BOARD OF INTERMEDIATE AND SECONDARY EDUCATION,MULTAN.

OBJECTIVE KEY FOR INTERMEDIATE 2nd ANNUAL EXAMINATION,2023

(1)

Name of Subject: Mathematics Part II Group: I 303

Q. Nos	Paper Code 4191	Correct Anwser	Paper Code 4193	Correct Anwser	Paper Code 4195	Correct Anwser	Paper Code 4197	Correct Anwser
1	A	Euler	D	$2\sqrt{2}$	D	$5/2$	A	$1/2$
2	C	-1	A	$e>1$	C	$x\cos\alpha+y\sin\alpha=p$	B	$\frac{x^n}{n}+c$
3	B	$f'(x)$	D	$y=0$	A	$x^2+5xy+y^2=0$	A	$\frac{a^x}{\ln a}+c$
4	C	$\sec^2\sqrt{x}/2\sqrt{x}$	D	$90°,45°,45°$	B	$x-y\leq -1$	C	$\sin^{-1}x$
5	D	0	B	3	C	$x=2\cos\theta$ $y=2\sin\theta$	B	2
6	A	$1/2$	A	Euler	D	$2\sqrt{2}$	D	$5/2$
7	B	$\frac{x^n}{n}+c$	C	-1	A	$e>1$	C	$x\cos\alpha+y\sin\alpha=p$
8	A	$\frac{a^x}{\ln a}+c$	B	$f'(x)$	D	$y=0$	A	$x^2+y^2+5xy=0$
9	C	$\sin^{-1}x$	C	$\frac{\sec^2\sqrt{x}}{2\sqrt{x}}$	D	$90°,45°,45°$	B	$x-y\leq -1$
10	B	2	D	0	B	3	C	$x=2\cos\theta$ $y=2\sin\theta$
11	D	$5/2$	A	$1/2$	A	Euler	D	$2\sqrt{2}$
12	C	$x\cos\alpha+y\sin\alpha=p$	B	$\frac{x^n}{n}+c$	C	-1	A	$e>1$
13	A	$x^2+5xy+y^2=0$	A	$\frac{a^x}{\ln a}+c$	B	$f'(x)$	D	$y=0$
14	B	$x-y\leq -1$	C	$\sin^{-1}x$	C	$\sec^2\sqrt{x}/2\sqrt{x}$	D	$90°,45°,45°$
15	C	$x=2\cos\theta$ $y=2\sin\theta$	B	2	D	0	B	3
16	D	$2\sqrt{2}$	D	$5/2$	A	$1/2$	A	Euler
17	A	$e>1$	C	$x\cos\alpha+y\sin\alpha=p$	B	$\frac{x^n}{n}+c$	C	-1
18	D	$y=0$	A	$x^2+5xy+y^2=0$	A	$\frac{a^x}{\ln a}+c$	B	$f'(x)$
19	D	$90°,45°,45°$	B	$x-y\leq -1$	C	$\sin^{-1}x$	C	$\sec^2\sqrt{x}/2\sqrt{x}$
20	B	3	C	$x=2\cos\theta$ $y=2\sin\theta$	B	2	D	0
Cross Check	A B C D		A B C D		A B C D		A B C D	
Total	5 5 5 5		5 5 5 5		5 5 5 5		5 5 5 5	

سرٹیفکیٹ بابت تصحیح سوالیہ پرچہ/مارکنگ Key

ہم نے مضمون ریاضی پرچہ part II گروپ I انٹرمیڈیٹ دوسرا سالانہ امتحان 2023 کا سوالیہ پرچہ انشائیہ ومعروضی (Subjective&Objective) کو بنظر عمیق چیک کرلیا ہے یہ پرچہ Syllabus کے عین مطابق Set کیا گیا ہے۔اس سوالیہ پرچہ میں کسی قسم کی کوئی غلطی نہ ہے۔ہم نے سوالیہ پرچہ کا اردو اور انگریزی Version بھی چیک کرلیا ہے۔یہ Version آپس میں مطابقت رکھتے ہیں۔نیز اس پرچہ کی معروضی (MCQs) Key کی بابت تصدیق کی جاتی ہے کہ اس میں بھی کسی قسم کی کوئی غلطی نہ ہے۔ مزید یہ کہ ہم نے Key بنانے سے متعلق دفتر کی جانب سے تیار کردہ ہدایات وصول کرکے ان کا بغور مطالعہ کرلیا ہے اور ان کی روشنی میں Key بنائی ہے۔نیز سب ایگزامینرز کیلئے تفصیلی مارکنگ ہدایات/مارکنگ سکیم Rubrics بھی تیار کردی گئی ہیں۔

Prepared & Checked By: Dated: 31-10-2023

S.#	Name	Designation	Institution	Mobile No	Signature
1	Mrs. Nighat Yasmin	Assistant professor	Govt Graduate College(W) Chungi No. 14, Multan	03317039457	Nighat
2	Hafiz M. Irshad	A.P	Bahauddin Zakariya University Multan	03007334944	Irshad
3	DR. M JAVED AZHAR KHAN	SSS	GHSS, Samejabad	03226171679	Javed
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Re-Checked By ہم نے درج بالا سوالیہ پرچہ (انشائیہ + معروضی)، معروضی "Key" اور ہدایات کے حوالہ سے مکمل طور پر تسلی کرلی ہے۔کسی قسم کی کوئی غلطی نہ ہے۔

1	Khurram Shahzad	Assistant Professor	Govt. Graduate College Civil Lines Multan	03216343022	
2	HAQ NAWAZ	SSS	GHSS Lar Multan	0300-7187736	

01-11-2023 تاریخ

BOARD OF INTERMEDIATE AND SECONDARY EDUCATION, MULTAN.

OBJECTIVE KEY FOR INTERMEDIATE 2nd ANNUAL EXAMINATION, 2023

(12)

Name of Subject: Mathematics – II Group: II

Q. Nos	Paper Code 4192	Correct Anwser	Paper Code 4194	Correct Anwser	Paper Code 4196	Correct Anwser	Paper Code 4198	Correct Anwser
1	D	x^n	A	$16e^{2x}$	C	Parallel to x-axis	B	$e<1$
2	B	Radia	B	$a\ln\|x\|+C$	B	$mm_2+1=0$	A	$\frac{2b^2}{a}$
3	C	Maclaurin	A	$\int_a^b f(x)dx+\int_c^b f(x)dx$	A	Vertical	D	1
4	A	$-\frac{1}{\sqrt{a^2-x^2}}$	B	$-\frac{1}{5}\cos 5x+C$	C	$x+2y<6$	B	$a\times b$
5	B	$-x$	B	2	B	$C=\pm a\sqrt{1+m^2}$	C	$\sqrt{2}$
6	A	$16e^{2x}$	C	Parallel to x-axis	B	$e<1$	D	x^n
7	B	$a\ln\|x\|+C$	B	$mm_2+1=0$	A	$\frac{2b^2}{a}$	B	Radian
8	A	$\int_a^b f(x)dx+\int_c^b f(x)dx$	A	Vertical	D	1	C	Maclaurin series
9	B	$-\frac{1}{5}\cos 5x+C$	C	$x+2y<6$	B	$a\times b$	A	$\frac{1}{\sqrt{a^2-x^2}}$
10	B	2	B	$C=\pm a\sqrt{1+m^2}$	C	$\sqrt{2}$	B	$-x$
11	C	Parallel to x-axis	B	$e<1$	D	x^n	A	$16e^{2x}$
12	B	$mm_2+1=0$	A	$\frac{2b^2}{a}$	B	Radia	B	$a\ln\|x\|+C$
13	A	Vertical	D	1	C	Maclaurin	A	$\int_a^b f(x)dx+\int_c^b f(x)dx$
14	C	$x+2y<6$	B	$a\times b$	A	$-\frac{x}{\sqrt{a^2-x^2}}$	B	$-\frac{1}{5}\cos 5x+C$
15	B	$C=\pm a\sqrt{1+m^2}$	C	$\sqrt{2}$	B	$-x$	B	2
16	B	$e<1$	D	x^n	A	$16e^{2x}$	C	Parallel to x-axis
17	A	$\frac{2b^2}{a}$	B	Radian	B	$a\ln\|x\|+C$	B	$mm_2+1=0$
18	D	1	C	Maclaurin	A	$\int_a^b f(x)dx+\int_c^b f(x)dx$	A	Vertical
19	B	$a\times b$	A	$-\frac{1}{\sqrt{a^2-x^2}}$	B	$-\frac{1}{5}\cos 5x+C$	C	$x+2y<6$
20	C	$\sqrt{2}$	B	$-x$	B	2	B	$C=\pm a\sqrt{1+m^2}$
Cross Check	A B C D		A B C D		A B C D		A B C D	
Total	5 9 4 2		5 9 4 2		5 9 4 2		5 9 4 2	

