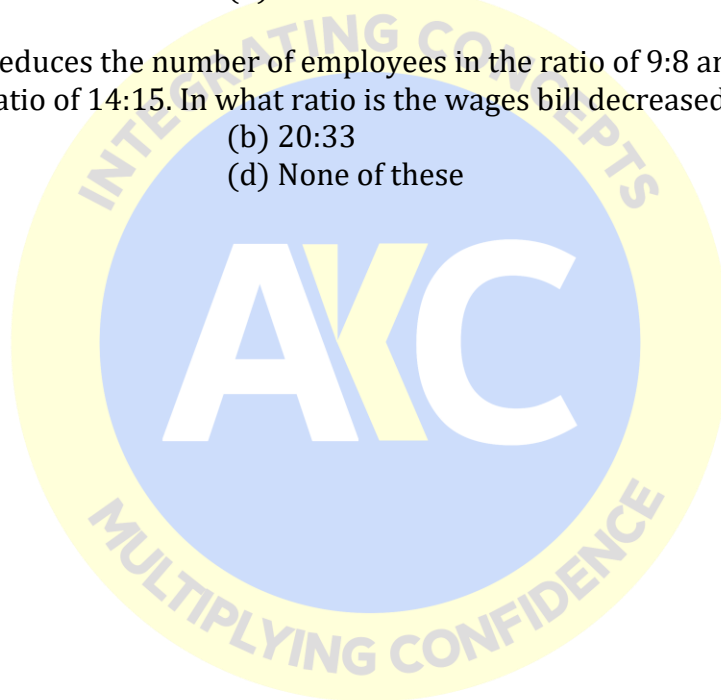
Answer Sheet

1	A	2	B	3	C	4	B	5	B
6	B	7	A	8	B	9	C	10	C
11	B	12	C						

DPP-22
Proportion

1. The third proportional to 15 and 20 is.
   (a) $\frac{80}{3}$ (b) 80
   (c) $\frac{80}{7}$ (d) None of these

2. The mean proportional between 9 and 25 is –
   (a) 16   (b) 10
   (c) 15   (d) None of these

3. The 4th peroration of 6, 8 and 15 is –
   (a) 40   (b) 30
   (c) 20   (d) None of these

4. If the salary of P is 25% lower than that of Q and the salary of R is 20% higher than that of Q, the ratio of the salary of R and P will be:
   (a) 5 : 8   (b) 8 : 5
   (c) 5 : 3   (d) 3 : 5

5. Divide 80 into two parts so that their product is maximum, then the numbers are:
   (a) 25,55   (b) 35,45
   (c) 40,40   (d) 15,65

6. For three months, the salary of a person are In the ratio 2: 4:5. If the difference between the product of salaries of the first two months and last two months is Rs. 4,80,00,000; then the salary of the person for the second month will be:
   (a) Rs. 4,000   (b) Rs. 6,000
   (c) Rs. 8,000   (d) Rs. 12,000

7. X, Y, Z together starts a business. If X invests 3 times as much as Y invests and Y invests two third of what Z invests, then the ratio of capitals of X, Y, Z is:
   (a) 3:9:2   (b) 6:3:2
   (c) 3:6:2   (d) 6:2:3

8. If a:b = c:d = e:f = 2:5, Then value of $\frac{4a + 15c + 29e}{4b + 15d + 29f}$ is
   (a) 2:4   (b) 1:5
   (c) 4:5   (d) 2:5

9. If $\frac{\sqrt{2-x} + \sqrt{2+x}}{\sqrt{2-x} - \sqrt{2+x}} = 3$, then x is equal to
   (a) -6/5   (b) -5/6
   (c) -1/5   (d) 6/5

10. The numbers 14, 16, 35, 42 are not in proportion. The fourth term for which they will be in proportion is

(a) 45

(b) 40

(c) 32

(d) none of these

Answer Sheet

1	A	2	C	3	C	4	B	5	C
6	C	7	D	8	D	9	A	10	B

DPP-23
Proportion

1. What must be added to reach of the four numbers 10, 18, 22, 38. So that they become in proportion?
   (a) 2
   (b) 5
   (c) 7
   (d) None of these

2. Find two numbers, such that the mean proportion between them is 24 and the third proportion to them is 192.
   (a) 48, 10
   (b) 12, 48
   (c) 10, 33
   (d) None of these

3. What must be added to each term of 83:263 to make it equal to 1:37?
   (a) 13
   (b) 10
   (c) 7
   (d) None of these

4. Divide Rs. 680 among A, B and C such that A gets $\frac{2}{3}$ of what B gets and B gets $\frac{1}{4}$ the of what C gets. What is C's share
   (a) Rs. 180
   (b) Rs. 280
   (c) Rs. 480
   (d) None of these

5. A student on being asked to multiply $\frac{16}{17}$ of a certain fraction made the mistake of dividing the fraction by $\frac{16}{17}$ and so got an answer which exceeded the correct answer by $\frac{33}{340}$ Find the correct answer.
   (a) $\frac{64}{85}$
   (b) $\frac{46}{58}$
   (c) $\frac{64}{58}$
   (d) None of these

Answer Sheet

1	A	2	B	3	C	4	C	5	B

DPP-24
Indices

1. Find the value of 'a' from the following $(\sqrt{9})^{-5} \times (\sqrt{3})^{-7} = (\sqrt{3})^{-a}$
   (a) 13   (b) 11
   (c) 15   (d) 17

2. The value of $\left(\frac{1}{64}\right)^0 + (63)^{\frac{1}{2}} + + (-32)^{\frac{4}{5}}$
   (a) $17\frac{1}{8}$ (b) $17\frac{3}{8}$
   (c) $11\frac{7}{8}$ (d) None of these

3. If $a^2 + b^2 = 45$ & $ab = 18$, then $\frac{1}{a} + \frac{1}{b}$ is
   (a) $\frac{1}{3}$ (b) $\frac{2}{3}$
   (c) $\frac{1}{2}$ (d) None of these

4. The value of $\frac{a^{\frac{1}{2}} + a^{\frac{-1}{2}}}{1-a} + \frac{1 - a^{\frac{-1}{2}}}{1+\sqrt{a}}$
   (a) $\frac{a}{a-1}$ (b) $\frac{a-1}{2}$
   (c) $\frac{2}{a-1}$ (d) $\frac{2}{1-a}$

5. Evaluate $\sqrt[2]{\frac{0.7214 \times 20.34}{69.8}}$
   (a) 1.5948   (b) 0.5948
   (c) $\frac{18}{27}$ (d) None of these

6. If $x = \sqrt{7 + 4\sqrt{3}}$, then $x + \frac{1}{x} =$
   (a) 4   (b) 6
   (c) 3   (d) 2

7. If $a^b = b^a$ then the value of $\left(\frac{a}{b}\right)^{\frac{a}{b}} - a^{\frac{a}{b}-1}$ reduces to
   (a) a   (b) b
   (c) 0   (d) None

