# Inter (Part-II) 2018

| Mathematics | Group-I | PAPER: II |
|---|---|---|
| Time: 30 Minutes | (OBJECTIVE TYPE) | Marks: 20 |

**Note:** Four possible answers, A, B, C and D to each question are given. The choice which you think is correct, fill that circle in front of that question with Marker or Pen ink in the answer-book. Cutting or filling two or more circles will result in zero mark in that question.

**1-1-** $\frac{d}{dx}\sin^{-1} x =$ :

(a) $\frac{1}{\sqrt{1+x^2}}$ (b) $\cos^{-1} x$

(c) $\frac{1}{\sqrt{1-x^2}}$ √ (d) $\frac{1}{\sqrt{1-x}}$

**2-** The order of the differential equation $\frac{d^2y}{dx^2} - \frac{dy}{dx} + 2x = 0$ is:

(a) 2 √ (b) 1

(c) 0 (d) 3

**3-** $\cos h^2 x - \sin h^2 x =$ :

(a) 1 √ (b) –1

(c) 0 (d) 2

**4-** $\int \frac{1}{f(x)} \times f'(x)\, dx =$ :

(a) $\ln x + c$ (b) $\ln [f'(x) + c]$

(c) $\frac{1}{f(x)} + c$ (d) $\ln |f(x)| + c$ √

**5-** Let $f(x) = x^2 + \cos x$, then f(x) is:

(a) Odd function (b) Constant function

(c) Even function √ (d) Neither even nor odd

**6-** $\int 3^x\, dx =$ :

(a) $3^x + c$ (b) $3^x \ln 3 + c$

(c) $\frac{3^x}{\ln 3} + c$ √ (d) $3 \ln 3^x + c$

7- If f(x) has second derivative at "c" such that $f'(c) = 0$ and $f''(c) < 0$ then "c" is a point of:

(a) Maxima ✓ (b) Minima

(c) Zero point (d) Point of inflection

8- If $y = \sqrt{1 - x^2}$, $0 < x < 1$ then $\frac{dy}{dx} =$ :

(a) $\sqrt{x^2 - 1}$ (b) $\frac{1}{\sqrt{1 - x^2}}$

(c) $\frac{x}{\sqrt{1 - x^2}}$ (d) $\frac{-x}{\sqrt{1 - x^2}}$ ✓

9- $\int_0^{\pi/2} \cos x \, dx =$ :

(a) 0 (b) 1 ✓

(c) 2 (d) 3

10- If $y = e^{\sin x}$, then $\frac{dy}{dx} =$ :

(a) $e^{\sin x}$ (b) $e^{\sin x} \cos x$ ✓

(c) $e^{\sin x} + \cos x$ (d) $-e^{\sin x} \cos x$

11- The equation $x^2 + y^2 + 2gx + 2fy + c = 0$ represents a circle with centre:

(a) $(-g, -f)$ ✓ (b) $(-f, +g)$

(c) $(f, g)$ (d) $(0, 0)$

12- If $\alpha$ is the inclination of the line $l$, then $\frac{x - x_1}{\cos \alpha} = \frac{y - y_1}{\sin \alpha} = r$ (say) is called:

(a) Point slope form (b) Normal form

(c) Symmetric form ✓ (d) Intercept form

13- The direction cosines of y-axis are:

(a) (0, 1, 0) ✓ (b) (1, 0, 0)

(c) (0, 0, 1) (d) (0, 0, 0)

14- The feasible solution which maximizes or minimizes the objective function is called:

(a) Exact solution (b) Optimal solution ✓

(c) Final solution (d) Objective solution

15- **Length of the vector $2\underline{i} - \underline{j} - 2\underline{k}$ is:**

(a) 2 (b) 4

(c) 3 √ (d) 5

16- **The centroid of a triangle divides each median in ratio:**

(a) 2 : 1 √ (b) 1 : 2

(c) 2 : 3 (d) 1 : 1

17- **The perpendicular distance of line $3x + 4y - 10 = 0$ from the origin is:**

(a) 0 (b) 1

(c) $\frac{1}{2}$ (d) 2 √

18- **The straight line $y = mx + c$ is tangent to the ellipse $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$ if:**

(a) $c^2 = a^2 m^2 - b^2$ (b) $c^2 = b^2 m^2 + a^2$

(c) $c^2 = b^2 m^2 - a^2$ (d) $c^2 = a^2 m^2 + b^2$ √

19- **If $\alpha$ is the inclination of a line "$l$", then it must be true that:**

(a) $0 \leq \alpha < \frac{\pi}{2}$ (b) $\frac{\pi}{2} \leq \alpha < \pi$

(c) $0 \leq \alpha < \pi$ √ (d) $0 \leq \alpha < 2\pi$

20- **Axis of the parabola $x^2 = 4ay$ is:**

(a) $y = 0$ (b) $x = 0$ √

(c) $x = y$ (d) $x = 1$