سرٹیفکیٹ بابت تصحیح سوالیہ پرچہ اور مارکنگ Key

ہم نے مضمون ریاضی پرچہ ماڈرن II گروپ II انٹرمیڈیٹ دوسرا سالانہ امتحان 2023 کا سوالیہ پرچہ انشائیہ ومعروضی (Subjective&Objective) کو بنظر عمیق چیک کرلیا ہے یہ پرچہ Syllabus کے عین مطابق Set کیا گیا ہے۔ اس سوالیہ پرچہ میں کسی قسم کی کوئی غلطی نہ ہے۔ ہم نے سوالیہ پرچہ کا اردو اور انگریزی Version بھی چیک کرلیا ہے۔ یہ Version آپس میں مطابقت رکھتے ہیں۔ نیز اس پرچہ کی معروضی (MCQs) Key کی بابت تصدیق کی جاتی ہے کہ اس میں بھی کسی قسم کی کوئی غلطی نہ ہے۔ مزید یہ کہ ہم نے Key بنانے سے متعلق دفتر کی جانب سے تیار کردہ ہدایات وصول کرکے ان کا بغور مطالعہ کرلیا ہے اور ان کی روشنی میں Key بنائی ہے۔ نیز سب ایگزامینرز کیلئے تفصیلی مارکنگ ہدایات/ مارکنگ سکیم/Rubrics بھی تیار کردی گئی ہیں۔

Prepared & Checked By: **Dated:** 31-10-2023

S.#	Name	Designation	Institution	Mobile No	Signature
1	Hafiz Muhammad Ishaq	A.P	Emerson University, Multan	03007331974	
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Re-Checked By ہم نے درج بالا سوالیہ پرچہ (انشائیہ + معروضی)، معروضی "Key" اور ہدایات کے حوالہ سے مکمل طور پر تسلی کرلی ہے۔ کسی قسم کی کوئی غلطی نہ ہے۔

1	Khurram Shahzad	Assistant Professor	Govt Graduate College Civil Lines Multan	03216343022	
2	HAQ NAWAZ	SSS	GHSS Lar Multan	0300-7187736	

01-11-2023 تاریخ

INTERMEDIATE PART-II (12th Class)	2023 (2nd-A)	Roll No: 3081
MATHEMATICS PAPER-II GROUP-I		
TIME ALLOWED: 2.30 Hours	SUBJECTIVE	MAXIMUM MARKS: 80

NOTE: Write same question number and its parts number on answer book, as given in the question paper.

SECTION-I

2. Attempt any eight parts. **8 × 2 = 16**

(i)	If $f(x)=\sqrt{x+1},\ g(x)=\frac{1}{x^2},\ x\neq 0$ find $fog(x)$	(ii)	Prove that $\sin h2x = 2\sin hx\cos hx$.
(iii)	Evaluate $\lim\limits_{x\to\pi}\frac{\sin x}{\pi - x}$	(iv)	Define Optimal solution.
(v)	Graph the solution set of $3x - 2y \geq 6$.	(vi)	Find by definition, the derivative w.r.t x of $(x+4)^{1/3}$
(vii)	If $y = x^4 + 2x^2 + 2$, prove that $\frac{dy}{dx} = 4x\sqrt{y-1}$	(viii)	Find $\frac{dy}{dx}$ if $x = \theta + \frac{1}{\theta},\ y = \theta + 1$
(ix)	Differentiate $\frac{1}{a}\sin^{-1}\frac{x}{a}$ w.r.t. x	(x)	Find $\frac{dy}{dx}$ if $y = x\sqrt{\ell nx}$
(xi)	Find y_2 if $x^2 + y^2 = a^2$	(xii)	Expand e^{2x} by Maclaurin series.

3. Attempt any eight parts. **8 × 2 = 16**

(i)	Using differentials to find $\frac{dy}{dx}$ if $x^2 + 2y^2 = 16$	(ii)	Evaluate $\int x(\sqrt{x}+1)\,dx$
(iii)	Evaluate $\int \frac{x+b}{(x^2+2bx+c)^{1/2}}\,dx$	(iv)	Evaluate $\int x\,\ell nx\,dx$
(v)	Evaluate $\int_{\pi/6}^{\pi/3}\cos t\,dt$	(vi)	Solve the differential equation $\frac{dy}{dx} = \frac{1-x}{y}$
(vii)	Find the area below the curve $y = 3\sqrt{x}$ and above the $x-$axis between $x = 1$ and $x = 4$.		
(viii)	Find the sum of the vectors $\overrightarrow{AB}$ and $\overrightarrow{CD}$, given the four points $A(1,-1), B(2,0), C(-1,3), D(-2,2)$		
(ix)	Find the direction cosines of $\vec{v} = 4\hat{i} - 5\hat{j}$		
(x)	Calculate projection of $\vec{a}$ along $\vec{b}$ if $\vec{a} = \hat{i} - \hat{k};\ \vec{b} = \hat{j} + \hat{k}$		
(xi)	Prove that $\vec{a}\times(\vec{b}+\vec{c}) + \vec{b}\times(\vec{c}+\vec{a}) + \vec{c}\times(\vec{a}+\vec{b}) = \vec{0}$		
(xii)	A force $\vec{F} = 4\hat{i} - 3\hat{k}$ passes through the point $A(2,-2,5)$. Find the moment of $\vec{F}$ about the point $B(1,-3,1)$		