8. If a: b = 9 : 4 then $\sqrt{\frac{a}{b}} + \sqrt{\frac{b}{a}} =$?
   (a) 2/3   (b) 3/2
   (c) 6/13   (d) 13/6

9. Let $a = (\sqrt{5} + \sqrt{3})/(\sqrt{5} - \sqrt{3})$ and $b = (\sqrt{5} - \sqrt{3})/(\sqrt{5} + \sqrt{3})$. What is the value of $a^2 + b^2$?
   (a) 64   (b) 62
   (c) 60   (d) 254

10. The value of $\dfrac{6^{n+4} + 3^{n+2} \times 2^{n+3}}{5 \times 6^n + 6^n}$ is :
   (a) 232   (b) 242
   (c) 262   (d) 262

11. If $\left(\dfrac{3a}{2b}\right)^{2x-4} = \left(\dfrac{2b}{3a}\right)^{2x-4}$ for some a and b, then the value of x is
   (a) 8   (b) 6
   (c) 4   (d) 2

Answer Sheet

1	B	2	A	3	C	4	D	5	B
6		7		8	D	9	B	10	C
11	D								

DPP-25
Permutation & Combination

1. In how many ways can the letters of the words "ALGEBRA" be arranged without changing the relative order of the vowels?
   (a) 82   (b) 70
   (c) 72   (d) None of these

2. How many words can be formed with the letters of the word "UNIVERSITY" the vowels always remaining together?
   (a) 60480   (b) 60483
   (c) 60000   (d) None of these

3. In how many ways can the letters of the word "DIRECTOR" be arranged so that the three vowels are never together?
   (a) 180   (b) 18,000
   (c) 18,002   (d) None of these

4. How many words can be formed with the letters of world "PARALLEL" so that all U's do not come together?
   (a) 2000   (b) 3000
   (c) 4000   (d) None of these

5. From 17 consonants and 5 vowels, how many words of 3 consonants and 2 vowels can be made it all the letters are different?
   (a) 810000   (b) 846000
   (c) 815000   (d) None of these

6. Find the number of words of three letters that can be formed with the letters of the word "CULCUTTA"
   (a) 90   (b) 96
   (c) 98   (d) None of these

7. The number of four-letter Words can be formed using the letters of the word DECTIONARY is
   (a) 5040   (b) 720
   (c) 90   (d) 30240

8. The number of words that can be formed using the letter of "PETROL" such that the words do not have "P" in the fist portion, is

   (a) 720   (b) 120

   (c) 600   (d) 540

9. The number of different ways the letters of the word "DETAIL" can be arranged in such a way that the vowels can occupy only the odd position is

   (a) 32   (b) 36

   (c) 48   (d) 60

10. Two letters are drawn at random from the word "HOME" Find the probability that at least one is vowel?

   (a) $\frac{5}{6}$ (b) $\frac{1}{6}$

   (c) $\frac{1}{3}$ (d) None of these

11. Two letters are drawn at random from the word "HOME" Find the probability that one of the letters selected should be M.

   (a) $\frac{1}{4}$ (b) $\frac{1}{6}$

   (c) $\frac{3}{6}$ (d) None of these

Answer Sheet

1	C	2	A	3	B	4	B	5	B
6	B	7	A	8	C	9	B	10	A
11	B								

DPP-26
Permutation & Combination

1. Find the number of even numbers greater than 100 that can be formed with the digits 0, 1, 2, 3?
   (a) 10   (b) 15
   (c) 20   (d) None of these

2. How many numbers between 100 and 1000 can be formed with the digits. 2, 3, 4, 0, 8, 9?
   (a) 100   (b) 105
   (c) 200   (d) None of these

3. Find the sum of four digit numbers made by then given digits 1, 3, 3, 0?
   (a) 22554   (b) 22550
   (c) 22,000   (d) None of these

4. How many numbers of members three digits can be made from the digits of the number 1,2,3,4,3,2?
   (a) 40   (b) 42
   (c) 45   (d) None of these

5. How many numbers greater than 1000 can be formed with the digits of the number 23416; of the digits are not repeated in the same number.
   (a) 120   (b) 200
   (c) 240   (d) None of these

6. How many numbers can be formed with the digits of the number 112321 that are greater than one lakh?
   (a) 60   (b) 80
   (c) 70   (d) None of these

7. The four-digit numbers that can be formed out of the seven digits 1,2, 3, 5, 7, 8, 9 such that no digit is repeated in any number and are greater than 3000 are:
   (a) 120   (b) 480
   (c) 600   (d) 840

8. The number of numbers between 1,000 and 10,000, which can be formed by the digits 1,2,3, 4, 5, 6 without repetition is:
   (a) 720   (b) 180
   (c) 360   (d) 540

Answer Sheet

1	C	2	A	3	A	4	B	5	C
6	A	7	C	8	C				

DPP-27
Permutation & Combination

1. How many different triangles can be formed joining the angular points of a polygon of in sides?
   (a) $\frac{m(m-1)(m-2)}{6}$
   (b) $\frac{m(m-1)}{2}$
   (c) m
   (d) None of these

2. In how many different ways can 1 invite one or more of my 6 friends?
   (a) 63
   (b) 64
   (c) 60
   (d) None of these

3. In an examination a candidate has to pass in each of the 4 papers. In how many different ways can be failed?
   (a) 14
   (b) 16
   (c) 15
   (d) None of these

4. From a panel of 4 doctors, 4 officers and one doctor who is also an officer, how many committees of 3 can be made if it has to contain at least one doctor and one other?
   (a) 76
   (b) 78
   (c) 80
   (d) None of these

5. In an election, there are five candidates contesting for three vacancies; an elector can vote any number of candidates not exceeding the number of vacancies. In how many ways can one cast his votes?
   (a) 12
   (b) 14
   (c) 25
   (d) None of these

6. In how many ways can 12 different things be equally distributed among 4 groups?
   (a) 15,400
   (b) 15,000
   (c) 14,400
   (d) None of these

7. There are 6 men and 4 women in a group, then the number of ways in which a committee of 5 persons can be formed of them, if the committee is to include at least 2 women are:
   (a) 180
   (b) 186
   (c) 120
   (d) 105

8. There are 10 students in a class including 3 girls. The number of ways to arrange them in a row when any two girls out of three never comes together:
   (a) 8P3 $\lfloor 7$
   (b) 3P3 $\lfloor 7$
   (c) 8P3 $\lfloor 10$
   (d) None of these.

