# MODEL PAPER (MATHEMATICS) INTER (PART – II)

## (BISE BWP) SESSION (2023-25) AND ONWARD (OBJECTIVE)

| Time : 30 Minutes | Marks : 20 | Paper Code No. 8197 |
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**Note** : Four possible choices A , B , C ,D to each question are given. Which choice is correct fill that circle in front of that Question No on the Objective Bubble Sheet. Use Marker or Pen to fill the circles. Cutting or filling two or more circles will result in Zero Mark in that Question.

**20 x 1 = 20**

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| 1 | If f(x) $=\sqrt{x+1}$ then range of f is ; | $(-\alpha, 0)$ | $(0, \alpha)$ | $(-\alpha, \alpha)$ | $(\alpha, -\alpha)$ |
| 2 | $\lim_{n\to\infty}(1+\frac{1}{n})^{\frac{n}{2}}$ = | $e^{-1}$ | $e^{\frac{1}{2}}$ | $e^{2}$ | $e^{\frac{n}{2}}$ |
| 3 | If f(x)=$cosx$ then f`($\pi$)= | -1 | 1 | 2 | 0 |
| 4 | $\frac{d}{dx}(5^x)$= | $5^x$ | $x5^x$ | $5^x ln5$ | $\frac{5^x}{ln5}$ |
| 5 | $\frac{d}{dx}(-cot^{-1}x)$= | $cosec^2 x$ | $-cosecxcotx$ | $\frac{1}{1+x^2}$ | $\frac{-1}{1+x^2}$ |
| 6 | The function $f(x)$=-3$x^2$ has maximum value at | x=3 | x=2 | x=1 | x=0 |
| 7 | Equation of line parallel to $x+3y-9=0$ | 3x-y-9=0 | 2x-6y-18=0 | 3x+9y+7=0 | x+3y+9=0 |
| 8 | The distance of point (3,–7) from $x-axis$ | 3 | -7 | 7 | $\sqrt{57}$ |
| 9 | The angle between lines $\frac{x}{\sqrt{3}}+y-1$ $and$ $\frac{x}{\sqrt{3}}-y=1$ $is$ ; | $30^0$ | $45^0$ | $60^0$ | $90^0$ |
| 10 | Equation of horizontal line through (7,-9) ; | $y=-9$ | $y=7$ | $y=9$ | $y=-7$ |

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|---|---|---|---|---|---|
| 11 | $\int tanx\,dx$ = | $lnsecx$ | $lncosx$ | $lnsinx$ | $lntanx$ |
| 12 | $\int_0^{\sqrt{2}} xdx$ = | 1 | 2 | 0 | -1 |
| 13 | Slope of $2y=22x+2$ | 22 | -11 | 11 | -22 |
| 14 | (1,-1) is the solution of | $x+y<0$ | $x+y>0$ | $x+y\leq 0$ | $2x+y<0$ |
| 15 | Radius of circle $x^2+y^2=4$ is : | 2 | 1 | 4 | $\sqrt{2}$ |
| 16 | Length of transverse axis of $\frac{x^2}{9}-\frac{y^2}{4}=1$ | 3 | 6 | 2 | 4 |
| 17 | For coplanar vectors $\underline{u}.\underline{v}\times\underline{w}$ = | 0 | 1 | 2 | 3 |
| 18 | Which one is vector quantity : | temperature | density | moment | Work done |
| 19 | Direction cosine of $\underline{i}$ is ; | -1,0,0 | –2,0,0 | 0,0,0 | 1,0,0 |
| 20 | Norm of unit vector is : | 0 | 2 | 1 | 5 |

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# MODEL PAPER (MATHEMATICS) INTER (PART – II)
## (BISE BWP) SESSION (2023-25) AND ONWARD (SUBJECTIVE)

| Time : 2 : 30 Hours | Marks : 80 |
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**Note:** It is compulsory to attempt any (8 – 8) Parts each from Q.No. 2 and Q.No.3 while attempt any (9) Parts from Q.No.4. Attempt any (3) Questions from Part – II. Write same Question No. and its Part No. as given in the Question Paper.