4. Attempt any nine parts. **9 × 2 = 18**

(i)	Write point-slope form of equation of a strength line.
(ii)	Transform the equation $5x - 12y + 39 = 0$ into slope-intercept form.
(iii)	Check whether the origin and the point $P(5,-8)$ lie on the same side or on the opposite sides of the line $3x + 7y + 15 = 0$
(iv)	Find the slope and inclination of the line joining points $(-2,4)$ and $(5,11)$.
(v)	Find an equation of the line through $(-4,-6)$ and perpendicular to a line having slope $\frac{-3}{2}$.
(vi)	Find the angle from the line with slope $\frac{-7}{3}$ to the line with slope $\frac{5}{2}$.
(vii)	Find k so that the line joining $A(7,3)$, $B(k,-6)$ and the line joining $C(-4,5)$, $D(-6,4)$ are parallel.
(viii)	Find the centre and radius of circle with the given equation $x^2 + y^2 + 12x - 10y = 0$
(ix)	Define focus and direction of the parabola.
(x)	Find equation of ellipse with given data: Foci $(\pm 3, 0)$ and minor axis of length 10.
(xi)	Find an equation of hyperbola with centre $(0, 0)$, focus $(6, 0)$ and vertex $(4, 0)$.
(xii)	Find the centre and foci of the ellipse $x^2 + 4y^2 = 16$
(xiii)	Write equations of the tangent and normal to conic $\frac{x^2}{8} + \frac{y^2}{9} = 1$ at the point $\left(\frac{8}{3}, 1\right)$

SECTION-II

NOTE: Attempt any three questions. **3 × 10 = 30**

5.(a)	Prove that $\lim\limits_{n\to\infty}\left(1+\frac{1}{n}\right)^n = e$	(b)	Find $\frac{dy}{dx}$ of following parametric function $x = \frac{a(1-t^2)}{1+t^2},\ y = \frac{2bt}{1+t^2}$
6.(a)	Evaluate $\int \sin^4 x\,dx$	(b)	Find equations of two parallel lines perpendicular to $2x - y + 3 = 0$ such that the product of the $x-$ and $y-$ intercepts of each is 3.
7.(a)	Evaluate $\int_0^{\pi/4}\frac{1}{1+\sin x}\,dx$	(b)	Maximize $f(x, y) = 2x + 5y$ subject to the constraints $2y - x \leq 8,\ x - y \leq 4,\ x \geq 0;\ y \geq 0$
8.(a)	If $y = a\cos(\ell nx) + b\sin(\ell nx)$ then prove that $x^2\frac{d^2y}{dx^2} + x\frac{dy}{dx} + y = 0$		
(b)	Find coordinates of the point of intersection of the line $x + 2y = 6$ with the circle $x^2 + y^2 - 2x - 2y - 39 = 0$		
9.(a)	Show that the equation $x^2 + 16x + 4y^2 - 16y + 76 = 0$ represents an ellipse. Find the foci and eccentricity and sketch its graph.		
(b)	Which vectors, if any, are perpendicular or parallel $\underline{u} = \underline{i} + 2\underline{j} - \underline{k};\ \underline{v} = -\underline{i} + \underline{j} + \underline{k};\ \underline{w} = -\frac{\pi}{2}\underline{i} - \pi\underline{j} + \frac{\pi}{2}\underline{k}$		

INTERMEDIATE PART-II (12th Class)	2023 (2nd-A)	Roll No: 309
MATHEMATICS PAPER-II	GROUP-II	
TIME ALLOWED: 2.30 Hours	SUBJECTIVE	MAXIMUM MARKS: 80

NOTE: Write same question number and its parts number on answer book, as given in the question paper.

SECTION-I

2. Attempt any eight parts. **8 × 2 = 16**

(i) Express the perimeter P of a square as a function of its area A.

(ii) For real valued function $f(x) = 2x + 1$ and $g(x) = \frac{3}{x-1}$; $x \neq 1$, find $fog\,(x)$

(iii) Evaluate $\lim\limits_{x \to 0} \frac{x}{\tan x}$

(iv) Differentiate $\left(\sqrt{x} - \frac{1}{\sqrt{x}}\right)^2$ w.r.t. x

(v) Find dy/dx if $3x + 4y + 7 = 0$

(vi) Find dy/dx if $x = y \sin y$

(vii) Find $f'(x)$ if $f(x) = x^3 e^{1/x}$; $x \neq 0$

(viii) Find y_2 if $x^3 - y^3 = a^3$

(ix) Apply Maclaurin series expansion to prove that $\ell n(1+x) = x - \frac{x^2}{2} + \frac{x^3}{3} - \frac{x^4}{4} + \ldots\ldots\ldots\ldots$

(x) Find the extreme values of the function $f(x) = 3x^2 - 4x + 5$

(xi) Define corner point.

(xii) Graph the solution set of the inequality $2x + y \geq 2$

3. Attempt any eight parts. **8 × 2 = 16**

(i) Use differentials to find dy/dx if $x^2 + 2y^2 = 16$

(ii) Evaluate $\int \left(\sqrt{x} + \frac{1}{\sqrt{x}}\right)^2 dx$

(iii) Evaluate $\int \frac{-2x}{\sqrt{4 - x^2}}\, dx$

(iv) Evaluate $\int e^{-x}(\cos x - \sin x)\, dx$

(v) Evaluate $\int_{-6}^{2} \sqrt{3 - x}\, dx$

(vi) Find the area bounded by cos function from $x = -\frac{\pi}{2}$ and $x = \frac{\pi}{2}$

(vii) Solve $\frac{dy}{dx} = \frac{y^2 + 1}{e^{-x}}$

(viii) If $\overrightarrow{AB} = \overrightarrow{CD}$, find the coordinates of point A, when B, C, D are $(1, 2), (-2, 5), (4, 11)$ respectively.

(ix) Find direction cosines for the given vector $\vec{v} = 3\hat{i} - \hat{j} + 2\hat{k}$

(x) Find a scalar α so that the vectors $2\hat{i} + \alpha\hat{j} + 5\hat{k}$ and $3\hat{i} + \hat{j} + \alpha\hat{k}$ are perpendicular.

(xi) If $\vec{v}$ is a vector for which $\vec{v} \cdot \hat{i} = 0$, $\vec{v} \cdot \hat{j} = 0$, $\vec{v} \cdot \hat{k} = 0$ find $\vec{v}$

(xii) Find the value of $3\hat{j} \cdot \hat{k} \times \hat{i}$

4. Attempt any nine parts. **9 × 2 = 18**

(i) Show that points $A(0, 2)$, $B(\sqrt{3}, -1)$ and $C(0, -2)$ are vertices of a right triangle.

(ii) Find k so that line joining $A(7, 3)$, $B(k, -6)$ and line joining $C(-4, 5)$, $D(-6, 4)$ are parallel.

(iii) Find equation of line joining $(-5, -3)$ and $(9, -1)$.

(iv) Convert $2x - 4y + 11 = 0$ into (i) slope-intercept form (ii) two-intercept form

(v) Find equation of line through $(-4, 7)$ and parallel to $2x - 7y + 4 = 0$

(vi) Find point of intersection of $x + 4y - 12 = 0$ and $x - 3y + 3 = 0$

(vii) Find lines represented by $10x^2 - 23xy - 5y^2 = 0$

(viii) Find equation of circle with ends of diameter at $(-3, 2)$ and $(5, -6)$

(ix) Find centre and radius of circle $x^2 + y^2 - 6x + 4y + 13 = 0$

(x) Find length of tangent from $P(-5, 10)$ to circle $5x^2 + 5y^2 + 14x + 12y - 10 = 0$

(xi) Write equation of parabola with focus (1, 2), vertex (3, 2).