9. The maximum number of points of inter section of 10 circles will be:
   (a) 2   (b) 20
   (c) 90   (d) 180

10. The number of parallelograms, formed from a set of six parallel lines intersecting another set of four parallel lines is:
    (a) 360   (b) 90
    (c) 180   (d) 45

Answer Sheet

1	A	2	A	3	C	4	A	5	C
6	A	7		8	A	9	C	10	C

DPP-28
Permutation & Combination

1. The number of the ways in which n different books can be arranged in an almirah so that two particular books are always together is –
   (a) n! × 2!   (b) (n-1) × 2!
   (c) (n-2)!   (d) None of these

2. There are 3 copies each of two books and two copies each of 5 books. In how many ways can a book seller arrange the 16 books in a self so that the copies of the same book are never separated?
   (a) 5040   (b) 5000
   (c) 5030   (d) None of these

3. There are stalls for 10 animals in a ship. In how many ways can the shipload be made, if there cows, calves and horses to be transported, animals of each kind being not less then 10?
   (a) 59040   (b) 59049
   (c) 59149   (d) None of these

4. When John arrives in New York, he has eight shops to see, but he has times only to visit sis of hem. In how many different ways can he arrange his schedule in New York?
   (a) 20000   (b) 20100
   (c) 21160   (d) None of these

5. There are 6 students of whom 2 are Indians, 2 Americans, and the remaining 2 are Russians. They have to stand in a row for a photograph so that the two Indians are together, the two Americans are together and so also the two Russians, Find the number of ways in which they can do so.
   (a) 40   (b) 42
   (c) 48   (d) None of these

6. Find the number of different poker hands in a pack of 52 playing cards;
   (a) 2598960   (b) 1506210
   (c) 5298216   (d) None of these

7. In an election the number of candidates is one more than the number of members to be elected. If a voter can vote in 254 different ways; find the number of candidates.
   (a) 8   (b) 10
   (c) 7   (d) None of these

8. A boat is to be manned by 8 men of which 3 can row only one side and 2 only on the other. In how many ways can the crew be arranged?
   (a) 1720   (b) 1700
   (c) 1728   (d) None of these

9. Three gentlemen and three ladies are candidates for two vacancies. A voter has to vote for two candidates. In how many different ways can one cast his vote?
   (a) 10   (b) 12
   (c) 15   (d) None of these

10. In a party of 40 people, each shakes hand with others. How many handshakes took place in the party?
    (a) 780   (b) 700
    (c) 880   (d) None of these

Answer Sheet

1	B	2	A	3	B	4	B	5	C
6	A	7	A	8	C	9	A	10	C
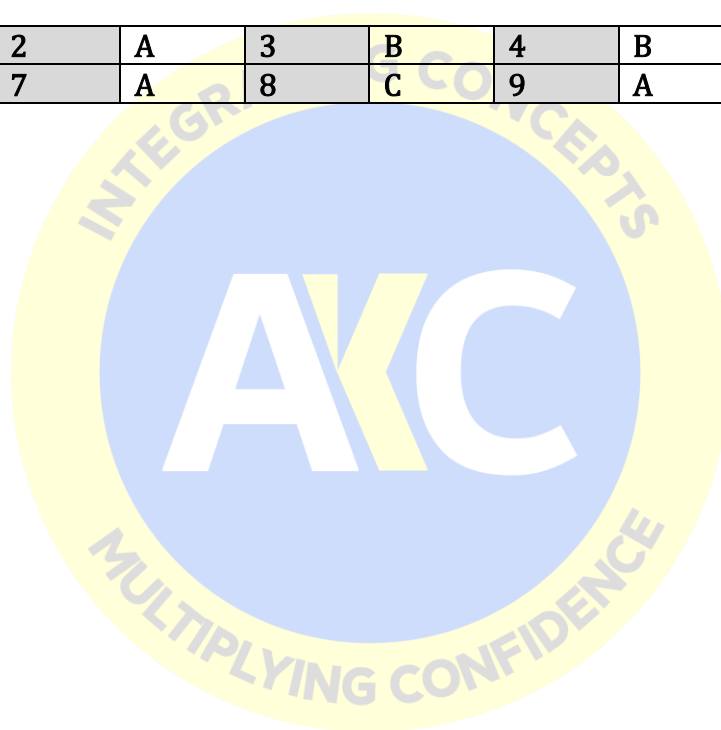
DPP-29
Permutation & Combination

1. How many different cricket teams of 11 players can be selected from 14 cricket players of which only two can play as wicketkeeper? Given each team must have exactly one wicketkeeper?
   (a) 130   (b) 132
   (c) 140   (d) None of these

2. Mr. X has 8 children of which he takes 3 at a time to the circus. Find, how many times a particular child goes to the circus?
   (a) 20   (b) 30
   (c) 21   (d) None of these

3. There are 7 man and 3 ladies. Find the numbers of ways in which a committee of 6 can be formed of them if the committee is to include at least two ladies.
   (a) 140   (b) 130
   (c) 105   (d) None of these

4. A committee is to be formed of 3 persons out of 12. Find the number of ways of forming such a committee.
   (a) 210   (b) 230
   (c) 220   (d) None of these

5. A gentlemen invites 6 of his friends to a party. In how many different arrangements they along with the wife of the gentlemen can sit of a round table for a dinner if the host and his wife always sit side by side?
   (a) 1440   (b) 144
   (c) 1445   (d) None of these

6. In how many ways can 7 departments be distributed among three ministers if every minister gets at least one but not more than 3 departments?
   (a) 1050   (b) 1000
   (c) 1200   (d) None of these

7. Five balls of different colors are in be placed in three boxes of different sizes. Each box can hold all the five balls. In how many different ways can we place the balls so that no box remains empty?
   (a) 100   (b) 120
   (c) 150   (d) None of these

8. A room has 10 doors. In how many ways can a man enter the room by one door and come out by a different door:
   (a) 90   (b) 100
   (c) 50   (d) None of these

9. In how many different ways can 17 billiard balls be arranged, if 7 of them are black, 6 red and 4 white.
   (a) 408408   (b) 4084080
   (c) 709826   (d) None of these

10. In an election the number of candidates is one more than the number of members to be elected. If a voter can vote in 254 different ways; find the number of candidates.
    (a) 8   (b) 10
    (c) 7   (d) None of these

11. Out of 7 boys and 4 girls a team of a debate club of 5 is to be chosen. The number of teams such that each team includes at least one girl is ____
    (a) 429   (b) 439
    (c) 419   (d) 441

12. From a group of 8 men and 4 women, 4 persons are to be selected to form a committee so that at least 2 women are there on the committee. In how many ways can it be done?
    (a) 201   (b) 168
    (c) 202   (d) 220

13. A fruit basket contains 7 apples, 6 bananas and 4 mangoes. How many selections of 3 fruits can be made so that all 3 are apples?
    (a) 120 ways   (b) 35 ways
    (c) 168 ways   (d) 70 ways

Answer Sheet

1	A	2	B	3	A	4	C	5	A
6	A	7	B	8	A	9	B	10	A
12	A	13	B						

DPP-30
Permutation & Combination

1. If $56\,P_{r+6} : 54P_{r+3} = 30800 : 1$ then the value of r is
   (a) 42   (b) 41
   (c) 45   (d) None of these

2. If $^{12}C_5 + 2\,^{12}C_4 + \,^{12}C_4 = \,^{14}C_x$ then the value x is;
   (a) 5   (b) 9
   (c) 5 or 9   (d) None of these

3. If $^{28}C_{2r}-4 : \,^{24}C_{2r-4} = 225 : 11$, then the value of r is
   (a) 10   (b) 7
   (c) 5   (d) None of these

