(24)

OBJECTIVE KEY FOR BOARD OF INTERMEDIATE AND SECONDARY EDUCATION,MULTAN.

INTERMEDIATE ..II.. ANNUAL EXAMINATION,2022.

Name of Subject: Mathematics Group: 2nd

Q. Nos	Paper Code 4192	Correct Anwser	Paper Code 4194	Correct Anwser	Paper Code 4196	Correct Anwser	Paper Code 4198	Correct Anwser
1	C	$\sqrt{e}$	D	$-\cos 2x$	D	0	D	6
2	A	$x=0$	A	$y=\tan x$	C	$\frac{-1}{x\sqrt{1-x^2}}$	B	$y=4$
3	B	-1	B	2	A	b^2-a^2	C	$(1,-1)$
4	B	Decreases	D	$\frac{1}{\sqrt{2}}$	D	$-\cos 2x$	D	$-\hat{k}$
5	D	0	C	$h^2-ab=0$	A	$y=\tan x$	A	2
6	C	$\frac{-1}{x\sqrt{1-x^2}}$	B	60°	B	2	C	$\sqrt{e}$
7	A	b^2-a^2	A	$(0,1)$	D	$\frac{1}{\sqrt{2}}$	A	$x=0$
8	D	$-\cos 2x$	C	$(3,1)$	C	$h^2-ab=0$	B	-1
9	A	$y=\tan x$	D	6	B	60°	B	Decreases
10	B	2	B	$y=4$	A	$(0,1)$	D	0
11	D	$\frac{1}{\sqrt{2}}$	C	$(1,-1)$	C	$(3,1)$	C	$\frac{-1}{x\sqrt{1-x^2}}$
12	C	$h^2-ab=0$	D	$-\hat{k}$	D	6	A	b^2-a^2
13	B	60°	A	2	B	$y=4$	D	$-\cos 2x$
14	A	$(0,1)$	C	$\sqrt{e}$	C	$(1,-1)$	A	$y=\tan x$
15	C	$(3,1)$	A	$x=0$	D	$-\hat{k}$	B	2
16	D	6	B	-1	A	2	D	$\frac{1}{\sqrt{2}}$
17	B	$y=4$	B	Decreases	C	$\sqrt{e}$	C	$h^2-ab=0$
18	C	$(1,-1)$	D	0	A	$x=0$	B	60°
19	D	$-\hat{k}$	C	$\frac{-1}{x\sqrt{1-x^2}}$	B	-1	A	$(0,1)$
20	A	2	A	b^2-a^2	B	Decreases	C	$(3,1)$

سرٹیفکیٹ بابت تصحیح سوالیہ پرچہ اور مارکنگ Key

ہم نے مضمون _____ پرچہ _____ گروپ _____ سکیم _____ انٹرمیڈیٹ ـــــ سالانہ امتحان ...202 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:** _____

S.#	Name	Designation	Institution	Mobile No	Signature
1	Nazir Ahmad	Associate Prof.	Govt. Graduate College Mian Channu	03006883752	
2	Rao Riasat Ali	Professor	Gr. Graduate College Khanewal	0332 432 1953	
3	Dr. Abdul Muneem	Assistant Professor	Emerson University Multan	0321-6371967	
4	Khurram Shahzad	Assistant Professor	Govt. Graduate College Civil Lines Multan.	03216343022	
5					

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	Hafiz M. IRSHAD	Assistant Prof.	Govt. Emerson college/ed	03007331974	
2					
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(95)

OBJECTIVE KEY FOR BOARD OF INTERMEDIATE AND SECONDARY EDUCATION, MULTAN.

