

Note: - You have four choices for each objective type question as A, B, C and D. The choice which you think is correct; fill that circle in front of that question number in your answer book. Use marker or pen to fill the circles. Cutting or filling up two or more circles will result no mark.

**SECTION-A**

Q.1	Questions	A	B	C	D
1.	The ratio between 2.5 kg and 4.5 kg is:	2:5	5:9	9:5	2:3
2.	Rs.250 is what percent of Rs.1000?	1.5%	2.5%	3.5%	25%
3.	The formula for finding rate%:	$\frac{I \times 100}{P}$	$\frac{I \times 100}{P \times T}$	$\frac{P \times 100}{I \times T}$	$\frac{T \times 100}{P \times I}$
4.	If $f(x) = \sqrt{x+9}$ , then $f(x^2-9) =$	$x+9$	$x^2-9$	$x^2$	$x$
5.	If $x-3=2x+9$ , then:	$x=-12$	$x=12$	$x=6$	$x=-6$
6.	The solution set of $3x^2+4x+1=0$ is:	$\left\{\frac{1}{3}, 1\right\}$	$\left\{\frac{-1}{3}, 1\right\}$	$\left\{\frac{-1}{3}, -1\right\}$	$\left\{\frac{1}{3}, -1\right\}$
7.	Conversion of 4 into binary system is:	$(10)_2$	$(11)_2$	$(101)_2$	$(100)_2$
8.	$(10000)_2$ in decimal system is equal to:	18	20	17	16
9.	If order of matrix A is $2 \times 3$ and order of matrix B is $3 \times 4$ , then order of AB is:	$2 \times 2$	$2 \times 4$	$3 \times 3$	$3 \times 4$
10.	If $A = \begin{bmatrix} 8 & 9 \\ 12 & 15 \end{bmatrix}$ , then order of $A^{-1}$ is:	$1 \times 1$	$2 \times 3$	$2 \times 2$	$3 \times 3$

Note :- Section **B** is compulsory. Attempt any **Two** Questions from Section **C**.

**SECTION-B**

2. Write short answers to any Six parts. (6 x 2 = 12)

- i. Distribute Rs.15000 in the ratio 3:2.
- ii. Find the missing term from the proportion 2:3 : □:15
- iii. A dealer bought a bicycle for Rs.15500 and sold for Rs.16740. Find profit percentage.
- iv. Find the simple interest on Rs.5000 invested for 6 months at the rate 8% per annum.
- v. Define the term 'ordinary annuity'.
- vi. Solve  $4(x-7) = 3(2x+1) - 5$ .
- vii. Find two consecutive integers whose sum is 29.
- viii. Solve  $4x^2 - 11x + 6 = 0$  by completing square.
- ix. Discuss the nature of the roots of  $x^2 - 5x + 6 = 0$ .

3. Write short answers to any Six parts. (6 x 2 = 12)

- i. Define profit function.
- ii. Sketch the graph of  $4x + 2y = 10$
- iii. Subtract  $(1101)_2$  from  $(10011)_2$ .
- iv. Evaluate  $(100111)_2 \times (111)_2$ .
- v. Convert  $(10110011)_2$  into decimal system.
- vi. If  $A = \begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \end{bmatrix}$ ;  $B = \begin{bmatrix} 1 & 2 \\ 3 & 4 \\ 5 & 6 \end{bmatrix}$ , then find AB.
- vii. If  $A = \begin{bmatrix} 2 & 5 \\ x & -10 \end{bmatrix}$  is a singular matrix, then find the value of x.
- viii. Define skew symmetric matrix.
- ix. If  $A = \begin{bmatrix} 1 & 2 \\ 4 & 9 \end{bmatrix}$ ; find the value of  $|2A|$ .

**SECTION-C**

Note: Attempt any Two questions. Each question carries 4+4=8 marks. (8x2=16)

- 4.(a) If 15 workers paint 5 houses in a day, then how many workers are required to paint 3 houses in a day.  
(b) Find the compound amount at the end of one year if Rs.10,000 are invested at 10% interest compounded annually.
- 5.(a) Draw the graph of function  $y = x^2 + 2x - 3$   
(b) Solve the equations:  
 $2x - y = 11$   
 $x + 4y = 1$
- 6.(a) If  $A = \begin{bmatrix} 1 & 2 \\ 4 & -3 \end{bmatrix}$  and  $B = \begin{bmatrix} 2 & -1 \\ 1 & 1 \end{bmatrix}$  then show that  $(AB)^t = B^t A^t$ .  
(b) Multiply  $(11011)_2$  and  $(101)_2$ .

Cancelled