



*This question paper contains four Sections A, B, C, and D. Each part is compulsory.

*Section A has Objective type questions and Sections B, C, and D have descriptive type questions

*Section A comprises of 20 questions of 1 mark each

*Section B comprises of 5 questions of 2 marks each

*Section C comprises of 2 questions of 3 marks each

*Section D comprises of 1 question of 4 marks

SECTION A

1. $\sin x = 0$, when $x = \dots\dots\dots$

- a) $n\pi$ b) $(2n + 1)\frac{\pi}{2}$ c) $(n\pi + 1)$ d) $(2n + 1)$

2. The value of $\sin 15^\circ$ is

- a) $\frac{\sqrt{3}}{2}$ b) $\frac{1}{\sqrt{2}}$ c) $\frac{\sqrt{3}-1}{2\sqrt{2}}$ d) $\frac{\sqrt{3}+1}{3\sqrt{2}}$

3. The radian measure corresponding to 25° is

- a) $\frac{4\pi}{3}$ b) $\frac{26\pi}{9}$ c) $\frac{5\pi}{36}$ d) 0

4. Solution of $5x - 3 < 3x + 1$ when x is an integer.

- a) $x = 2$ b) $x > 2$ c) $x < 2$ d) $x \neq 2$

5. If an inequality is of the type $ax + by \geq c$ or $ax + by \leq c$, then the points on the line $ax + by = c$ are also included in the solution region

- a) True b) False

6. The Value of $\frac{7!}{5!}$ is

- a) 24 b) 63 c) 64 d) 42

7. If $nC_9 = nC_8$, then the value of nC_{17} .

- a) 0 b) -1 c) 1 d) 2

8. What is the number of ways of choosing 4 cards from a pack of 52 playing cards?

- a) $52C_{48}$ b) $52C_4$ c) $52C_{52}$ d) $4C_{52}$

9. The equation of the circle with Centre at (0, 0) and radius r is

- a) $x^2 + y^2 = r^2$ b) $x^2 - y^2 = r^2$ c) $x^2 = y^2$ d) $(x - 1)^2 + (y + 1)^2 = r^2$

10. The coordinates of the focus of the parabola $y^2 = 12x$ is

- a) (3, 0) b) (0, 3) c) (12, 0) d) (0, 12)

11. The eccentricity of the ellipse $\frac{x^2}{25} + \frac{y^2}{9} = 1$.

- a) $\frac{3}{5}$ b) $\frac{4}{5}$ c) $\frac{2}{5}$ d) $\frac{1}{5}$

12. The coordinates of points in the XY plane are of the form.....

- a) (x, y, z) b) (0, y, z) c) (x, y, 0) d) (x, 0, z)

13. The distance between the points P(2, 2, 2) and Q (1, -2, 4) is,

- a) $\sqrt{21}$ b) $\sqrt{22}$ c) $\sqrt{21}$ d) $\sqrt{23}$

14. The octant in which the points (-4, 1, 3) lies

- a) I b) II c) III d) IV

15. The derivative of $x^2 - 2$ at $x = 10$ is

- a) 10 b) 20 c) -10 d) 18

16. $\frac{d}{dx}(f(x) + g(x)) = \frac{d}{dx}f(x) + \frac{d}{dx}g(x)$.

- a) True b) False

17. Derivative of $\tan x$ is.....

- a) x b) $\sec^2 x$ c) $\sec x$ d) $\operatorname{cosec}^2 x$

18. If A and B are Mutually exclusive events, then $P(A \cup B) = \dots\dots\dots$

- a) $P(A) + P(B)$ b) $P(A) + P(B) - P(A \cap B)$ c) $P(A) - P(B)$ d) $P(B) - P(A)$

19. One card is drawn from a well shuffled deck of 52 cards. If each outcome is equally likely, the

probability of getting a diamond card is

- a) $\frac{4}{52}$ b) $\frac{8}{52}$ c) $\frac{13}{52}$ d) $\frac{1}{52}$

20. A coin is tossed twice, the probability that at least one tail occurs.

- a) $\frac{1}{4}$ b) $\frac{2}{3}$ c) $\frac{3}{4}$ d) $\frac{4}{4}$

SECTION B

21. In how many ways can a team of 3 boys and 3 girls be selected from 5 boys and 4 girls?
22. Find the equation of the ellipse whose vertices are $(\pm 5, 0)$ and foci are $(\pm 4, 0)$.
23. Find the coordinates of the point which divides the line segment joining the points $(-2, 3, 5)$ and $(1, -4, 6)$ in the ratio 2:3 internally.
24. Find the derivative of $f(x) = \sin x \cos x$
25. Three coins are tossed once. Find the probability of getting three heads.

SECTION C

26. Show that $\tan 3x \tan 2x \tan x = \tan 3x - \tan 2x - \tan x$
27. A committee of two persons is selected from two men and two women. What is the probability that the committee will have a) no men? b) one man? C) two men ?

SECTION D

28. Solve the system of following inequalities graphically

$$3x + 4y \leq 60$$

$$x + 3y \leq 30$$

$$x \geq 0$$

$$y \geq 0$$
