

**MATHEMATICS**  
 SECTION - I

[Mat. Marks : 100]

Time Allowed : 3.00 Hours]

Note : Answer all the 14 questions.

Choose the correct answer from the given four alternatives and write the option code and the corresponding answer. 14x1=14

1. If  $n(A \times B) = 6$  and  $A = \{1, 3\}$  then  $n(B)$  is -----  
 (1) 1 (2) 2 (3) 3 (4) 6
2. If  $f: A \rightarrow B$  is a bijective function and if  $n(B) = 7$ , then  $n(A)$  is equal to -----  
 (1) 7 (2) 49 (3) 1 (4) 14
3. If the HCF of 65 and 117 is expressible in the form of  $65m - 117$ , then the value of  $m$  is -----  
 (1) 4 (2) 2 (3) 1 (4) 3
4. If  $1 + 2 + 3 + \dots + n = K$ , then  $1^3 + 2^3 + 3^3 + \dots + n^3$  is equal to -----  
 (1)  $k^2$  (2)  $k^3$  (3)  $\frac{k(k+1)}{2}$  (4)  $(k+1)^2$
5. If  $(x - 6)$  is the HCF of  $x^2 - 2x - 24$  and  $x^2 - kx - 6$ , then the value of  $k$  is -----  
 (1) 3 (2) 5 (3) 6 (4) 8
6. If  $A$  is a  $2 \times 3$  matrix and  $B$  is a  $3 \times 4$  matrix, how many columns does  $AB$  have  
 (1) 3 (2) 4 (3) 2 (4) 5
7. If  $\frac{a^3}{a-b}$  is added with  $\frac{b^3}{b-a}$ , then the new expression is -----  
 (1)  $a^2 + ab + b^2$  (2)  $a^2 - ab + b^2$  (3)  $a^3 + b^3$  (4)  $a^3 - b^3$
8. The perimeters of two similar triangles  $\triangle ABC$  and  $\triangle PQR$  are 36 cm and 24 cm respectively. If  $PQ = 10$  cm, then the length of  $AB$  is -----  
 (1)  $6\frac{2}{3}$  cm (2)  $\frac{10\sqrt{6}}{3}$  cm (3)  $66\frac{2}{3}$  cm (4) 15 cm
9. The area of triangle formed by the points  $(-5, 0)$ ,  $(0, -5)$  and  $(5, 0)$  is -----  
 (1) 0 sq. units (2) 25 sq. units (3) 5 sq. units (4) 50 sq. units
10. If  $\sin\theta = \cos\theta$ , then  $2\tan^2\theta + \sin^2\theta - 1$  is equal to -----  
 (1)  $\frac{3}{2}$  (2)  $\frac{3}{2}$  (3)  $\frac{2}{3}$  (4)  $\frac{-2}{3}$
11. If the ratio of the height of a tower and the length of its shadow is  $\sqrt{3}:1$  then the angle of elevation of the sun has measure  
 (1)  $45^\circ$  (2)  $30^\circ$  (3)  $90^\circ$  (4)  $60^\circ$
12. The height of a right circular cone whose radius is 5 cm and slant height is 13 cm will be -----  
 (1) 12 cm (2) 10 cm (3) 13 cm (4) 5 cm
13. The range of the data 8, 8, 8, 8, 8, ..... 8 is  
 (1) 0 (2) 1 (3) 8 (4) 3
14. The probability that a student will score centum in mathematics is  $\frac{4}{5}$ . The probability that he will not score centum is -----  
 (1)  $\frac{1}{5}$  (2)  $\frac{2}{5}$  (3)  $\frac{3}{5}$  (4)  $\frac{4}{5}$

## SECTION - II

Answer any 10 questions.

Question No. 28 is compulsory. select any 9 questions from the first 13 questions. 10x2=20

15. A Relation  $R$  is given by the set  $\{(x, y) / y = x + 3, x \in \{0, 1, 2, 3, 4, 5\}\}$  Determine its domain and Range.
16. Find  $k$  if  $f \circ f(k) = 5$ , where  $f(k) = 2k - 1$
17. If  $13824 = 2^a \times 3^b$ , then find  $a$  and  $b$ .
18. In a GP 729, 243, 81, ..... find  $t$ .
19. Find the excluded values of  $\frac{t}{t^2 - 5t + 6}$

CH/10/Mat/I