(xii) Find centre and foci of ellipse $25x^2 + 9y^2 = 225$

(xiii) Find eccentricity and vertices of hyperbola $x^2 - y^2 = 9$

SECTION-II

NOTE: Attempt any three questions. **3 × 10 = 30**

5.(a) Evaluate the following limit $\lim\limits_{x \to 0} \frac{e^{1/x} - 1}{e^{1/x} + 1}$, $x < 0$

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

6.(a) Evaluate the integral $\int \frac{2x}{1 - \sin x}\, dx$

(b) Check whether the lines $4x - 3y - 8 = 0$, $3x - 4y - 6 = 0$, $x - y - 2 = 0$ are concurrent. If so, find the point where they meet.

7.(a) Find area between $x-axis$ and the curve $y = \sqrt{2ax - x^2}$ when $a > 0$

(b) Minimize $z = 3x + y$ subject to constraints $3x + 5y \geq 15$, $x + 3y \geq 9$, $x \geq 0$, $y \geq 0$

8.(a) Find the point on the curve $y = x^2 + 1$ that is closest to the point $(18, 1)$.

(b) Find an equation of circle passes through $A(3, -1)$, $B(0, 1)$ and having centre at $4x - 3y - 3 = 0$

9.(a) Find the focus, vertex and directrix of parabola $x^2 - 4x - 8y + 4 = 0$

(b) Show that mid point of hypotenuse a right triangle is equidistant from its vertices.

Paper Code Number: 4191	2023 (2^{nd}-A) INTERMEDIATE PART-II (12^{th} Class)	Roll No: 3e4
MATHEMATICS PAPER-II GROUP-I		
TIME ALLOWED: 30 Minutes	OBJECTIVE	MAXIMUM MARKS: 20

Q.No.1 You have four choices for each objective type question as A, B, C and D. The choice which you think is correct, fill that bubble in front of that question number, on bubble sheet. Use marker or pen to fill the bubbles. Cutting or filling two or more bubbles will result in zero mark in that question.

S.#	QUESTIONS	A	B	C	D
1	_____ mathematician invented a symbolic way to write "y is a function of x" as $y = f(x)$.	Euler	Newton	Leibniz	Cauchy
2	Let $f(x) = x^3 - 2x^2 + 4x - 1$; then $f(0) =$ _____	0	1	–1	4
3	Lagrange used _____ notation for derivative.	$Df(x)$	$f'(x)$	$\dot{f}(x)$	$\frac{dy}{dx}$
4	$\frac{d}{dx}(\tan\sqrt{x}) =$ _____	$\frac{\sec^2\sqrt{x}}{\sqrt{x}}$	$\frac{\sec x}{2\sqrt{x}}$	$\frac{\sec^2\sqrt{x}}{2\sqrt{x}}$	$\sec^2 x$
5	$\frac{d}{dx}(\pi^e) =$ _____	1	$e\pi^{e-1}$	$\pi^e \ln\pi$	0
6	The function $f(x) = x^2 - x - 2$ has local minima at $x =$ _____	$\frac{1}{2}$	2	–2	$-\frac{1}{2}$
7	$\int x^{n-1}dx =$ ____; $n \neq 0$	$\frac{x^{n+1}}{n+1} + c$	$\frac{x^n}{n} + c$	$\frac{x^{2n}}{2} + c$	$\frac{x^n}{n+1} + c$
8	$\int a^x dx =$ _____	$\frac{a^x}{\ln a} + c$	$\frac{a^{x+1}}{x+1} + c$	$\frac{a^x}{x+1} + c$	$a^x + c$
9	$\int \frac{1}{\sqrt{1-x^2}}dx$	$Cos^{-1}x$	$Tan^{-1}x$	$Sin^{-1}x$	$-Sin^{-1}x$
10	Order of $\frac{d^2y}{dx^2} + 2\frac{dy}{dx} + y = 0$ is _____.	1	2	3	4
11	Slope of $2y - 5x = 3$ is _____.	$-\frac{2}{5}$	$-\frac{5}{2}$	$\frac{2}{5}$	$\frac{5}{2}$
12	Normal form is _____.	$y - y_1 = m(x - x_1)$	$y = mx + c$	$x\cos\alpha + y\sin\alpha = p$	$\frac{x}{a} + \frac{y}{b} = 1$
13	Which one is second degree homogeneous equation?	$x^2 + 5xy + y^2 = 0$	$x^2 + y^2 = 1$	$x + 2y = 0$	$x^2 + 2 = y^2$
14	(0,1) satisfy _____.	$2x + 3y < 0$	$x - y \leq -1$	$x + y \leq -1$	$x + y > 3$
15	Parametric equation of $x^2 + y^2 = 4$ is _____.	$x = \cos\theta$; $y = 3\sin\theta$	$x = 2\cos\theta$; $y = \sin\theta$	$x = 2\cos\theta$; $y = 2\sin\theta$	$x = \cos\theta$; $y = \sin\theta$
16	Radius of $x^2 + y^2 + 4x + 4y = 0$ is _____	1	2	$\sqrt{2}$	$2\sqrt{2}$
17	For hyperbola:	$e > 1$	$e < 1$	$e = 1$	$e = 0$
18	Major axis for ellipse $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$, $a > b$ is _____.	$y = 2$	$x = y$	$x = 0$	$y = 0$
19	Which of one triplet is direction angle?	$30°, 45°, 60°$	$45°, 45°, 45°$	$90°, 0°, 0°$	$90°, 45°, 45°$
20	$(3\underline{j} \times \underline{k}) \cdot \underline{i} =$ _____	$3\underline{i}$	3	$-3\underline{i}$	–3

Paper Code Number: 4193	2023 (2^{nd}-A) INTERMEDIATE PART-II (12^{th} Class)	Roll No: 305
MATHEMATICS PAPER-II GROUP-I		
TIME ALLOWED: 30 Minutes	OBJECTIVE	MAXIMUM MARKS: 20

Q.No.1 You have four choices for each objective type question as A, B, C and D. The choice which you think is correct, fill that bubble in front of that question number, on bubble sheet. Use marker or pen to fill the bubbles. Cutting or filling two or more bubbles will result in zero mark in that question.

