

Roll No. 74990 to be filled in by the candidate.

(For all sessions)

Paper Code

8

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9

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Mathematics (Objective Type)

Time: 30 Minutes

Marks:20

NOTE: Write answers to the questions on objective answer sheet provided. Four possible answers A,B,C & D to each question are given. Which answer you consider correct, fill the corresponding circle A,B,C or D given in front of each question with Marker or pen ink on the answer sheet provided.

1-1. If $g(x) = \frac{1}{x^2}$, $x \neq 0$ then $g \circ g(x)$ equals.

(A) x (B) x^2 (C) x^4 (D) x^3

2. $\lim_{\theta \rightarrow 0} \frac{1 - \cos \theta}{\theta}$ equals.

(A) zero

(B) 1

(C) 2

(D) 3

3. The derivative of $\sqrt{x}$ at $x = 1$ is:

(A) $\frac{1}{2}$

(B) 2

(C) 1

(D) $-\frac{1}{2}$

4. $\frac{d}{dx} \left[\frac{1}{g(x)} \right]$ equals.

(A) $\frac{1}{g^2(x)}$ (B) $\frac{-g'(x)}{(g(x))^2}$ (C) $-g(x)$ (D) $\frac{1}{g(x)}$

5. If $y = 5e^x$ then y_3 equals.

(A) $25e^x$ (B) $75e^x$ (C) $15e^x$ (D) $5e^x$

6. If $f(x+h) = \cos(x+h)$ then $f'(x)$ equals.

(A) $\cos x$ (B) $-\cos x$ (C) $-\sin x$ (D) $\sin x$

7. Inverse of $\int \dots dx$ is:

(A) $\frac{d}{dy}$ (B) $\frac{u}{dx}$ (C) $\frac{dy}{dx}$ (D) $\frac{dx}{dy}$

8. $\int_a^b f(x) dx$ equals:

(A) $-\int_b^a f(x) dx$ (B) $\int_{-b}^a f(x) dx$ (C) $\int_b^{-a} f(x) dx$ (D) $\int_a^{-b} f(x) dx$

9. The general solution of $\frac{dy}{dx} = \frac{-y}{x}$ is:

(A) $xy = c$ (B) $x^2 y^2 = c$ (C) $\frac{x}{y} = c$ (D) $\frac{y}{x} = c$

10. $\int e^{-x} (\cos x - \sin x) dx$ equals:
 (A) $-\bar{e}^x \sin x + c$ (B) $\bar{e}^x \cos x + c$ (C) $\bar{e}^x + c$ (D) $\bar{e}^x \sin x + c$
11. The distance of point (3,7) from x-axis is:
 (A) 3 (B) 7 (C) -3 (D) -7
12. Slope of Y-axis is:
 (A) zero (B) 1 (C) 2 (D) undefined
13. Equation of horizontal line through (7,-9) is:
 (A) $y = -9$ (B) $y = 7$ (C) $x = -9$ (D) $x = 7$
14. (0,2) is solution of inequality.
 (A) $3x + 5y > 7$ (B) $3x + 5y < 7$ (C) $x < 0$ (D) $x > 0$
15. Centre of circle $x^2 + y^2 + 2gx + 2fy + c = 0$ is:
 (A) (g, f) (B) $(-g, f)$ (C) $(0, 0)$ (D) $(-g, -f)$
16. Equation of Latus rectum of parabola $x^2 = 4ay$ is:
 (A) $y = -a$ (B) $y = a$ (C) $x = -a$ (D) $x = a$
17. Vertices of $\frac{x^2}{16} - \frac{y^2}{25} = 1$ are:
 (A) $(0, \pm 4)$ (B) $(0, \pm 5)$ (C) $(\pm 4, 0)$ (D) $(\pm 5, 0)$
18. The non zero vectors $\underline{a}$ and $\underline{b}$ are parallel if $\underline{a} \times \underline{b}$ is:
 (A) zero (B) 1 (C) 2 (D) 3
19. $\cos \theta$ equals:
 (A) $\underline{a} \cdot \underline{b}$ (B) $\underline{a} \times \underline{b}$ (C) $|\underline{a} \times \underline{b}|$ (D) $\hat{\underline{a}} \cdot \hat{\underline{b}}$
20. If any two vectors of scalar triple product are equal then its value is:
 (A) -1 (B) zero (C) 1 (D) 2