4. If $^nP_3 = 60$, then the value n is
   (a) 3   (b) 10
   (c) 5   (d) None of these

5. If $^nP_5 : \,^nP_5\; 2:1$; then the value of n is
   (a) 4   (b) 5
   (c) 10   (d) None of these

6. The number of factors of 420 is
   (a) 20   (b) 22
   (c) 25   (d) None of these

7. Evaluate: $^{67}c_4 + \sum_{J-0}^{3} 50\text{-}jc_3$
   (a) 2490000   (b) 24990
   (c) 249000   (d) None of these

8. If $^nP_4 = 20\,^np_2$ were denotes the number of permutations n = _____
   (a) 4   (b) 2
   (c) 5   (d) 7

Answer Sheet

1	B	2	C	3	B	4	C	5	B
6	B	7	A	8	D				

DPP-31

Inequalities

1. Find the range of real values of x satisfying the inequalities 3x - 2 > 7 and 4x -13 > 15

    (a) x>3

    (b) x>7

    (c) x < 7

    (d) x < 3

2. The graph of linear inequalities 7x+9y ≤63, x+y ≥1,0 ≤x ≤6 and

Common region of the inequalities is:

(a) BCDB and DEFD

(b) Unbounded

(c) HFGH

(d) ABDFHKA

3. The graph to express the inequality x + y ≤ 6 is:

(d) None of these.

4. The graph of linear inequalities x + y≥5;x + y ≤5;0 ≤x ≤ 4 and 0 ≤ y ≥ 2 is given below:
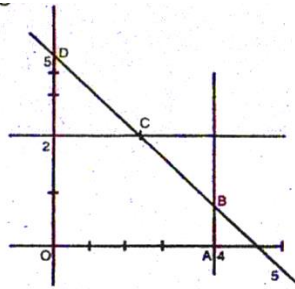
The common region of the inequalities will be:

(a) OABCEO   (b) ECDE

(c) Line Segment DC (d) Line Segment BC

5. The common regions by the inequalities $4x + 3y \leq 60$; $y \geq 2x$; $x \geq 3$, $x \geq 0$ and $y \geq 0$ is

Answer Sheet

1	B	2	D	3	A	4	C	5	C

DPP-32

Inequalities

1. Which of the following shows the quadratic inequality $x^2 + 5x + 6 \geq 0$?

    (a) x ≤ -3 or x ≥ -2   (b) x < -3 or x > -2

    (c) -2 < x < -3   (d) None of these

2. Which of the following shows the quadratic inequality $(2x - 1)(3x + 4) > 0$?

    (a) $-\frac{4}{3} < x < \frac{1}{2}$ (b) $-\frac{1}{2} < x < \frac{4}{3}$

    (c) $x < -\frac{4}{2}$ or $x > \frac{1}{2}$ (d) None of these

3. The common region in the graph of linear inequalities 2x + y > 18, x + y≥ 12 and

    3x + 2y ≤ 34 is:

    (a) unbounded
    (b) infeasible
    (c) feasible and bounded
    (d) feasible and unbounded

4. The solution of the inequality 8x + 6 < 12x + 14 is:

    (a) (-2,2)   **(b)** (0, -2)

    (c) (2, ∞)   **(d)** (-2, ∞)

Answer Sheet

1	B	2	C	3	C	4	D

DPP-33
Relations & Functions

1. find the domain for the function $f(x) = \frac{1}{\sqrt{(x^2 - 4)}}$
   (a) (-∞, -2) U (-2, 2) U (2, ∞)   (b) (-∞, -2) U (2, ∞)
   (c) (-2, 2) U (2, ∞)   (d) None

2. find the domain for the function $g(x) = 1 / (x^2 + 4x + 3)$
   (a) (-3, 0) U (3, ∞)   (b) (-∞, -3) U (-3, -1) U (-1, ∞)
   (c) (-∞, -3) U (-3, -1)   (d) None

3. find the domain For the function $h(x) = \sqrt{x^2 + 5x - 6}$
   (a) (-∞, -2) U (-2, 2) U (2, ∞)   (b) (-∞, -2) U (2, ∞)
   (c) (-∞, -6) U (1, ∞)   (d) None

4. find the domain for the function $k(x) = 1 / \sqrt{(x - 2)^2}$
   (a) (-∞, -2) U (-2, 2) U (2, ∞)   (b) (-∞, -2) U (2, ∞)
   (c) (-2, 2) U (2, ∞)   (d) None

5. find the domain for the function $k(x) = \log(x + 3) - 5$
   (a) (-3, 2) U (3, ∞)   (b) (-∞, -2) U (2, ∞)
   (c) (-3, ∞)   (d) None

6. find the range for the function $f(x) = -x^2 + 6x + 5$
   (a) (-∞, 14]   (b) (-∞, 14) U (14, ∞)
   (c) (14, ∞)   (d) None

7. find the range for the function $g(x) = | x + 3 | - 2$
   (a) (-2, ∞)   (b) [-2, ∞)
   (c) (14, ∞)   (d) None

8. For the function $f(x) = 12^{1+x}$, the domain of real values of x where $0 \le x \le 9$ the range is
   (a) $12 \le f(x) \le 12^{10}$ (b) $0 \le f(x) \le 12^{10}$
   (c) $0 \le f(x) \le 12$ (d) None

9. Find the domain and range of the function $f(x) = \frac{x^2}{1+x^2}$
   (a) R and R^+ (b) R and [0,1)
   (c) R and [0,2)   (d) None

10. Find the domain and range of the function $f(x) = \frac{x^2}{1+x^2}$
    (a) R and R^+ (b) R and [0,1)
    (c) R and [0,2)   (d) None

Answer Sheet

1	A	2	B	3	C	4	B	5	C
6	A	7	B	8	A	9	A	10	A

DPP-34
Relations & Functions

1. A function f: R→R is defined by $f(x)=5x^3-8$. The type of function is
   (a) one -one
   (b) onto
   (c) many-one
   (d) both one-one and onto

2. The function f: R→R defined as $f(x)=7x+4$ is both one-one and onto.
   (a) True
   (b) False

3. A function f: R→R defined by $f(x)=5x^4+2$ is one – one but not onto.
   (a) True
   (b) False

4. Let A= {1,2,3} and B= {4,5,6}. Which one of the following functions is bijective?
   (a) f= {(2,4), (2,5), (2,6)}
   (b) f= {(1,5), (2,4), (3,4)}
   (c) f= {(1,4), (1,5), (1,6)}
   (d) f= {(1,4), (2,5),(3,6)}

5. The inverse function $f^{-1}$of f(y) = 3y is _____
   (a) 1/3y
   (b) y/3
   (c) -3y
   (d) 1/y

6. The range of the function $f: N \to N; f(x) = (-1)^{x-1}$, is
   (A) {0, -1}
   (b) {1, -1}
   (c) {1, 0}
   (d){1,0-1}

7. If f; R—> R is a function, defined by f(x)= 10x-7, if $g(x) = f^{-1}(x)$ then the value of g(x) is equal to
   (a) $\frac{x}{10x-7}$
   (b) $\frac{x}{10x+7}$
   (c) $\frac{x+7}{10}$
   (d) $\frac{x-7}{10}$

8. The value of elements in range of constant function is
   (a) One
   (b) Zero
   (c) Infinite
   (d)None

9. $f(x) = 2x + 2$, $g(x) = x^2$, fog (4) =?
   (a) 100
   (b) 10
   (c) 34
   (d) None of these