S.#	QUESTIONS	A	B	C	D
1	Radius of $x^2+y^2+4x+4y=0$ is _____	1	2	$\sqrt{2}$	$2\sqrt{2}$
2	For hyperbola:	$e>1$	$e<1$	$e=1$	$e=0$
3	Major axis for ellipse $\frac{x^2}{a^2}+\frac{y^2}{b^2}=1$, $a>b$ is _____.	$y=2$	$x=y$	$x=0$	$y=0$
4	Which of one triplet is direction angle?	$30°,45°,60°$	$45°,45°,45°$	$90°,0°,0°$	$90°,45°,45°$
5	$(3\underline{j}\times\underline{k})\cdot\underline{i}=$ _____	$3\underline{i}$	3	$-3\underline{i}$	-3
6	_____ mathematician invented a symbolic way to write "y is a function of x" as $y=f(x)$.	Euler	Newton	Leibniz	Cauchy
7	Let $f(x)=x^3-2x^2+4x-1$; then $f(0)=$_____	0	1	-1	4
8	Lagrange used _____ notation for derivative.	$Df(x)$	$f'(x)$	$\dot{f}(x)$	$\frac{dy}{dx}$
9	$\frac{d}{dx}(\tan\sqrt{x})=$ _____	$\frac{\sec^2\sqrt{x}}{\sqrt{x}}$	$\frac{\sec x}{2\sqrt{x}}$	$\frac{\sec^2\sqrt{x}}{2\sqrt{x}}$	$\sec^2 x$
10	$\frac{d}{dx}(\pi^e)=$ _____	1	$e\pi^{e-1}$	$\pi^e\ln\pi$	0
11	The function $f(x)=x^2-x-2$ has local minima at $x=$_____	$\frac{1}{2}$	2	-2	$-\frac{1}{2}$
12	$\int x^{n-1}dx=$____; $n\neq 0$	$\frac{x^{n+1}}{n+1}+c$	$\frac{x^n}{n}+c$	$\frac{x^{2n}}{2}+c$	$\frac{x^n}{n+1}+c$
13	$\int a^x dx=$ _____	$\frac{a^x}{\ln a}+c$	$\frac{a^{x+1}}{x+1}+c$	$\frac{a^x}{x+1}+c$	a^x+c
14	$\int\frac{1}{\sqrt{1-x^2}}dx$	$Cos^{-1}x$	$Tan^{-1}x$	$Sin^{-1}x$	$-Sin^{-1}x$
15	Order of $\frac{d^2y}{dx^2}+2\frac{dy}{dx}+y=0$ is _____.	1	2	3	4
16	Slope of $2y-5x=3$ is _____.	$-\frac{2}{5}$	$-\frac{5}{2}$	$\frac{2}{5}$	$\frac{5}{2}$
17	Normal form is _____.	$y-y_1=m(x-x_1)$	$y=mx+c$	$x\cos\alpha+y\sin\alpha=p$	$\frac{x}{a}+\frac{y}{b}=1$
18	Which one is second degree homogeneous equation?	$x^2+5xy+y^2=0$	$x^2+y^2=1$	$x+2y=0$	$x^2+2=y^2$
19	(0,1) satisfy _____.	$2x+3y<0$	$x-y\leq -1$	$x+y\leq -1$	$x+y>3$
20	Parametric equation of $x^2+y^2=4$ is _____.	$x=\cos\theta$; $y=3\sin\theta$	$x=2\cos\theta$; $y=\sin\theta$	$x=2\cos\theta$; $y=2\sin\theta$	$x=\cos\theta$; $y=\sin\theta$

Paper Code Number: 4195	2023 (2nd-A) INTERMEDIATE PART-II (12th Class)	Roll No: 306
MATHEMATICS PAPER-II GROUP-I		
TIME ALLOWED: 30 Minutes	OBJECTIVE	MAXIMUM MARKS: 20

Q.No.1 You have four choices for each objective type question as A, B, C and D. The choice which you think is correct, fill that bubble in front of that question number, on bubble sheet. Use marker or pen to fill the bubbles. Cutting or filling two or more bubbles will result in zero mark in that question.

S.#	QUESTIONS	A	B	C	D
1	Slope of $2y-5x=3$ is _____.	$-\frac{2}{5}$	$-\frac{5}{2}$	$\frac{2}{5}$	$\frac{5}{2}$
2	Normal form is _____.	$y-y_1=m(x-x_1)$	$y=mx+c$	$x\cos\alpha+y\sin\alpha=p$	$\frac{x}{a}+\frac{y}{b}=1$
3	Which one is second degree homogeneous equation?	$x^2+5xy+y^2=0$	$x^2+y^2=1$	$x+2y=0$	$x^2+2=y^2$
4	(0,1) satisfy _____.	$2x+3y<0$	$x-y\leq -1$	$x+y\leq -1$	$x+y>3$
5	Parametric equation of $x^2+y^2=4$ is _____.	$x=\cos\theta;\ y=3\sin\theta$	$x=2\cos\theta;\ y=\sin\theta$	$x=2\cos\theta;\ y=2\sin\theta$	$x=\cos\theta;\ y=\sin\theta$
6	Radius of $x^2+y^2+4x+4y=0$ is _____	1	2	$\sqrt{2}$	$2\sqrt{2}$
7	For hyperbola:	$e>1$	$e<1$	$e=1$	$e=0$
8	Major axis for ellipse $\frac{x^2}{a^2}+\frac{y^2}{b^2}=1$, $a>b$ is _____.	$y=2$	$x=y$	$x=0$	$y=0$
9	Which of one triplet is direction angle?	$30°,45°,60°$	$45°,45°,45°$	$90°,0°,0°$	$90°,45°,45°$
10	$(3\underline{j}\times\underline{k})\cdot\underline{i}=$ _____	$3\underline{i}$	3	$-3\underline{i}$	-3
11	_____ mathematician invented a symbolic way to write "y is a function of x" as $y=f(x)$.	Euler	Newton	Leibniz	Cauchy
12	Let $f(x)=x^3-2x^2+4x-1$; then $f(0)=$_____	0	1	-1	4
13	Lagrange used _____ notation for derivative.	$Df(x)$	$f'(x)$	$\dot{f}(x)$	$\frac{dy}{dx}$
14	$\frac{d}{dx}(\tan\sqrt{x})=$ _____	$\frac{\sec^2\sqrt{x}}{\sqrt{x}}$	$\frac{\sec x}{2\sqrt{x}}$	$\frac{\sec^2\sqrt{x}}{2\sqrt{x}}$	$\sec^2 x$
15	$\frac{d}{dx}(\pi^e)=$ _____	1	$e\pi^{e-1}$	$\pi^e\ln\pi$	0
16	The function $f(x)=x^2-x-2$ has local minima at $x=$_____	$\frac{1}{2}$	2	-2	$-\frac{1}{2}$
17	$\int x^{n-1}dx=$____; $n\neq 0$	$\frac{x^{n+1}}{n+1}+c$	$\frac{x^n}{n}+c$	$\frac{x^{2n}}{2}+c$	$\frac{x^n}{n+1}+c$
18	$\int a^x dx=$ _____	$\frac{a^x}{\ln a}+c$	$\frac{a^{x+1}}{x+1}+c$	$\frac{a^x}{x+1}+c$	a^x+c
19	$\int\frac{1}{\sqrt{1-x^2}}dx$	$Cos^{-1}x$	$Tan^{-1}x$	$Sin^{-1}x$	$-Sin^{-1}x$
20	Order of $\frac{d^2y}{dx^2}+2\frac{dy}{dx}+y=0$ is _____.	1	2	3	4

Paper Code Number: 4197	2023 (2^{nd}-A) INTERMEDIATE PART-II (12^{th} Class)	Roll No: 3097
MATHEMATICS PAPER-II GROUP-I		
TIME ALLOWED: 30 Minutes	OBJECTIVE	MAXIMUM MARKS: 20

Q.No.1 You have four choices for each objective type question as A, B, C and D. The choice which you think is correct, fill that bubble in front of that question number, on bubble sheet. Use marker or pen to fill the bubbles. Cutting or filling two or more bubbles will result in zero mark in that question.

