Serial No. of Answer Book	MRD-E/XI (A)	Roll Number
_____	**Mathematics Part-II**	_____

Fic. No. _____

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Mathematics Part-II

Time: 20 Min **SECTION "A"** Marks: 20

NOTE:Use this sheet for this section. No marks will be awarded for cutting, erasing or overwriting.

Q1.Choose the correct answer from the given choices i.e. (a, b, c, d) and insert into the relevant box.

(i). $\lim_{x\to 4}(\log_4 x)(\log_4 x^2)$ (A) 2 (B)16 (C)10 (D) 9

(ii) If $x = t^4$ $y = t^3$ than $\frac{dy}{dx}$ =_____ (A) $\frac{3}{4}$ (B) $\frac{3}{4t}$ (C) $\frac{1}{t}$ (D) t

(iii). $\frac{d}{dx}(\tan\alpha\tan\alpha S$ =_____ (A).0 (B) Cos α Sec^2 α (C) Tan α Cosx (D).None

(iv). $\int e^{\cos x}$ Sinx dx = _____ (A) -E$^{\cos x}$ (B) Sinx (C) -e$^{\sin x}$ (D) None

(v). $\int_2^3 f(x) + \int_3^2 f(x)\,dx =$ _____ (A) 0 (B) $\int_2^3 f(x)$ (C) $\int_2^3 f(x)\,dx$ (D) None

(vi). The Angle between two straight lines l_1, l_2 then tan φ = _____.

(A) $\frac{m2-m1}{1+m1m2}$ (B) $\frac{m1+m2}{1-m1m2}$ (C) $\frac{m2+m1}{1-m1m2}$ (D) NONE

(vii). The Length of the Latus-Rectum to ellipse $16x^2 + 25y^2 = 400$.

(A) 8 (B) 10 (C) $\frac{32}{5}$ (D) 8

(viii). The line y = mx + c passes through origin then .

(A) y = mx (B) y = mx+c (C) y = 0 (D) 0

(ix). The Perpendicular distance from origin then .

(A) d = c (B) d = $\frac{ax+by}{\sqrt{a^2+b^2}}$ (C $\frac{c}{\sqrt{a^2+b^2}}$ (D) 0

(x). The angle of inclination for the line parallel to y – x is $\phi \neq$

(A) 90^0 (B) 75^0 (C) 45^0 (D) 60^0

(xi). The line y = mx + c Tangent to ellipse. If c^2 =

(A) $c^2 = a^2m^2-b^2$ (B) $c^2 = a^2m^2+b^2$ (C) $c = \frac{a}{m}$ (D) None

(xii). The asymptotes of hyperbola.

(A) $y = \pm\frac{bx}{a}$ (B) $y = \pm\frac{ax}{b}$ (C) $x = \pm\frac{by}{a}$ (D) None

(xiii). The distance between foci to ellipse $25x^2 + 16y^2 = 400$ is _____

(A) 6 (B) 10 (C) 7 (D) 8

(xiv). The equation of direct in to parabola $y^2 = 8x$ is _____

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

(xv). The volume of Parellopiped are _____

(A) |a.b x c| (B) |a x b| (C) |a. C x b| (D) |a x c|

(xvi). If Two vectors a and b are Perpendicular to each other if a.b =

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

(xvii). Length of the vector | a | = | 4i + 7j + 2k | = _____

(A) $\sqrt{69}$ (B) 9 (C) 7 (D) 5

(xviii). $\lim_{x\to 0}\frac{e^{2x}-1}{2x}$ =_____ (A) 1 (B) 0 (C) 2 (D) 4

(xix). $\lim_{x\to 0}\frac{\text{Sin}px}{qx}$ =_____ (A) 1 (B) $\frac{p}{q}$ (C) 0 (D) 2

(xx). $\int e^{2x}dx$ = _____ (A) $\frac{e^{2x+1}}{2x+1}$ (B) e^{2x} (C) $\frac{e^{2x}}{2}$ (D) 0

MRD-E/XI (A)

Mathematics Part-II

Time: Allowed: 2.40h Marks: 80

SECTION "B" Marks: 50

Q2. Attempt any Ten (10) questions. All question carry equal Marks.

(i) $f(x) = x - 4 \quad g(x) = 3x - 2$ Find f og $^{-1}$

(ii) $\lim_{x \to 2} \dfrac{\sqrt{x+7} - 3}{x - 2}$

(iii) $y = x + \sqrt{x}$ Differentiate w-r-t abinito method.

(iv) $\dfrac{y}{x} = \tan^{-1} \dfrac{x}{y}$ Find $\dfrac{dy}{dx} = \dfrac{y}{x}$

(v) Use differential to Find approximate value of $\sqrt[3]{61}$

(vi) $\int \cos^3 3x dx$

(vii) $\int \dfrac{e^{2x}}{1+e^2}$

(viii) Use distance Formula show that A(3,1) B(6,2) C(9,3) are collinear.

(ix) Are the pair of lines are Parallel if yes then Find distance between $6x + 8y + 16 = 0$ and $3x + 4y - 12 = 0$

(x) Find the equation of circle whose centre (3,4) and which contain (8,9).

(xi) Show that the line $y = mx + \dfrac{a}{m}$ is tangent to Parabola $y^2 = 4ax$.

(xii) Find the eccentricity of the ellipse $\dfrac{x^2}{a^2} + y^2 = 1$; if its latus-Rectum be equal to half of its minor axis.

(xiii) Use the usual notation prove that in triangle ABC. $a = bCos\gamma + CCos\beta$

SECTION "C" Marks: 30

Note: Attempt any THREE questions. All questions carry equal marks.

Q3. (A) $\lim_{x \to 0} \dfrac{e^{\frac{1}{x}} - 1}{e^{\frac{1}{x}} + 1} \quad x < 0$ **(B)** $y = Sin(Sinx)$ Prove that $y'' + \tan xy + yCos^2 x$

Q4. (A) $\int_0^{\frac{3\pi}{4}} |Cosx| dx$ **(B)** $\int \dfrac{dx}{25 - 16x^2}$

Q.5 (A) Find the Points Trisecting the line Segment joining the points A(2,1) B(3,6).

(B) Find angle θ Form line l_1=x - sy + 3 = 0 and l_2 = 3u – y + 7 = 0

Q.6 (A) For what value of a. the circle $x^2 + y^2 - 2ax - 4 = 0$ will Touch the line $x - 2y = 6$

(B) Find the Value of P for which the line $xCos\alpha + ySin\alpha = P$ Touch the ellipse