10. Let f: $Z \to Z$ f (x) $= x^2 + x \ for \ all \ x \in z$, then f is:
    (a)Many-one
    (b) One-One
    (c)Onto
    (d) None

Answer Sheet

1	C	2	A	3	A	4	D	5	B
6	B	7	C	8	A	9	C	10	A

DPP-35
Sets

1. The number of subsets formed from the letters of the word "ALLAHABAD".
   (a) 128
   (b) 16
   (c) 32
   (d) None

2. In a class of 80 students, 35% play only cricket, 45% only Tennis. How many plays Cricket?
   (a) 86
   (b) 54
   (c) 36
   (d) 44

3. The number of proper subsets of the set {3,4,5,6,7} is
   (a) 32
   (b) 31
   (c) 30
   (d) 25

4. There are 40 students, 30 of them passed in English, 25 of them passed in Maths and 15 of them passed in both. Assuming that every Student has passed at least in one subject. How many students passed in English only but not in Math's.
   (a) 15
   (b) 20
   (c) 10
   (d)25

5. If P = {1, 2, 3, 4}: Q = {2, 4, 6} then P ∪ Q
   (a) {1, 2, 3, 6}
   (c){1, 2, 3, 4, 6}
   (b) {1, 4, 6}
   (d) none of these

6. The relation "is parallel to" on the set of all straight lines are plane is –
   (a)An equivalence relation
   (c) reflexive relation
   (b)An equal relation
   (d) transitive relation

7. "is perpendicular to" over the set of straight lines in a given plane is
   (a)Symmetric
   (c) transitive
   (b)Reflexive
   (d) equivalence

8. "Is equal to" is a
   (a) Symmetric relation
   (b) Reflexive relation
   (c) Transitive relation
   (d) Equivalence relation

9. If $f(x) = x^2 + 2$, then the given function is
   (a) odd function
   (b) even function
   (c) Neither odd nor even function
   (d) None of these

10. "Is greater than" over the set of real number s is
    (a) Transitive relation
    (b) Symmetric relation
    (c) Reflexive relation
    (d) Equivalence relation

Answer Sheet

1	C	2	D	3	B	4	A	5	C
6	A	7	A	8	D	9	B	10	A

DPP-36
Derivation

Derivate the following with respect to x

1. $20x^{-4} + 9$

2. $\log(2x - 3)$

3. $(x-a)(x-b)$

4. $6x^3 - 9x + 4$

5. $x(3x^2 - 9)$

6. $\dfrac{4x^3 - 7x + 8}{x}$

7. $\sqrt{x} + 8\sqrt[3]{x} - 2\sqrt[4]{x}$

8. *Derivate it with respect to z , f(z) = $6z^7 - 3z^{-7} + 9z$*

DPP-37
Derivation

1. Find $\frac{dy}{dx}$; if $y = \frac{x}{(1+x)^2}$

   (a) $\frac{1+x}{(1-x)^3}$

   (b) $\frac{1-x}{(1+x)^3}$

   (c) $\frac{1-x}{(1+x)^4}$

   (d) None of these

2. valuate $\frac{dy}{dx}$: if $y = \sqrt{\frac{1-x}{1+x}}$

   (a) $\frac{1}{(1+x)\sqrt{1-x^2}}$

   (b) $-\frac{1}{(1+x)\sqrt{1-x^2}}$

   (c) $\frac{1}{(1+x^2)\sqrt{1-x^2}}$

   (d) None of these

3. If $y = \log\left[e^x \left(\frac{x-2}{x+2}\right)^{\frac{5}{4}}\right]$ then $\frac{dy}{dx}$ is

   (a) $\frac{x^2-1}{x^2-4}$

   (b) $\frac{x^2+1}{x^2-4}$

   (c) $\frac{x^2-1}{x^2+4}$

   (d) None of these

4. If $y = \frac{10^x + \log x}{\sqrt{x}}$; then find $\frac{dy}{dx}$

   (a) $\frac{10^x(2\log10-1)+2-\log x}{2x\sqrt{x}}$

   (b) $\frac{10^x(2\log10 + 1)+2-\log x}{2x\sqrt{x}}$

   (c) $\frac{10^x(2-1)+2-\log x}{2x\sqrt{x}}$

   (d) *None of these*

5. Evaluate $\frac{dy}{dx}$; if $y = \frac{e^x - e^y}{e^x - e^y}$

   (a) $\frac{-4}{(e^x+e^{-x})^2}$

   (b) $\frac{-4}{(e^x+e^{-x})^2}$

   (c) $\frac{-4}{(e^x+e^{-x})^2}$

   (d) None of these

6. If $y = \log(x + \sqrt{x^2 + a^2})$ than find $\frac{dy}{dx}$

   (a) $\frac{1}{\sqrt{x^2+a^2}}$

   (b) $\frac{-1}{\sqrt{x^2+a^2}}$

   (c) $\frac{x}{\sqrt{x^2+a^2}}$

   (d) None of these

7. If $y = \frac{\sqrt{1-x}}{\sqrt{1+x}}$ and $\frac{dy}{dx}$ is

   (a) $\frac{2/3}{(1+x)(1-x)}$

   (b) $\frac{-1}{(1+x)^{3/2}\sqrt{1-x}}$

   (c) $\frac{-3/2}{(1+x)^2\sqrt{(1-x)}}$

   (d) None of these

8. If $y = \frac{x}{\sqrt{1+x^2}}$, then $x^2 \frac{dy}{dx}$ is

   (a) y^2

   (b) y

   (c) y^3

   (d) None of these

Answer Sheet

1	B	2	B	3	A	4	A	5	B
6	A	7	B	8	C				

DPP-38
Derivation

1. If $y^3 \cdot x^5 - (x-y)^8$, then $\frac{dy}{dx}$ is

   (a) $\frac{y}{x}$ (b) $\frac{-y}{x}$

   (c) $\frac{y^5}{x^3}$ (d) None of these

2. If $x^y = e^{x-y}$; then $\frac{dy}{dx}$ is

   (a) $\frac{\log x}{(1+\log x)^2}$ (b) $\frac{\log x}{(1-\log x)^2}$

   (c) $\frac{1}{(1+\log x)^2}$ (d) None of these

3. If $y = x^{x^{x^{\cdots}}}$; then $x \cdot \frac{dy}{dx}$ is

   (a) $\frac{y^2}{1+y\log x}$ (b) $\frac{y^2}{1-y\log x}$

   (c) $\frac{-y^2}{1-y\log x}$ (d) None of these

4. If $(x-y)\, e^{\frac{x}{x-y}} = a$; then $y\frac{dy}{dx} + x$ is

   (a) 2   (b) -2y

   (c) 2y   (d) None of these

5. If $y = \sqrt{x} + \frac{1}{\sqrt{x}}$, then $2x\frac{dy}{dx}$ is

   (a) $\sqrt{x} - \frac{1}{\sqrt{x}}$ (b) $\sqrt{x} + \frac{1}{\sqrt{x}}$

   (c) $x - \frac{1}{x}$ (d) None of these

Answer Sheet

1	A	2	A	3	B	4	C	5	A

DPP-39
Derivation

1. If $\sqrt{\frac{y}{x}} + \sqrt{\frac{y}{x}} = 6$, then $\frac{dy}{dx}$ is
   (a) $\frac{x+17y}{17x+y}$ (b) $\frac{x-17y}{17x+y}$
   (c) $\frac{x-17y}{17x-y}$ (d) None of these

