SG

1219 Warning:- Please write your Roll No. in the space provided and sign. Roll No----------
(Inter Part – II) (Session 2015-17 to 2017-19) Sig. of Student ----------

Mathematics (Objective) **Paper (II)**

Time Allowed:- 30 minutes **PAPER CODE 4195** 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. Write **PAPER CODE, which is printed on this question paper,** on the both sides of the Answer Sheet and fill bubbles accordingly, otherwise the student will be responsible for the situation. Use of Ink Remover or white correcting fluid is not allowed.

Q. 1

1) $\int Cot\, x\, dx$ equals

(A) $\ell n\, Cos\, x + c$ (B) $\ell n\, Sin\, x + c$ (C) $-\ell n\, Cos\, x + c$ (D) $-\ell n\, Sin\, x + c$

2) $\int \frac{1}{x^2+2x+5}\, dx$ equals

(A) $2\tan^{-1}\left(\frac{x+1}{2}\right)+c$ (B) $2\tan^{-1}\left(\frac{x-1}{2}\right)+c$ (C) $\frac{1}{2}\tan^{-1}\left(\frac{x-1}{2}\right)+c$ (D) $\frac{1}{2}\tan^{-1}\left(\frac{x+1}{2}\right)+c$

3) $x = at^2$ and $y = -2at$ are parametric equations of the curve

(A) $y^2 = -4ax$ (B) $y^2 = 4ax$ (C) $x^2 = -4ay$ (D) $x^2 = 4ay$

4) $\lim_{x\to 3} \frac{x-3}{\sqrt{x}-\sqrt{3}}$ equals

(A) $\frac{1}{2\sqrt{3}}$ (B) $\frac{1}{\sqrt{3}}$ (C) $\sqrt{3}$ (D) $2\sqrt{3}$

5) The derivative of Cot x w.r.t x equals

(A) $-Cosec^2\, x$ (B) $Cosec^2\, x$ (C) $-Sec^2 x$ (D) $Sec^2 x$

6) If $y = e^{f(x)}$, then $f'(x)$ will be equal to

(A) $y\cdot\frac{dy}{dx}$ (B) $y\cdot\frac{dx}{dy}$ (C) $\frac{1}{y}\,\frac{dy}{dx}$ (D) $\frac{1}{y}\,\frac{dx}{dy}$

7) $\frac{d}{dx}\left[\ell n\,(Sin\, hx)\right]$ equals

(A) $Cot\, hx$ (B) $\tan hx$ (C) $-Cot\, hx$ (D) $-\tan hx$

8) Slope of tangent to the curve $x^2 - y^2 - 12 = 0$ at point (4 , 2) will be equal to

(A) 4 (B) $\frac{1}{4}$ (C) 2 (D) $\frac{1}{2}$

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9) It two vectors $\underline{i}-\underline{j}+\alpha\underline{k}$ and $\underline{i}-2\underline{j}-3\underline{k}$ are perpendicular, then 'α' will be equal to

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

10) Moment of force $\underline{F}$ about a point with position vector $\underline{r}$ will be equal to

(A) $\underline{F}\times\underline{r}$ (B) $\underline{r}\times\underline{F}$ (C) $\underline{d}\times\underline{F}$ (D) $\underline{F}\times\underline{d}$

11) $\int_0^{\pi/2} Cos\,t\ dt$ will be equal to

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

12) Area bounded by curve $y=f(x)$ about $X-axis$ from $x=a$ to $x=b$ is denoted by

(A) $\int_a^b x\,dy$ (B) $\int_b^a x\,dy$ (C) $\int_b^a y\,dx$ (D) $\int_a^b y\,dx$

13) If (4 , -2) ; (-2 , 4) and (4 , 10) are vertices of triangle, then its centroid will be

(A) (-2 , 4) (B) (2 , 4) (C) (2 , -4) (D) (-2 , -4)

14) If the straight lines represented by $ax^2+2\,hxy+by^2=0$ are perpendicular, then

