

Time: 3.00 Hours

Standard 10 MATHEMATICS Part - A

Marks: 100

14x1=14

Note: i) Answer all the questions.

ii) Choose the most suitable answer from the four given alternatives and write the correct option.

- 1) If there are 1024 relations from a Set A = {1, 2, 3, 4, 5} to a Set B, then the number of elements in B is
a) 3 b) 2 c) 4 d) 8
- 2) If $f: A \rightarrow B$ is a bijective function and if $n(B) = 7$, then $n(A)$ is equal to
a) 7 b) 49 c) 1 d) 14
- 3) Is composition of three functions associative?
a) Sometimes true b) Always true c) Never true d) Not defined
- 4) If the HCF of 65 and 117 is expressible in the form of $65m - 117$, then the value of 'm' is
a) 4 b) 2 c) 1 d) 3
- 5) The value of $(1^3 + 2^3 + 3^3 + \dots + 15^3) - (1 + 2 + 3 + \dots + 15)$ is
a) 14400 b) 14200 c) 14280 d) 14520
- 6) The sequence $\sqrt{1}, \sqrt{55}, \sqrt{11}, \sqrt{55}, 2\sqrt{11}, \dots$ is
a) A.P b) G.P
c) both A.P and G.P d) neither A.P nor G.P
- 7) $Y^2 + \frac{1}{Y}$ is not equal to
a) $\frac{Y^4 + 1}{Y^2}$ b) $\left(Y + \frac{1}{Y}\right)^2$ c) $\left(Y - \frac{1}{Y}\right)^2 + 2$ d) $\left(Y + \frac{1}{Y}\right)^2 - 2$
- 8) which of the following should be added to make $x^4 + 64$ a perfect square
a) $4x^2$ b) $16x^2$ c) $8x^2$ d) $-8x^2$
- 9) The number of excluded values of $\frac{x^3 + x^2 - 10x + 8}{x^4 + 8x^2 - 9}$ is
a) 2 b) 1 c) 3 d) 4
- 10) If $\triangle ABC$ is an isoscles triangle with $\angle C = 90^\circ$ and $AC = 5\text{cm}$, then AB is
a) 2.5 cm b) 5cm c) 10 cm d) $5\sqrt{2}$ cm
- 11) In $\triangle ABC$, $DE \parallel BC$, $AB = 3.6\text{cm}$, $AC = 2.4\text{cm}$ and $AD = 2.1$ cm then the length of AE is
a) 1.4 cm b) 1.8cm c) 1.2cm d) 1.05cm
- 12) If (5, 7) (3, P) and (6, 6) are collinear, then the value of 'P' is
a) 3 b) 6 c) 9 d) 12
- 13) If slope of the line PQ is $\frac{1}{\sqrt{3}}$ then slope of the perpendicular bisector of PQ is
a) $\sqrt{3}$ b) $-\sqrt{3}$ c) $\frac{1}{\sqrt{3}}$ d) 0
- 14) $\tan \theta \operatorname{Cosec}^2 \theta - \tan \theta$ is equal to
a) $\sec \theta$ b) $\cot^2 \theta$ c) $\sin \theta$ d) $\cot \theta$

Part - B

II. Do any 10 sums: (Q.No: 28 is compulsory)

10x2=20

- 15) If $A = \{1, 3, 5\}$ and $B = \{2, 3\}$ then find $n(A \times B)$ and $n(B \times A)$.
- 16) Let $f(x) = 2x + 5$. If $x \neq 0$ then find $\frac{f(x+2) - f(2)}{x}$
- 17) Let $f(x) = x^2 - 1$. Find $f \circ f$.
- 18) Find the least number that is divisible by the first ten natural numbers.
- 19) Find the indicated terms whose n^{th} term is given by $a_n = -(n^2 - 4)$; a_4 and a_{11} .
- 20) Find the sum $3 + 1 + \frac{1}{3} + \dots$
- 21) Find the excluded value in the expression $\frac{y}{y^2 - 25}$
- 22) Determine the nature of roots of the quadratic equation $9x^2 - 24x + 16 = 0$

