SAH

Roll No. _____ Annual 2018

Mathematics
Paper : II

(INTER PART II CLASS 12th )
SUBJECTIVE

Time : 2 : 30 Hours
Marks : 80

Note :- **Section I is compulsory. Attempt any three Questions from section II.**

## Section = I

2. **Write short answers to any Eight parts.** **( 8x 2 = 16)**

i. $f(x)=\frac{x}{x^2-4}$, find the domain and range of f (x).

ii. Prove the identities $Cosh^2x-Sinh^2x=1$ .

iii. Find $fog(x)$ if $f(x)=\frac{1}{\sqrt{x-1}}$ , $g(x)=\frac{1}{x^2}$ , $x\neq 1$

iv. Define derivative of a function.

v. If $y=\sqrt{x+2}$ find $dy/dx$ from first principle.

vi. Differentiate $\frac{x^2+1}{x^2-3}$ *w.r to* "$x$".

vii. Differentiate w. r. to "x" $(x-5)(3-x)$

viii. Find $dy/dx$ if $x=at^2$ *and* $y=2at$ .

ix. Find $dy/dx$ if $3x+4y+7=0$

x. Prove that $\frac{d}{dx}(Sin^{-1}x)=\frac{1}{\sqrt{1-x^2}}, x\in(-1,1)$ .

xi. Differentiate $Sin^3x$ *w.r.to* $Cos^2x$

xii. Find $f'(x)$ *if* $f(x)=e^{\sqrt{x}-1}$

3. **Write short answers to any Eight parts.** **( 8 x 2 = 16 )**

i. Find $\delta y$ and dy if $y=x^2+2x$ when $x$ changes from 2 to 1.8.

ii. Evaluate $\int\left(\sqrt{x}-\frac{1}{\sqrt{x}}\right)^2 dx$ , $x>0$

iii. Evaluate $\int\frac{ax+b}{ax^2+2bx+c}dx$ .

iv. Evaluate $\int\frac{x^2}{4+x^2}dx$

v. Evaluate $\int\frac{1}{(1+x^2)\,Tan^{-1}x}dx$

vi. Evaluate $\int x\,ln\,x\,dx$

vii. Evaluate $\int\frac{xe^x}{(1+x)^2}dx$

viii. Evaluate $\int_0^{\pi/4} Secx(Secx+\tan x)dx$

ix. Find the area bounded by the curve $y=x^3+2x^2$ and $x-axis$ .

x. Solve $ydx+xdy=0$

xi. Define a corner point or vertex of solution region.

xii. Graph the inequality $x+2y<6$ .

**( Turn Over )**

SAH

Roll No._____ Annual 2018

**Mathematics**
**Paper : II**

**(INTER PART II CLASS 12th) - (II )**
**OBJECTIVE**

**Time :30 Minutes**
**Marks : 20**

**Code : 8193**

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 with marker or pen. Cutting or filling two or more circles will result in zero mark in that question.

1 i. $\left[\hat{i}\ \hat{i}\ \hat{k}\right] =$

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

ii. Projection of a vector $\underline{v}$ along vector $\underline{u}$ is

(A) $\frac{\underline{u}\times\underline{v}}{|\underline{v}|}$ (B) $\frac{\underline{u}.\underline{v}}{|\underline{u}|}$ (C) $\frac{\underline{u}.\underline{v}}{\hat{u}}$ (D) $\frac{\underline{u}.\underline{v}}{|\underline{v}|}$

iii. Length of the major and minor axes of the ellipse $x^2+16y^2=16$ is

(A) 4 , 1 (B) 10 , 5 (C) 8 , 2 (D) 16 , 2

iv. The length of latus rectum of the ellipse $\frac{x^2}{36}+\frac{y^2}{25}=1$ is

(A) $\frac{25}{6}$ (B) $\frac{25}{3}$ (C) $\frac{25}{36}$ (D) $\frac{3}{25}$

v. Length of the diameter of the circle $(x+5)^2+(y-8)^2=12$ is

(A) $4\sqrt{3}$ (B) $2\sqrt{3}$ (C) 12 (D) 24

vi. ( 3 , 2 ) is not in the solution of inequality

(A) $x+y>2$ (B) $x-y>1$ (C) $3x+5y>7$ (D) $3x-7y<3$

vii. Equation of a line passing through (5 , - 7) having slope undefined is

(A) $y=-7$ (B) $x=5$ (C) $x=-5$ (D) $y=7$

viii. The line ax + by + c = 0 is parallel to $x-axis$ if

(A) a = 0 (B) b = 0 (C) c = 0 (D) b = c

ix. Y - co-ordinate of centroid of the triangle with vertices A(-2 , 3) B ( -4 , 1) C (3 , 5) is

(A) 9 (B) 3 (C) 9/2 (D) 3/2

x. Distance of the point $P(x,y)$ from $y-axis$ is

(A) $|x|$ (B) $|y|$ (C) $x$ (D) $y$

(Turn Over)