S.#	QUESTIONS	A	B	C	D
1	The function $f(x)=x^2-x-2$ has local minima at $x=$_____	$\frac{1}{2}$	2	-2	$-\frac{1}{2}$
2	$\int x^{n-1}dx=$____; $n\neq 0$	$\frac{x^{n+1}}{n+1}+c$	$\frac{x^n}{n}+c$	$\frac{x^{2n}}{2}+c$	$\frac{x^n}{n+1}+c$
3	$\int a^x dx=$ _____	$\frac{a^x}{\ln a}+c$	$\frac{a^{x+1}}{x+1}+c$	$\frac{a^x}{x+1}+c$	a^x+c
4	$\int \frac{1}{\sqrt{1-x^2}}dx$	$Cos^{-1}x$	$Tan^{-1}x$	$Sin^{-1}x$	$-Sin^{-1}x$
5	Order of $\frac{d^2y}{dx^2}+2\frac{dy}{dx}+y=0$ is _____.	1	2	3	4
6	Slope of $2y-5x=3$ is _____.	$-\frac{2}{5}$	$-\frac{5}{2}$	$\frac{2}{5}$	$\frac{5}{2}$
7	Normal form is _____.	$y-y_1=m(x-x_1)$	$y=mx+c$	$x\cos\alpha+y\sin\alpha=p$	$\frac{x}{a}+\frac{y}{b}=1$
8	Which one is second degree homogeneous equation?	$x^2+5xy+y^2=0$	$x^2+y^2=1$	$x+2y=0$	$x^2+2=y^2$
9	(0,1) satisfy _____.	$2x+3y<0$	$x-y\leq -1$	$x+y\leq -1$	$x+y>3$
10	Parametric equation of $x^2+y^2=4$ is _____.	$x=\cos\theta;\ y=3\sin\theta$	$x=2\cos\theta;\ y=\sin\theta$	$x=2\cos\theta;\ y=2\sin\theta$	$x=\cos\theta;\ y=\sin\theta$
11	Radius of $x^2+y^2+4x+4y=0$ is _____	1	2	$\sqrt{2}$	$2\sqrt{2}$
12	For hyperbola:	$e>1$	$e<1$	$e=1$	$e=0$
13	Major axis for ellipse $\frac{x^2}{a^2}+\frac{y^2}{b^2}=1$, $a>b$ is _____.	$y=2$	$x=y$	$x=0$	$y=0$
14	Which of one triplet is direction angle?	$30^o,45^o,60^o$	$45^o,45^o,45^o$	$90^o,0^o,0^o$	$90^o,45^o,45^o$
15	$(3\underline{j}\times\underline{k})\cdot\underline{i}=$ _____	$3\underline{i}$	3	$-3\underline{i}$	-3
16	_____ mathematician invented a symbolic way to write "y is a function of x" as $y=f(x)$.	Euler	Newton	Leibniz	Cauchy
17	Let $f(x)=x^3-2x^2+4x-1$; then $f(0)=$_____	0	1	-1	4
18	Lagrange used _____ notation for derivative.	$Df(x)$	$f'(x)$	$\dot{f}(x)$	$\frac{dy}{dx}$
19	$\frac{d}{dx}(\tan\sqrt{x})=$ _____	$\frac{\sec^2\sqrt{x}}{\sqrt{x}}$	$\frac{\sec x}{2\sqrt{x}}$	$\frac{\sec^2\sqrt{x}}{2\sqrt{x}}$	$\sec^2 x$
20	$\frac{d}{dx}(\pi^e)=$ _____	1	$e\pi^{e-1}$	$\pi^e\ln\pi$	0

Paper Code Number: 4192	2023 (2^{nd}-A) INTERMEDIATE PART-II (12^{th} Class)	Roll No: 310
MATHEMATICS PAPER-II GROUP-II		
TIME ALLOWED: 30 Minutes	OBJECTIVE	MAXIMUM MARKS: 20

Q.No.1 You have four choices for each objective type question as A, B, C and D. The choice which you think is correct, fill that bubble in front of that question number, on bubble sheet. Use marker or pen to fill the bubbles. Cutting or filling two or more bubbles will result in zero mark in that question.

S.#	QUESTIONS	A	B	C	D
1	Which is not the exponential function?	2^x	n^x	e^x	x^n
2	$\lim_{\theta\to 0}\frac{\sin\theta}{\theta}=1$, where θ is measured in:	Degree	Radian	Gradient	None of these
3	$f(x)=f(0)+f'(0)x+\frac{f''(0)}{2!}x^2+\frac{f'''(0)}{3!}x^3+$ ____ $+\frac{f^n(0)}{n!}x^n+$ ____ is called:	Taylor series	Binomial series	Maclaurin series	Laurent series
4	$\frac{d}{dx}\left(\cos^{-1}\frac{x}{a}\right)=$ ____	$\frac{-1}{\sqrt{a^2-x^2}}$	$\frac{1}{\sqrt{a^2-x^2}}$	$\frac{1}{a\sqrt{a^2-x^2}}$	$\frac{1}{\sqrt{a^2+x^2}}$
5	If $f(x)=\cos x$, then $f'(\sin^{-1}x)=$	$-\sin x$	$-x$	1	x
6	If $y=e^{2x}$, then $y_4=$	$16e^{2x}$	$8e^{2x}$	$4e^{2x}$	$-16e^{2x}$
7	$\int\frac{a}{x}dx=$	$ax+c$	$a\ell n\lvert x\rvert+c$	$-\frac{a}{x^2}+c$	$\frac{1}{a}\ell n\lvert x\rvert+c$
8	$\int_a^b f(x)\,dx=$ $a<c<b$	$\int_a^c f(x)\,dx+\int_c^b f(x)\,dx$	$\int_a^c f(x)\,dx-\int_c^b f(x)\,dx$	$\int_b^c f(x)\,dx+\int_c^a f(x)\,dx$	$-\int_a^c f(x)\,dx+\int_c^b f(x)\,dx$
9	$\int\sin 5x\,dx=$	$-\frac{1}{6}\cos x+c$	$-\frac{1}{5}\cos 5x+c$	$\frac{1}{5}\sin x+c$	$\frac{1}{5}\cos 5x+c$
10	$\int_{\frac{-\pi}{4}}^{\pi/4}\sec^2\theta\,d\theta=$	1	2	Zero	3
11	If a is some fixed number, then the line $y=a$ is:	Along $y-axis$	Parallel to $y-axis$	Parallel to $x-axis$	Perpendicular to $x-axis$
12	If m_1 and m_2 are slopes of two perpendicular lines, then	$m_1m_2+1\neq 0$	$m_1m_2+1=0$	$m_1=m_2$	$m_1=-m_2$
13	If $b=0$, then the line $ax+by+c=0$ is:	Vertical	Horizontal	Inclined	None of these
14	$(0,\ 0)$ is the solution of inequality:	$7x+2y>3$	$x-3y>0$	$x+2y<6$	$x-3y<0$
15	The condition for a line $y=mx+c$ to be the tangent to the circle $x^2+y^2=a^2$ is:	$c=\pm m\sqrt{1+a^2}$	$c=\pm a\sqrt{1+m^2}$	$c=\pm a\sqrt{1-m^2}$	$c=\pm m\sqrt{1-a^2}$
16	The eccentricity e of ellipse is:	$e=0$	$e<1$	$e>1$	$e=1$
17	The length of lactusrectum of the ellipse $\frac{x^2}{a^2}+\frac{y^2}{b^2}=1$ is:	$\frac{2b^2}{a}$	$\frac{a^2}{2b}$	$\frac{a}{2b^2}$	$2ab$
18	Length of tangent drawn from $(0,\ 1)$ to the circle $x^2+y^2+6x-3y+3=0$ is:	4	3	2	1
19	A vector perpendicular to both vectors $\underline{a}$ and $\underline{b}$ is:	$\underline{a}.\underline{b}$	$\underline{a}\times\underline{b}$	$\frac{\underline{a}.\underline{b}}{\lvert\underline{a}\rvert}$	$\underline{b}.\underline{a}$
20	The magnitude of $\underline{u}=\underline{i}+\underline{j}$ is:	$2\sqrt{\hat{i}^2+\hat{j}^2}$	2	$\sqrt{2}$	$\frac{\hat{i}+\hat{j}}{\sqrt{2}}$

Paper Code Number: 4194	2023 (2^{nd}-A) INTERMEDIATE PART-II (12^{th} Class)	Roll No: 311
MATHEMATICS PAPER-II GROUP-II		
TIME ALLOWED: 30 Minutes	OBJECTIVE	MAXIMUM MARKS: 20

Q.No.1 You have four choices for each objective type question as A, B, C and D. The choice which you think is correct, fill that bubble in front of that question number, on bubble sheet. Use marker or pen to fill the bubbles. Cutting or filling two or more bubbles will result in zero mark in that question.