2. If $y = x^x$, then $\frac{dy}{dx}$ is
   (a) $x^x(2 + \log x)$ (b) $x^x \log (ex)$
   (c) $x^x \log \left(\frac{e}{x}\right)$ (d) None of these

3. If $y = x^{e^{-x^2}}$ then $\frac{dy}{dx}$ is
   (a) $x^{e^{-x^2}} x^{e^{-x^2}} \left[\frac{1-2x^2 logx}{x}\right]$ (b) $x^{e^{-x^2}} x^{e^{-x^2}} \left[\frac{1-3x^3 logx^2}{x^2}\right]$
   (c) $e^{-x^2} \left[\frac{1-3x^2 logx}{x}\right]$ (d) None of these

4. If $y = \log_3 \log_3 x$, find $\frac{dy}{dx}$
   (a) $\frac{1}{x \log 3.\log x}$ (b) $\frac{-1}{x \log 3.\log x}$
   (c) $\frac{1}{log3.logx}$ (d) None of these

5. If $x\sqrt{1+y} + y\sqrt{1+x} = 0$ then $(1+x)^2 = \frac{dy}{dx}$ is equal to
   (a) 0   (b) 11
   (c) -1   (d) None of these

6. If $y = x\sqrt{x^2+1} + \log(x + \sqrt{x^2+1})$ then $\frac{dy}{dx}$ is equal to
   (a) $\sqrt{x^2+1}$ (b) $2\sqrt{x+1}$
   (c) $2\sqrt{x^2+1}$ (d) None of these

7. Find $= \frac{dy}{dx}$; if $y = \sqrt{x + \sqrt{x}}$
   (a) $\frac{2\sqrt{x}+1}{4-\sqrt{x}\sqrt{x+\sqrt{x}}}$ (b) $\frac{2\sqrt{x}+1}{4\sqrt{x}\sqrt{x-\sqrt{x}}}$
   (c) $\frac{2\sqrt{x}+1}{2\sqrt{x}-1}$ (d) None of these

8. Evaluate $\frac{dy}{dx}$; if $y = 7^{x^2+2x}$
   (a) $(2x+1).7^{x^2+2^x}. \log7$ (b) $(2x+1).7^{x^2+2^x}. \log7$
   (c) $7^{x^2+2^x}. \log7$ (d) None of these

Answer Sheet

1	C	2	B	3	A	4	A	5	A
6	C	7	A	8	B				

DPP-40
Derivation

1. If $y = \dfrac{\sqrt{x^2+1} + \sqrt{x^2-1}}{\sqrt{x^2+1} - \sqrt{x^2-1}}$, then $\dfrac{dy}{dx}$ is

   (a) $2x - \dfrac{2x^3}{\sqrt{x^4-1}}$

   (b) $2x + \dfrac{2x^3}{\sqrt{x^4-1}}$

   (c) $x - \dfrac{x^3}{\sqrt{x^4-1}}$

   (d) None of these

2. If $y = ae^{mx} + be^{mx}$ then $\dfrac{d^2y}{dx^2}$ is

   (a) my

   (b) m^2y^2

   (c) m^2y

   (d) None of these

3. If $y = x^{\log(\log x)}$; then $\dfrac{dy}{dx}$ is

   (a) $\dfrac{y}{x}[\log(\log x) + 1]$

   (b) $\dfrac{x}{y}[\log(\log x) + 1]$

   (c) $\dfrac{x}{y}[\log(\log x) + 1]$

   (d) None of these

4. If $y = x + \dfrac{1}{x + \frac{1}{x}}$, then $\dfrac{dy}{dx}$ is

   (a) $\dfrac{x^4+x^2+2}{(x^2+1)^2}$

   (b) $\dfrac{x^4+x^2+2}{x^2+1}$

   (c) $\dfrac{(x^4+x^2+2)^2}{x^2+1}$

   (d) None of these

5. If the demand low is $x = \sqrt{10 - p^2}$ then the elasticity of demand at point $p = 2$

   (a) 2/3

   (b) 3/2

   (c) 2/5

   (d) None of these

Answer Sheet

1	B	2	C	3	A	4	A	5	A

DPP-41
Integration

1. Evaluate $\int x^3 \sqrt{3 + 5x^4}\, dx$

    (a) $\frac{1}{9}(6x^2 + 11)^{3/2} + e$

    (b) $-\frac{1}{9}(3 + 5x^4)^{2/3} + e$

    (c) $\frac{1}{30}(3 + 5x^4)^{3/2} + e$

    (d) None of these

2. Evaluate $\int \frac{\log \sqrt{x}}{3x}\, dx$

    (a) $\frac{1}{3}\left(\log \sqrt{x}\right)^2 + e$

    (b) $\frac{1}{3x}\left(\log \sqrt{x}\right) + e$

    (c) $\frac{1}{3x}\left[\log(3x + \sqrt{x})\right] + e$

    (d) None of these

3. Evaluate $\int \frac{1}{x \log x}\, dx$

    (a) $\log\left(\log \frac{x^2}{2}\right) + e$

    (b) $\log(\log x) + e$

    (c) $\log(\log x^2) + e$

    (d) None of these

4. Evaluate $\int (x - 3)\sqrt{x^2 - 6x + 100}\, dx$

    (a) $\frac{1}{3}(x^2 - 6x + 100)^{3/2} + e$

    (b) $\frac{1}{6}(x^3 - 6x^2 + 100)^{2/3} + e$

    (c) $\frac{1}{3}(x^3 - 6x^2 + 100)^{2/3} + e$

    (d) None of these

5. Evaluate $\int \frac{x+3}{x^2+6x+4}\, dx$

    (a) $\frac{1}{2}\log(x^2 + 6x + 4) + c$

    (b) $\frac{1}{2}$-x + log (x² +6x + c) + c

    (c) $\frac{1}{2}\log(x + 3) + c$

    (d) None of these

6. Evaluate $\int (3x + 5)^4\, dx$

    (a) $\frac{(3x + 5)^5}{3} + c$

    (b) $\frac{(3x + 5)^5}{15} + c$

    (c) $\frac{(3x + 5)^4}{15} + c$

    (d) None of these

7. Evaluate $\int \sqrt{7x + 5}\, dx$

    (a) $\frac{2}{21}(7x + 5)^{3/2} + c$

    (b) $\frac{2}{21}(7x + 5)^{3/2} + c$

    (c) $(7x + 5)^{3/2} + c$

    (d) None of these

8. Evaluate $\int \frac{2x+1}{x(x+1)}\, dx$

    (a) log (x²-x)+e

    (b) log (x²+x)+e

    (c) log (x²-1)+e

    (d) None of these

Answer Sheet

1	C	2	A	3	B	4	A	5	C
6	A	7	B	8	B				

DPP-42
Derivation

1. Evaluate $\int 2^2 x^2 dx$
   (a) $\frac{2^x x^2}{2} - \frac{x 2^{x+1}}{(log2)^2} + \frac{2^{x+1}}{(log2)^3} + c$

   (b) $-\frac{2^x x^3}{3} - \frac{x 2^{x+1}}{(log2)^2} + \frac{2^{x+1}}{(log3)^2} + c$

