

MATHEMATICS PAPER-II

TIME ALLOWED: 30 Minutes

GROUP-I

OBJECTIVE

MAXIMUM MARKS: 20

Note: You have four choices for each objective type question as A, B, C and D. The choice which you think is correct, fill that circle in front of that question number. Use marker or pen to fill the circles. Cutting or filling two or more circles will result in zero mark in that question. Attempt as many questions as given in objective type question paper and leave others blank. No credit will be awarded in case BUBBLES are not filled. Do not solve question on this sheet of OBJECTIVE PAPER.

Q.No.1

(1) Let $f : x \rightarrow y$ be a bijective function then $\text{Dom } f^{-1}$ is equal to:-

- (A) Range f (B) Range f^{-1} (C) Dom f (D) Dom f^{-1}

(2) $f(x) = x^{2/3} - 1$ is:-

- (A) Odd function (B) Even function (C) Implicit function (D) None of these

(3) If $y = \frac{1}{x^2}$ then $\frac{dy}{dx}$ at $x = -1$ is equal to:- (A) 0 (B) 1 (C) 2 (D) -2

(4) If $x^2 + y^2 = 4$ then $\frac{dy}{dx}$ is equal to:- (A) $2x$ (B) $\frac{x}{y}$ (C) $-\frac{x}{y}$ (D) $\frac{y}{x}$

(5) $\frac{d}{dx}(\cot x)$ is equal to:- (A) $\sec x$ (B) $\sec x \tan x$ (C) $\sec^2 x$ (D) $-\text{cosec}^2 x$

(6) $\frac{d}{dx}(a)^x$ equals:- (A) $a^x \ln x$ (B) $a^x \ln a$ (C) $\frac{a^x}{\ln a}$ (D) $x a^{x-1}$

(7) $\frac{d}{dx}(\cos^{-1} x)$ is equal to:- (A) $\frac{1}{\sqrt{1-x^2}}$ (B) $\frac{-1}{\sqrt{1-x^2}}$ (C) $\frac{1}{1+x^2}$ (D) $\frac{-1}{1+x^2}$

(8) $\int a^x dx$ is equal to:- (A) a^x (B) $a^x \ln x$ (C) $\frac{a^x}{\ln a}$ (D) $\frac{a^x}{\ln x}$

(9) $\int \frac{1}{x} dx$ is equal to:- (A) $-\frac{1}{x^2}$ (B) $\ln x$ (C) 0 (D) $\frac{1}{x}$

(10) $\int \frac{1}{(1+x^2)\tan^{-1}x} dx$ is equal to:- (A) $\tan^{-1}x$ (B) $\frac{-1}{1+x^2}$ (C) $\ln(\tan^{-1}x)$ (D) $\frac{-1}{\tan^{-1}x}$

(11) If $f(x) = |x| = -x$ then:- (A) $x > 0$ (B) $x < 0$ (C) $x = 0$ (D) $x \geq 0$

(12) $\int_a^b f(x) dx$ is equal to:- (A) $-\int_a^b f(x) dx$ (B) $-\int_b^a f(x) dx$ (C) $\int_a^0 f(x) dx$ (D) $\int_0^b f(x) dx$

(13) Order of the differential equation $x \frac{d^2 y}{dx^2} + \frac{dy}{dx} + y = 0$ is:- (A) 2 (B) 1 (C) 3 (D) 4

(14) The distance between the points $(0, 0)$ and $(2, 1)$ is:- (A) 3 (B) $\sqrt{3}$ (C) $\sqrt{5}$ (D) 5

(15) The centroid of triangle is the point of concurrency of all three:-

- (A) Altitudes (B) Medians (C) Angle bisectors (D) Right bisectors

(16) $(1, 0)$ is the solution of the inequality:-

- (A) $4x - 5y < 2$ (B) $7x - 5y < -2$ (C) $4x + 7y > 2$ (D) $5x - 3y < 3$

(17) The radius of circle; $4x^2 + 4y^2 - 8x + 12y - 25 = 0$ is:-

- (A) $\frac{\sqrt{19}}{2}$ (B) $\frac{\sqrt{19}}{2}$ (C) $\frac{19}{\sqrt{2}}$ (D) $\frac{19}{2}$

(18) Equation of directrix of parabola $y^2 = -4ax$ is:- (A) $x = -a$ (B) $x = a$ (C) $y = a$ (D) $y = -a$

(19) The angle in a semicircle is of measure:- (A) 45° (B) 60° (C) 90° (D) 180°

(20) If $2i + \alpha j + 5k$ and $3i + j + \alpha k$ are perpendicular vectors then α is equal to:-

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