S.#	QUESTIONS	A	B	C	D
1	If $y = e^{2x}$, then $y_4 =$	$16e^{2x}$	$8e^{2x}$	$4e^{2x}$	$-16e^{2x}$
2	$\int \frac{a}{x} dx =$	$ax + c$	$a\ell n\lvert x\rvert + c$	$-\frac{a}{x^2} + c$	$\frac{1}{a}\ell n\lvert x\rvert + c$
3	$\int_a^b f(x)\,dx =$ $\quad a < c < b$	$\int_a^c f(x)\,dx + \int_c^b f(x)\,dx$	$\int_a^c f(x)\,dx - \int_c^b f(x)\,dx$	$\int_b^c f(x)\,dx + \int_c^a f(x)\,dx$	$-\int_a^c f(x)\,dx + \int_c^b f(x)\,dx$
4	$\int \sin 5x\,dx =$	$-\frac{1}{6}\cos x + c$	$-\frac{1}{5}\cos 5x + c$	$\frac{1}{5}\sin x + c$	$\frac{1}{5}\cos 5x + c$
5	$\int_{\frac{-\pi}{4}}^{\pi/4} \sec^2\theta\,d\theta =$	1	2	Zero	3
6	If a is some fixed number, then the line $y = a$ is:	Along $y-axis$	Parallel to $y-axis$	Parallel to $x-axis$	Perpendicular to $x-axis$
7	If m_1 and m_2 are slopes of two perpendicular lines, then	$m_1m_2 + 1 \neq 0$	$m_1m_2 + 1 = 0$	$m_1 = m_2$	$m_1 = -m_2$
8	If $b = 0$, then the line $ax + by + c = 0$ is:	Vertical	Horizontal	Inclined	None of these
9	$(0,\ 0)$ is the solution of inequality:	$7x + 2y > 3$	$x - 3y > 0$	$x + 2y < 6$	$x - 3y < 0$
10	The condition for a line $y = mx + c$ to be the tangent to the circle $x^2 + y^2 = a^2$ is:	$c = \pm m\sqrt{1 + a^2}$	$c = \pm a\sqrt{1 + m^2}$	$c = \pm a\sqrt{1 - m^2}$	$c = \pm m\sqrt{1 - a^2}$
11	The eccentricity e of ellipse is:	$e = 0$	$e < 1$	$e > 1$	$e = 1$
12	The length of lactusrectum of the ellipse $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$ is:	$\frac{2b^2}{a}$	$\frac{a^2}{2b}$	$\frac{a}{2b^2}$	$2ab$
13	Length of tangent drawn from $(0,\ 1)$ to the circle $x^2 + y^2 + 6x - 3y + 3 = 0$ is:	4	3	2	1
14	A vector perpendicular to both vectors $\underline{a}$ and $\underline{b}$ is:	$\underline{a}.\underline{b}$	$\underline{a} \times \underline{b}$	$\frac{\underline{a}.\underline{b}}{\lvert\underline{a}\rvert}$	$\underline{b}.\underline{a}$
15	The magnitude of $\underline{u} = \underline{i} + \underline{j}$ is:	$2\sqrt{\hat{i}^2 + \hat{j}^2}$	2	$\sqrt{2}$	$\frac{\hat{i} + \hat{j}}{\sqrt{2}}$
16	Which is not the exponential function?	2^x	n^x	e^x	x^n
17	$\lim_{\theta \to 0} \frac{\sin\theta}{\theta} = 1$, where θ is measured in:	Degree	Radian	Gradient	None of these
18	$f(x) = f(0) + f'(0)x + \frac{f''(0)}{2!}x^2 + \frac{f'''(0)}{3!}x^3 +$ ____ $+ \frac{f^n(0)}{n!}x^n +$ ____ is called:	Taylor series	Binomial series	Maclaurin series	Laurent series
19	$\frac{d}{dx}\left(\cos^{-1}\frac{x}{a}\right) =$ ____	$\frac{-1}{\sqrt{a^2 - x^2}}$	$\frac{1}{\sqrt{a^2 - x^2}}$	$\frac{1}{a\sqrt{a^2 - x^2}}$	$\frac{1}{\sqrt{a^2 + x^2}}$
20	If $f(x) = \cos x$, then $f'(\sin^{-1}x) =$	$-\sin x$	$-x$	1	x

Paper Code Number: 4196	2023 (2^{nd}-A) INTERMEDIATE PART-II (12^{th} Class)	Roll No: 312
MATHEMATICS PAPER-II GROUP-II		
TIME ALLOWED: 30 Minutes	OBJECTIVE	MAXIMUM MARKS: 20

Q.No.1 **You have four choices for each objective type question as A, B, C and D. The choice which you think is correct, fill that bubble in front of that question number, on bubble sheet. Use marker or pen to fill the bubbles. Cutting or filling two or more bubbles will result in zero mark in that question.**

