

Time: 20 Minutes

Max. Marks: 20

SECTION "A" (MULTIPLE CHOICE QUESTION)

1. Choose the correct answer for each from the given options:

(i) If 1, $x - 1$, 3 are in A.P., then $x =$:

- 0 • 1 • 2 • 3

(ii) The H.M. between 3 and 6 is:

- $\frac{1}{4}$ • $\frac{9}{2}$ • $\pm\sqrt{18}$ • 4

(iii) If $\frac{a-b}{b-c} = \frac{a}{b}$, then a, b, c are in:

- A.P. • G.P. • H.P. • A.G.P.

(iv) The number of permutations of the letters of the word COMMITTEE is:

- $\binom{9}{2 \ 2 \ 2}$ • $\binom{6}{2 \ 2 \ 2}$ • $\binom{9}{2 \ 2 \ 1}$ • $\binom{2 \ 2 \ 2}{9}$

(v) The middle term in the expansion of $\left(2x - \frac{1}{x^2}\right)^{20}$ is the:

- ninth term • tenth term • eleventh term • twelfth term

(vi) If $n = 0$, then $\frac{(n+1)!}{n!} =$:

- 0 • 1 • n • ∞

(vii) $\sin 60^\circ \cos 30^\circ - \cos 60^\circ \sin 30^\circ =$:

- $\frac{1}{2}$ • $\frac{\sqrt{3}}{2}$ • $\frac{\sqrt{3}}{2}$ • $-\frac{1}{2}$

(viii) If arc length S is equal to the radius r , then the central angle θ is:

- 0 radian • $\frac{1}{2}$ radian • 2 radian • 1 radian

(ix) In a triangle ABC, if $\gamma = 90^\circ$, then the law of cosine reduces to:

- $a^2 = b^2 + c^2$ • $b^2 = a^2 - c^2$ • $c^2 = a^2 + b^2$ • $c^2 = a^2 - b^2$

(x) In an escribed triangle ABC, $\frac{\Delta}{r_3} =$:

- s • $(s-a)$ • $(s-b)$ • $(s-c)$

(xi) If $r \cos \theta = 4$ and $r \sin \theta = 3$, then $r =$:

- 3 • 5 • 6 • 2

(xii) $(10.5)^\circ =$:

- $\frac{\pi}{18}$ radians • $\frac{7\pi}{120}$ radian • $\frac{10.5}{\pi}$ radian • 5π radian

(xiii) If $A = \{2, 3\}$ and $B = \{3, 4\}$, then $(A - B) \cap B =$:

- ϕ • $\{\phi\}$ • $\{2\}$ • $\{3\}$

(xiv) $(A \cup A')' =$:

- A • A' • ϕ • U

(xv) The imaginary part of $i(3 + 5i^2)$ is:

- $-2i$ • $3i$ • -2 • -5

(xvi) If z is a complex number, then $z\bar{z} =$:

- z^2 • $(\bar{z})^2$ • $|z|$ • $|z|^2$

(xvii) The product of the roots of the equation $y^2 + 1 = 7y - 7$ is :

- 4 • 8 • 7 • 1

(xviii) If ω is a complex cube root of unity, then $(2 - \omega - \omega^2)^2 =$:

- -1 • 1 • 3 • 9

(xix) If A , B and C are non singular matrices, then $(CBA)^{-1} =$:

- $A^{-1}B^{-1}C^{-1}$ • $C^{-1}B^{-1}A^{-1}$ • $(ABC)^{-1}$ • ABC

(xx) If A is a square matrix, then $|A|A^{-1} =$:

- AA^{-1} • $|A|I_3$ • $\text{adj } A$ • A^2