(A) $h^2-ab=0$ (B) $h^2+ab=0$ (C) $a+b=0$ (D) $a-b=0$

15) The angle from the line with slope 2 to the line with slope 1 will be

(A) $\tan^{-1}(3)$ (B) $\tan^{-1}\left(\frac{1}{3}\right)$ (C) $Cos^{-1}(3)$ (D) $Cos^{-1}\left(\frac{1}{3}\right)$

16) Equation of straight line passing through (0 , 0) and parallel to the line with slope 2 will be

(A) $x=\frac{2}{3}y$ (B) $x=y$ (C) $y=\frac{1}{2}x$ (D) $y=2x$

17) A function which is to be maximized or minimized is called

(A) Objective function (B) Optimal function (C) Constant function (D) Polynomial function

18) For ellipse $\frac{x^2}{a^2}+\frac{y^2}{b^2}=1$; a^2e^2 will be equal to

(A) b^2-a^2 (B) $a^2(1-b^2)$ (C) a^2-b^2 (D) a^2+b^2

19) The equation of tangent drawn from point (2 , 1) to the circle $x^2+y^2=5$ equals.

(A) $2y+x=0$ (B) $2y-x=0$ (C) $2x-y=0$ (D) $2x+y-5=0$

20) The co-ordinates of vertex of Parabola $x+8-y^2+2y=0$ will be

(A) (-9 , 1) (B) (9 , 1) (C) (9 , -1) (D) (-9 , -1)

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Mathematics (Subjective) (Inter Part -- II) Paper (II)

Time Allowed: 2.30 hours (Session 2015-17 to 2017-19) Maximum Marks: 80

Section ---------- I

2. Answer briefly any Eight parts from the followings:- **8 × 2 = 16**

(i) $f(x)=\sqrt{x+4}$ Find $f(x^2+4)$

(ii) Evaluate $\lim_{x\to 0}(1+3x)^{\frac{1}{x}}$ (iii) Evaluate $\lim_{x\to 0}\frac{x}{\tan x}$

(iv) Find $\frac{dy}{dx}$ if $y=\frac{x^2+1}{x^2-3}$ (v) Find $\frac{dy}{dx}$ if $xy+y^2=2$

(vi) Differentiate w.r.t x $Sin^{-1}\sqrt{1-x^2}$

(vii) Find $\frac{dy}{dx}$ if $y=\ell n(9-x^2)$ (viii) Find the extreme value of $f(x)=x^2-x-2$

(ix) Find $\frac{dy}{dx}$ if $y=5\ e^{3x-4}$ (x) Find $\frac{dy}{dx}$ if $y=Sinh3x$

(xi) Find $\frac{dy}{dx}$ if $y=\sqrt{x+\sqrt{x}}$

(xii) Define point of inflection of a function.

3. Answer briefly any Eight parts from the followings:- **8 × 2 = 16**

(i) Find δy if $y=x^2-1$

(ii) Evaluate $\int\frac{1}{1+\cos x}dx, \left(-\frac{\pi}{2}<x<\frac{\pi}{2}\right)$

(iii) Find the approximate increase in the volume of a cube if the length of its each edge changes from 5 to 5.02

(iv) Evaluate $\int\frac{3x+2}{\sqrt{x}}dx$ (v) Evaluate $\int\frac{ax+b}{ax^2+2bx+c}dx$

(vi) Find $\int\frac{1}{x\,\ell n\,x}dx$ (vii) Find $\int xe^x\,dx$

(viii) Evaluate $\int x^3\ell n\,x\,dx$

(ix) Evaluate $\int_{\frac{\pi}{6}}^{\frac{\pi}{2}}Cost\,dt$ (x) Evaluate $\int_0^2(e^{x/2}-e^{-x/2})\,dx$

(xi) Define feasible solution.

(xii) Graph the solution set of $5x-4y\le 20$

P.T.O **1230** -- 1219 -- 18000

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