S.#	QUESTIONS	A	B	C	D
1	If a is some fixed number, then the line $y = a$ is:	Along $y-axis$	Parallel to $y-axis$	Parallel to $x-axis$	Perpendicular to $x-axis$
2	If m_1 and m_2 are slopes of two perpendicular lines, then	$m_1m_2+1 \neq 0$	$m_1m_2+1 = 0$	$m_1 = m_2$	$m_1 = -m_2$
3	If $b = 0$, then the line $ax + by + c = 0$ is:	Vertical	Horizontal	Inclined	None of these
4	$(0, 0)$ is the solution of inequality:	$7x+2y>3$	$x-3y>0$	$x+2y<6$	$x-3y<0$
5	The condition for a line $y = mx + c$ to be the tangent to the circle $x^2 + y^2 = a^2$ is:	$c=\pm m\sqrt{1+a^2}$	$c=\pm a\sqrt{1+m^2}$	$c=\pm a\sqrt{1-m^2}$	$c=\pm m\sqrt{1-a^2}$
6	The eccentricity e of ellipse is:	$e = 0$	$e < 1$	$e > 1$	$e = 1$
7	The length of lactusrectum of the ellipse $\frac{x^2}{a^2}+\frac{y^2}{b^2}=1$ is:	$\frac{2b^2}{a}$	$\frac{a^2}{2b}$	$\frac{a}{2b^2}$	$2ab$
8	Length of tangent drawn from $(0, 1)$ to the circle $x^2+y^2+6x-3y+3=0$ is:	4	3	2	1
9	A vector perpendicular to both vectors $\underline{a}$ and $\underline{b}$ is:	$\underline{a}.\underline{b}$	$\underline{a}\times\underline{b}$	$\frac{\underline{a}.\underline{b}}{\lvert\underline{a}\rvert}$	$\underline{b}.\underline{a}$
10	The magnitude of $\underline{u} = \underline{i} + \underline{j}$ is:	$2\sqrt{\hat{i}^2+\hat{j}^2}$	2	$\sqrt{2}$	$\frac{\hat{i}+\hat{j}}{\sqrt{2}}$
11	Which is not the exponential function?	2^x	n^x	e^x	x^n
12	$\lim_{\theta\to 0}\frac{\sin\theta}{\theta}=1$, where θ is measured in:	Degree	Radian	Gradient	None of these
13	$f(x)=f(0)+f'(0)x+\frac{f''(0)}{2!}x^2+\frac{f'''(0)}{3!}x^3+$ ____ $+\frac{f^n(0)}{n!}x^n+$ ____ is called:	Taylor series	Binomial series	Maclaurin series	Laurent series
14	$\frac{d}{dx}\left(\cos^{-1}\frac{x}{a}\right)=$ ____	$\frac{-1}{\sqrt{a^2-x^2}}$	$\frac{1}{\sqrt{a^2-x^2}}$	$\frac{1}{a\sqrt{a^2-x^2}}$	$\frac{1}{\sqrt{a^2+x^2}}$
15	If $f(x)=\cos x$, then $f'(\sin^{-1}x)=$	$-\sin x$	$-x$	1	x
16	If $y=e^{2x}$, then $y_4=$	$16e^{2x}$	$8e^{2x}$	$4e^{2x}$	$-16e^{2x}$
17	$\int\frac{a}{x}dx=$	$ax+c$	$a\ell n\lvert x\rvert+c$	$-\frac{a}{x^2}+c$	$\frac{1}{a}\ell n\lvert x\rvert+c$
18	$\int_a^b f(x)\,dx=$ $a<c<b$	$\int_a^c f(x)\,dx+\int_c^b f(x)\,dx$	$\int_a^c f(x)\,dx-\int_c^b f(x)\,dx$	$\int_b^c f(x)\,dx+\int_c^a f(x)\,dx$	$-\int_a^c f(x)\,dx+\int_c^b f(x)\,dx$
19	$\int\sin 5x\,dx=$	$-\frac{1}{6}\cos x+c$	$-\frac{1}{5}\cos 5x+c$	$\frac{1}{5}\sin x+c$	$\frac{1}{5}\cos 5x+c$
20	$\int_{\frac{-\pi}{4}}^{\pi/4}\sec^2\theta\,d\theta=$	1	2	Zero	3

Paper Code Number: 4198	2023 (2^{nd}-A) INTERMEDIATE PART-II (12^{th} Class)	Roll No: 313
MATHEMATICS PAPER-II GROUP-II		
TIME ALLOWED: 30 Minutes	OBJECTIVE	MAXIMUM MARKS: 20

Q.No.1 You have four choices for each objective type question as A, B, C and D. The choice which you think is correct, fill that bubble in front of that question number, on bubble sheet. Use marker or pen to fill the bubbles. Cutting or filling two or more bubbles will result in zero mark in that question.

S.#	QUESTIONS	A	B	C	D
1	The eccentricity e of ellipse is:	$e=0$	$e<1$	$e>1$	$e=1$
2	The length of lactusrectum of the ellipse $\frac{x^2}{a^2}+\frac{y^2}{b^2}=1$ is:	$\frac{2b^2}{a}$	$\frac{a^2}{2b}$	$\frac{a}{2b^2}$	$2ab$
3	Length of tangent drawn from (0, 1) to the circle $x^2+y^2+6x-3y+3=0$ is:	4	3	2	1
4	A vector perpendicular to both vectors $\underline{a}$ and $\underline{b}$ is:	$\underline{a}.\underline{b}$	$\underline{a}\times\underline{b}$	$\frac{\underline{a}.\underline{b}}{\lvert\underline{a}\rvert}$	$\underline{b}.\underline{a}$
5	The magnitude of $\underline{u}=\underline{i}+\underline{j}$ is:	$2\sqrt{\hat{i}^2+\hat{j}^2}$	2	$\sqrt{2}$	$\frac{\hat{i}+\hat{j}}{\sqrt{2}}$
6	Which is not the exponential function?	2^x	n^x	e^x	x^n
7	$\lim_{\theta\to 0}\frac{\sin\theta}{\theta}=1$, where θ is measured in:	Degree	Radian	Gradient	None of these
8	$f(x)=f(0)+f'(0)x+\frac{f''(0)}{2!}x^2+\frac{f'''(0)}{3!}x^3+$ ____ $+\frac{f^n(0)}{n!}x^n+$ ____ is called:	Taylor series	Binomial series	Maclaurin series	Laurent series
9	$\frac{d}{dx}\left(\cos^{-1}\frac{x}{a}\right)=$ ____	$\frac{-1}{\sqrt{a^2-x^2}}$	$\frac{1}{\sqrt{a^2-x^2}}$	$\frac{1}{a\sqrt{a^2-x^2}}$	$\frac{1}{\sqrt{a^2+x^2}}$
10	If $f(x)=\cos x$, then $f'(\sin^{-1}x)=$	$-\sin x$	$-x$	1	x
11	If $y=e^{2x}$, then $y_4=$	$16e^{2x}$	$8e^{2x}$	$4e^{2x}$	$-16e^{2x}$
12	$\int\frac{a}{x}dx=$	$ax+c$	$a\ell n\lvert x\rvert+c$	$-\frac{a}{x^2}+c$	$\frac{1}{a}\ell n\lvert x\rvert+c$
13	$\int_a^b f(x)\,dx=$ $a<c<b$	$\int_a^c f(x)\,dx+\int_c^b f(x)\,dx$	$\int_a^c f(x)\,dx-\int_c^b f(x)\,dx$	$\int_b^c f(x)\,dx+\int_c^a f(x)\,dx$	$-\int_a^c f(x)\,dx+\int_c^b f(x)\,dx$
14	$\int\sin 5x\,dx=$	$-\frac{1}{6}\cos x+c$	$-\frac{1}{5}\cos 5x+c$	$\frac{1}{5}\sin x+c$	$\frac{1}{5}\cos 5x+c$
15	$\int_{\frac{-\pi}{4}}^{\pi/4}\sec^2\theta\,d\theta=$	1	2	Zero	3
16	If a is some fixed number, then the line $y=a$ is:	Along $y-axis$	Parallel to $y-axis$	Parallel to $x-axis$	Perpendicular to $x-axis$
17	If m_1 and m_2 are slopes of two perpendicular lines, then	$m_1m_2+1\neq 0$	$m_1m_2+1=0$	$m_1=m_2$	$m_1=-m_2$
18	If $b=0$, then the line $ax+by+c=0$ is:	Vertical	Horizontal	Inclined	None of these
19	(0, 0) is the solution of inequality:	$7x+2y>3$	$x-3y>0$	$x+2y<6$	$x-3y<0$
20	The condition for a line $y=mx+c$ to be the tangent to the circle $x^2+y^2=a^2$ is:	$c=\pm m\sqrt{1+a^2}$	$c=\pm a\sqrt{1+m^2}$	$c=\pm a\sqrt{1-m^2}$	$c=\pm m\sqrt{1-a^2}$