   (c) $\frac{2^x x^2}{3} - \frac{x^3 2^x}{3} - \frac{2^{x+1}}{(log2)^3} + c$

   (d) None of these

2. Evaluate $\int e^{2x} \times x^2 dx$
   (a) $\frac{x^3}{3} e^{3x} - \frac{x^2 e^{2x}}{2} + \frac{e^{2x}}{4} + e$

   (b) $\frac{x^2 e^{2x}}{2} - \frac{x e^{2x}}{2} + \frac{e^{2x}}{4} + e$

   (c) $\frac{x^3 e^{2x}}{3} - \frac{x^2 e^x}{2} + e$

   (d) None of these

3. Evaluate $\int log_{10} x \, dx$
   (a) $log_{10}(x \log x - x) + c$

   (b) $log_{10}(x \log x - x) + c$

   (c) $log_{10}(x \log x - x) + c$

   (d) None of these

4. Evaluate $\int \frac{xe^x}{(x+1)^2} dx$
   (a) $\frac{1}{(x+1)^2} ex + c$

   (b) $\frac{1}{(x+1)^2} e^x + c$

   (c) $\frac{2x}{(x+1)^2} e^{2x} + c$

   (d) None of these

5. Evaluate $\int e^x \frac{x-1}{(x+1)^3} dx$
   (a) $\frac{e^{2x}}{(x+1)^3} + c$

   (b) $\frac{e^x}{(x+1)^3} + c$

   (c) $\frac{e^x}{(x+1)^2}$

   (d) None of these

6. Evaluate $\int \frac{e^x(x^2+1)}{(x+1)^2} dx$
   (a) $e^x \left(\frac{x-1}{x+1}\right) + c$

   (b) $e^x \left(\frac{x-1}{x+1}\right) + c$

   (c) $-e^x \left(\frac{x-1}{x+1}\right) + c$

   (d) None of these

7. Evaluate $\int \frac{xe^2}{(1+x)^2} dx$
   (a) $\frac{e^x}{1+x} + c$

   (b) $\frac{xe^x}{1+x} + c$

   (c) $\frac{e^x}{(1+x)^2} + c$

   (d) None of these

8. Evaluate $\int e^x \frac{x-1}{(x+1)^3} dx$
   (a) $\frac{ex}{(x+1)^2} + e$

   (b) $x^2 + \log(e^x + 1) e$

   (c) $(x + 1)^2 + \log(e^x + 1) + c$

   (d) None of these

9. Evaluate: $\int \log (x + 1) \, dx$
   (a) x log (x+1) – x + log(x+1) +c
   (b) x² log (x+1) – x² + log (x² + 1) +c
   (c) x log (x+1) – x² + log (x+1) +c
   (d) None of these

10. Evaluate: $\int \frac{e^x + 1}{x^2 + 1} \, dx$ (*Out of Syllabus but this question is from ICAI Material so let's discuss it*)

   (a) $\frac{x^2}{2}$ + x – 2 log (x²+1) +c   (b) x²+x+2log(x²+1)+c

   (c) $\frac{x^3}{3}$ – x + 2 tan⁻¹ x + c   (d) None of these

11. Evaluate $\int \frac{1}{(x^2 - 4)\sqrt{x-1}} \, dx$ (*Out of Syllabus but this question is from ICAI Material so let's discuss it*)

   (a) $\frac{1}{4\sqrt{3}} \log \left(\frac{\sqrt{x+1}-\sqrt{3}}{\sqrt{x+1}+\sqrt{3}} \right) - \frac{1}{2} \tan^{-1} \sqrt{x + 1}$ +c

   (b) $\frac{1}{4} \log \left(\frac{\sqrt{x^2+4}-\sqrt{3}}{\sqrt{x^2+4}-\sqrt{3}} \right) - \frac{1}{2} \tan^{-1} \sqrt{x^2 + 4}$ +c

   (c) $\frac{1}{2} \log \left[(x^2 - 4)\sqrt{x + 1} \right] - \frac{1}{2} \tan^{-1} \left(\sqrt{x^2 + 1} \right)$ +c

   (d) None of these

Answer Sheet

1	A	2	B	3	B	4	B	5	C
6	A	7	A	8	A	9	A	10	C
11	A								

DPP-43
Derivation

1. Evaluate $\int \frac{\log x}{x^2} dx$

(a) $\frac{1}{x}(1+\log x)+c$

(b) $\frac{-1}{x} \log ex + c$

(c) $\frac{1}{3} \log \left(\frac{x}{e}\right) + c$

(d) None of these

2. Evaluate $\int \frac{dx}{x+\sqrt{x}}$

(a) $2 \log(x+1)+c$

(b) $-2\log(\sqrt{x}+1)+e$

(c) $2\log(\sqrt{x}+1)+e$

(d) None of these

3. Evaluate $\int \frac{4e^x + 6e^{-x}}{9e^x - 4e^{-x}} dx$

(a) $-\frac{3}{4}\log e^{2x} + \frac{35}{36}\log(9e^{2x}-4)+c$

(b) $-\frac{9}{8}\log e^x + \frac{36}{35}\log(4e^{x}-6^{e-x})+c$

(c) $-\frac{3}{2}\log e^x + \frac{36}{35}\log(9e^2-4^{e-x})+c$

(d) None of these

4. Evaluate $\int \sqrt{\frac{5-x}{x-2}} \, dx$

(a) $\left(\sqrt{5-x^2}\right)\left(\sqrt{x-2}\right)- \text{Cos}^{-1}\left(\sqrt{\frac{3}{x-2}}\right) + e$

(b) $\left(\sqrt{5-x^2}\right)\left(\sqrt{x-2}\right)- \tan^{-1}\left(\sqrt{\frac{x-3}{3}}\right) + e$

(c) $\left(\sqrt{5-x}\right)\left(\sqrt{x-2}\right)- 3\,\text{Cos}^{-1}\left(\sqrt{\frac{x-2}{3}}\right) + e$