**( Part – I )** **25 x 2 = 50**

QNo2:

i. Draw a graph of $f(x)$ whose limit exists at $x = a$ but $f(a)$ does not exist.

ii. Evaluate $\lim_{x\to 5} \frac{x^2-25}{x(x-5)}$.

iii. Evaluate $\lim_{x\to 0} \frac{1-cosx}{x}$.

iv. Differentiate $sin^2x$ w.r.t $(x+1)^4$.

v. Prove that $\frac{d}{dx}(3^x) = 3^x ln3$.

vi. What is the difference between $dy$ and $\delta y$.

vii. Prove that $\frac{d}{dx} Tan^{-1}x^2 = \frac{2x}{1+x^4}$

viii. For what value of h, Tailors series becomes a Maclaurin series.

ix. Define convex function with example.

x. Explain vertical line test in your words.

xi. What is the difference between feasible region and solution region with graphical example?

xii. Graph the solution region of $x + y < 0$

Q.No. 3

i. Evaluate $\int \frac{\sqrt{y}(y+1)}{y} dx$

ii. Evaluate $\int \frac{x+2}{\sqrt{x+3}} dx$

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

iv. Evaluate $\int e^x (\cos x + \sin x) dx$

v. Evaluate $\int_1^2 \frac{x}{x^2+2} dx$

vi. Find the area between the x – axis and the curve $y = 4x - x^2$

vii. Solve the differential equation $\sec x + \tan y \frac{dy}{dx} = 0$

viii. Find an equation of the line having $y-$intercept $= -7$ and slope $= -5$.

ix. Find the angle between the lines represented by $x^2 + 2xy\sec\alpha + y^2 = 0$

x. Is (1,5) at a distance of 15 units from the origin?

xi. Find an equation of a line through $(-8, 5)$ having slope undefined.

xii. Find the distance of the point P(6, – 1) from the

Q.No. 4

i. How can you find the slope of a line given two points on the line?

ii. The points $(-5,-2)$ & $(5,-4)$ are ends of a diameter of a circle . Find the radius and centre of the circle.

iii. How can you define the altitude of triangle

iv. Find an equation of line having $x$ – intercept $-9$ and slope: $-4$

v. How can define angle between two parallel lines

vi. Find the measure of angle: $x^2 + 2xy\sec\alpha + y^2 = 0$

vii. Find the distance and mid point of A(3,1) & B$(-2,-4)$.

viii. Find the equation of the circle whose ends of a diameter are at A$(-3,2)$ and B$(5,-6)$

ix. Make a systematic diagram if P$(x,y)$ be any point on the circle with centre at origin and inclination $\theta$.

x. Write the general form of equation of circle. Give an eaxample.

xi. Find an equation of tangent to circle $x^2 + y^2 = 25$ at $(4,3)$ and make a sketch.

xii. Prove that normal lines of a circle passes through the centre of the circle.

xiii. Find eq. of ellipse if vertices $(0, \pm 5)$, ecentricty $= \frac{3}{5}$

**P.T.O**

**( Part – II )** **3 x 10 = 30**

Q.No.5 (a) If $f(x)=\frac{2x+1}{x-1}$, $x>1$. Then verify that $f\left(f^{-1}(x)\right)=f^{-1}\left(f(x)\right)=x$ (5)

(b) If $x=a\cos^3\theta$ and $y=b\sin^3\theta$, show that $a\frac{dy}{dx}+b\tan\theta=0$ (5)

Q.No.6 (a) Show that $y=\frac{\ell nx}{x}$ has maximum value at x = e (5)

(b) Evaluate $\int\frac{\sqrt{2}}{\sin x+\cos x}dx$ (5)

Q.No.7 (a) Evaluate $\int_0^{\pi/4}\frac{\sec\theta}{\sin\theta+\cos\theta}d\theta$ (5)

(b) Graph the feasible region of the following system of linear inequalities. Also find corner points.

$2x+3y\leq 18$,
$2x+y\leq 10$,
$x+4y\leq 12$,
$x\geq 0$,
$y\geq 0$ (5)

Q.No.8 (a) Write an equation of the circle passing through the points $A(4,5)$, $B(-4,-3)$, $C(8,-3)$ (5)

(b) In any $\triangle ABC$, prove that

$$\frac{a}{SinA}=\frac{b}{SinB}=\frac{c}{SinC}$$ (5)

Q.No.9 (a) Find the equation of the tangents to the ellipse $\frac{x^2}{4}+y^2=1$ which are parallel to the line $2x-4y+5=0$ (5)

(b) Find the length of the chord cut off from the line $2x+3y=13$ by the circle $x^2+y^2=26$. (5)

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