☆ **Roll No.** 765216 *to be filled in by the candidate.* **(For all sessions)** | Paper Code | 8 | 1 | 9 | 1 |

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. The domain of $g(x) = 2x - 5$ is:

    (A) IR   **(B)** the set of positive No.

    (C) The set of negative real No.   **(D)** The set of non-negative real No.

2. $\lim\limits_{n \to x}\left(1 + \dfrac{1}{n}\right)^{\frac{n}{2}} =$

    (A) e **(B)** e^2 **(C)** $e^{\frac{1}{2}}$ **(D)** e^3

3. $\dfrac{d}{dx}(x-5)(3-x) =$

    (A) $2x + 8$ **(B)** $-2x + 8$ **(C)** $2x - 8$ **(D)** $x + 8$

4. If $3x + 4y + 7 = 0$, then $\dfrac{dy}{dx} =$

    (A) $\dfrac{3}{4}$ **(B)** $\dfrac{4}{3}$ **(C)** $\dfrac{-4}{3}$ **(D)** $\dfrac{-3}{4}$

5. $\dfrac{d}{dx}(\sec x) =$

    (A) $\sec x \tan x$ **(B)** $\sec x$ **(C)** $\csc x$ **(D)** $-\sec x \tan x$

6. If $f(x) = \sin x$, then $f'(0) =$

    (A) 0   **(B)** 1   **(C)** -1   **(D)** 2

7. Differential of y is denoted by:

    (A) dy' **(B)** $\dfrac{dy}{dx}$ **(C)** dy **(D)** dx

8. $\displaystyle\int \dfrac{1}{1+x^2} e^{\tan^{-1} x}\, dx =$

    (A) $e^{\sec x} + c$ **(B)** $e^{\tan x} + c$ **(C)** $e^{-\tan x} + c$ **(D)** $\cdots - c$

9. $\int_1^e \ell nx\, dx =$

(A) -1   (B) 0   (C) 1   (D) e

10. The order of differential equation $\dfrac{d^2y}{dx^2} + \dfrac{dy}{dx} - 3x = 0$ is:

(A) 2   (B) 1   (C) 0   (D) 3

11. If a line "ℓ" is parallel to $x-axis$, then inclination=

(A) 90^0 (B) 0^0 (C) 30^0 (D) 45^0

12. If a line "ℓ" intersect $x-axis$ at $(a,0)$, then "a" is called _____ of line "ℓ".

(A) y-intercept   (B) $x-intercept$ (C) slope   (D) inclination

13. $y = mx + c$ is_____form of equaion of line:

(A) point slope   (B) intercept   (C) normal   (D) slope intercept

14. An equaion of line bisecting I and III quadrant is:

(A) $x = y$ (B) $x = -y$ (C) $x + 2y = 0$ (D) $x - 2y = 0$

15. $x = 0$ is the solution of the inequality.

(A) $2x + 1 > 0$ (B) $2x + 1 < 0$ (C) $2x + 1 \le 0$ (D) $2x - 1 < 0$

16. The centre of circle $(x+1)^2 + (y-2)^2 = 26$ is:

(A) (1 , 2)   (B) (-1 , 2)   (C) (-1 , -2)   (D) (1 , -2)

17. The equation of directrix of the parabola $x^2 = 4ay$ is:

(A) $x = a$ (B) $x = -a$ (C) $y = -a$ (D) $y = a$

18. The centre of Ellipse $\dfrac{x^2}{4} + \dfrac{y^2}{1} = 16$ is:

(A) (4 , 1)   (B) (1 , 4)   (C) (-1 , 4)   (D) (0 , 0)

19. If $\underline{U}$ is any vector then $\hat{u} =$

(A) $\underline{\underline{u}}$ (B) $\underline{u}$ (C) $\dfrac{-U}{|U|}$ (D) $U.|U|$

20. If $2i + \alpha\,\underline{j} + 5\underline{k}$ and $3i - j - \alpha\,k$ are perpendicular, then $\alpha =$

(A) 0   (B) 1   (C) -1   (D) 2