(d) None of these

5. Evaluate: $\int \frac{x^2}{x+1} dx$

(a) $x + \log(x+1) + c$

(b) $x^3 - \log(x+1) + c$

(c) $\frac{x^5}{3} - \frac{x^2}{2} + x - \log(x+1) + c$

(d) None of these

6. Evaluate: $\int \frac{e^{4x}+e^{2x}}{e^{3x}} dx$

(a) $\frac{1}{2}e^{2x} - \frac{1}{4e^{4x}} + c$

(b) $e^x - e^{-x} e$

(c) $e^x - \frac{1}{e^{4x}} + e$

(d) None of these

7. Evaluate: $\int \frac{dx}{\sqrt{x+\sqrt{1+x}}}$

(a) $\frac{2}{3}\left\{(1+x)^{2/3} - x^{2/3}\right\} + c$

(b) $\frac{2}{3}\left\{(1+x)^{3/2} - x^{3/2}\right\} + c$

(c) $\frac{2}{3}\left\{(1+x)^{2/3} - x^{2/3}\right\} + c$

(d) None of these

8. Evaluate: $\int \frac{x^2-x+2}{x^3+x^2+2x} \, dx$

(a) $-\log x + 3/2 \log (x-1) + 4/3 \log (x^2+2) + \log e$

(b) $-\log x + 2/3 \log (x^2-1) + \frac{3}{4} \log (x^2+2) + \log e$

(c) $-\log x + 2/3 \log (x-1) + 4/3 \log (x+2) + \log e$

(d) None of these

Answer Sheet

1	B	2	C	3	A	4	C	5	C
6	B	7	B	8	C				

DPP-44
Integration

1. Evaluate $\int_0^5 \frac{x^2}{x^2+(5-x)^2}dx$
   (a) 0   (b) 1
   (c) -1   (d) None of these

2. Evaluate: $\int_a^b \frac{\log x}{x}dx$
   (a) $\frac{1}{2}\log(ba).\log\left(\frac{b}{a}\right)$ (b) $\log(ba).\log\left(\frac{b}{a}\right)$
   (c) $\log(b+a).\log\left(\frac{a}{b}\right)$ (d) None of these

3. Evaluate: $\int_a^b \frac{dx}{(a+b-x)^{2/3}}$
   (a) $b^{\frac{1}{2}} - a^{\frac{1}{3}}$ (b) $3\left(b^{\frac{1}{3}} - a^{\frac{1}{3}}\right)$
   (c) $3\left(b^{\frac{1}{3}} + a^{\frac{1}{3}}\right)$ (d) None of these

4. Evaluate: $\int_0^2 \frac{\sqrt{x}}{\sqrt{x}+\sqrt{2-x}}dx$
   (a) 1   (b) 0
   (c) -1   (d) None of these

5. Evaluate: $\int_0^1 \log\left(\frac{1}{x} - x\right)dx$
   (a) 1   (b) -1
   (c) 0   (d) None of these

6. Evaluate $\int_{-1}^1 (e^x - e^x)dx$
   (a) 1   (b) 0
   (c) -1   (d) None of these

7. Evaluate $\int_1^e \frac{1+\log x}{x}dx$
   (a) $\frac{3}{2}$ (b) $-\frac{3}{2}$
   (c) 0   (d) None of these

8. Evaluate $\int_0^{\log 3} \frac{e^x}{1+e^x}dx$
   (a) log 3   (b) log 2
   (c) 1   (d) None of these

9. Evaluate $\int_0^1 \frac{x}{1+\sqrt{1+x^2}}dx$
   (a) $\frac{2}{3}(\sqrt{2} + 1)$ (b) $\frac{2}{3}(-\sqrt{2} + 1)$
   (c) $\frac{2}{3}(\sqrt{2} - 1)$ (d) None of these

10. Evaluate $\int_0^1 \frac{dx}{(1+x)(2+x)}$

   (a) $\log \frac{4}{3}$ (b) $\log \frac{3}{4}$

   (c) 0   (d) None of these

Answer Sheet

1	D	2	A	3	B	4	A	5	C
6	B	7	A	8	B	9	D	10	A

DPP-45
Integration

1. Evaluate: $\int [f(x) + f(-x)][g(x) - g(-x)]dx$
   (a) 0
   (b) 1
   (c) -1
   (d) None of these

2. Evaluate $\int \frac{1}{\sqrt{x^2 + a^2}}dx$
   (a) $\log(x + \sqrt{x^2 + a^2}) + c$
   (b) $\log(x + \sqrt{x^2 + a^2}) + c$
   (c) $\log(x + \sqrt{x^2 + a^2}) + c$
   (d) None of these

3. Evaluate $\int \frac{1}{\sqrt{x^2 - a^2}}dx$
   (a) $\log(x - \sqrt{x^2 - a^2}) + c$
   (b) $\log(x + \sqrt{x^2 + a^2}) + c$
   (c) $\log(x + \sqrt{x^2 - a^2}) + c$
   (d) None of these

4. Evaluate $\int \frac{1}{9x^2 - 1}dx$
   (a) $\frac{1}{6}\log\left(\frac{3x+1}{3x-1}\right) + c$
   (b) $\frac{1}{6}\log\left(\frac{3x-1}{3x+1}\right) + c$
   (c) $\frac{1}{3}\log\left(\frac{3x+2}{3x+2}\right) + c$
   (d) None of these

5. Evaluate $\int \frac{x-1}{\sqrt{x^2+1}}dx$
   (a) $\sqrt{x^2 + 1} - \log(x + \sqrt{x^2 + 1}) + c$
   (b) $\sqrt{x - 1} - \log(x + \sqrt{x - 1}) + c$
   (c) $\sqrt{x^2 + 1} - \log(x + \sqrt{x - 1}) + c$
   (d) None of these

6. Evaluate $(1-x^2) \log x$
   (a) $(1 - x^2)x \log x - \left(1 - \frac{x^2}{9}\right) + c$
   (b) $(1 - x^2)x \log x - \left(1 + \frac{x^2}{9}\right) + c$
   (c) $\left(1 - \frac{x^2}{3}\right)x \log x - \left(x - \frac{x^3}{9}\right) + c$
   (d) None of these

7. Evaluate $\int \frac{dx}{x^2 - a^2} dx$
   (a) $\frac{1}{2a}\log\left|\frac{x-a}{x+4}\right| + c$
   (b) $\frac{1}{2a}\log\left|\frac{x+a}{x-4}\right| + c$
   (c) $\frac{1}{2a}\log\left|\frac{x-a}{x+4}\right| + c$
   (d) None of these

8. Evaluate $\int \frac{1}{a^2 - x^2} dx$
   (a) $\frac{1}{2a}\log\left|\frac{a+x}{a-x}\right| + c$
   (b) $\frac{1}{2a}\log\left|\frac{a-x}{a+x}\right| + c$
   (c) $\frac{1}{2a}\log\left|\frac{x-a}{x+a}\right| + c$
   (d) None of these

9. Evaluate: $\int \frac{1}{3x^2+13x-10}dx$

    (a) $\frac{1}{17}\log\left(\frac{3x^2-2}{3x^2+15}\right) + c$ (b) $\frac{1}{17}\log\left(\frac{3x-2}{3x^2+15}\right) + c$

    (c) $\frac{1}{17}\log\left(\frac{3x+15}{3x-2}\right) + c$ (d) None of these

10. Evaluate: $\int e^2\{f(x) + f^1(x)\}dx$

    (a) $e^x f(x) + c$ (b) $-e^x f(x) + c$

    (c) $-e^x f'(x) + c$ (d) None of these

Answer Sheet

1	A	2	A	3	C	4	B	5	A
6	C	7	A	8	B	9	B	10	A