INTERMEDIATE ...II.... ANNUAL EXAMINATION, 202.2

Name of Subject: Mathematics. Group: 1st

Q. Nos	Paper Code 4191	Correct Anwser	Paper Code 4193	Correct Anwser	Paper Code 4195	Correct Anwser	Paper Code 4197	Correct Anwser
1	C	7	D	$\sqrt{8}$	D	2	C	$\frac{1}{\sqrt{1+x^2}}$
2	D	Neither even nor odd	B	$\frac{\pi}{2}$	A	$\frac{3}{5}$	B	$\frac{1}{3}\tan^{-1}\frac{x}{3}$
3	B	nx^{n-1}	A	$xx_1+yy_1=a^2$	D	undefined	A	$\ln(e^x-2)$
4	D	2	A	$\frac{0}{\vec{b}\cdot\vec{a}}$	B	$\frac{13}{\sqrt{29}}$	A	0
5	B	$2^x \ln 2$	B	$\frac{\vec{b}\cdot\vec{a}}{\lvert a\rvert}$	A	$2x+y>0$	C	$e^x \tan x$
6	C	$\frac{1}{\sqrt{1+x^2}}$	C	7	D	$\sqrt{8}$	D	2
7	B	$\frac{1}{3}\tan^{-1}\frac{x}{3}$	D	Neither even nor odd	B	$\frac{\pi}{2}$	A	$\frac{3}{5}$
8	A	$\ln(e^x-2)$	B	nx^{n-1}	A	$xx_1+yy_1=a^2$	D	undefined
9	A	0	D	2	A	$\frac{0}{\vec{b}\cdot\vec{a}}$	B	$\frac{13}{\sqrt{29}}$
10	C	$e^x \tan x$	B	$2^x \ln 2$	B	$\frac{\vec{b}\cdot\vec{a}}{\lvert a\rvert}$	A	$2x+y>0$
11	D	2	C	$\frac{1}{\sqrt{1+x^2}}$	C	7	D	$\sqrt{8}$
12	A	$\frac{3}{5}$	B	$\frac{1}{3}\tan^{-1}\frac{x}{3}$	D	Neither even nor odd	B	$\frac{\pi}{2}$
13	D	undefined	A	$\ln(e^x-2)$	B	nx^{n-1}	A	$xx_1+yy_1=a^2$
14	B	$\frac{13}{\sqrt{29}}$	A	0	D	2	A	0
15	A	$2x+y>0$	C	$e^x \tan x$	B	$2^x \ln 2$	B	$\frac{\vec{b}\cdot\vec{a}}{\lvert a\rvert}$
16	D	$\sqrt{8}$	D	2	C	$\frac{1}{\sqrt{1+x^2}}$	C	7
17	B	$\frac{\pi}{2}$	A	$\frac{3}{5}$	B	$\frac{1}{3}\tan^{-1}\frac{x}{3}$	D	Neither even nor odd
18	A	$xx_1+yy_1=a^2$	D	undefined	A	$\ln(e^x-2)$	B	nx^{n-1}
19	A	0	B	$\frac{13}{\sqrt{29}}$	A	0	D	2
20	B	$\frac{\vec{b}\cdot\vec{a}}{\lvert a\rvert}$	A	$2x+y>0$	C	$e^x \tan x$	B	$2^x \ln 2$

Key پر ٹیکنیکل بابت تصحیح سوالیہ پرچہ امارکنگ

انٹرمیڈیٹ ـــــ سالانہ امتحان ....202 کا

ہم نے مضمون _____ پرچہ _____ گروپ _____ سکیم _____

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: _____

S.#	Name	Designation	Institution	Mobile No	Signature
1	Nazir Ahmad	Associate Prof.	Govt. Graduate College Mian Channu	03006883752	Ahmad
2	Rao Riasat Ali	Professor	Govt. G. College Khanewal	0332 632 1953	Riasat
3	Dr. Abdul Mueed	Assistant Professor	Emerson University	0321-6319672	Mueed
4	Khurram Shahzad	Assistant Professor	Govt. Graduate College Civil Lines Multan.	03216343022	Khurram
5					

Re-Checked By ہم نے درج بالا سوالیہ پرچہ (انشائیہ + معروضی)، معروضی "Key" اور ہدایات کے حوالے سے مکمل طور پر تسلی کرلی ہے۔ کسی قسم کی کوئی غلطی نہ ہے۔

1	Hafiz M. Irshad	Assistant Professor	Emerson University, Multan	03007381772	Irshad
2					
3					

تاریخ _____

Paper Code Number: 4191	2022 (2nd-A)	Roll No: 46

INTERMEDIATE PART-II (12th CLASS)

MATHEMATICS PAPER-II TIME ALLOWED: 30 Minutes

GROUP-I **OBJECTIVE** 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 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. No credit will be awarded in case BUBBLES are not filled. Do not solve question on this sheet of OBJECTIVE PAPER.

Q.No.1

(1) $\lim_{\theta \to 0} \frac{\sin 7\theta}{\theta}$ (A) $\frac{1}{7}$ (B) 1 (C) 7 (D) -7

(2) The function $f(x) = (x+2)^2$ is:
(A) Even (B) Odd (C) Both even and odd (D) Neither even nor odd

(3) $\frac{d}{dx}(x^n - 2) =$ (A) $n(x^{n-1} - 2)$ (B) nx^{n-1} (C) $(n-2)x^{n-1}$ (D) x^n

(4) If $f(x) = \frac{1}{x^2}$ then $f'(-1) =$ (A) 1 (B) -1 (C) $\frac{1}{2}$ (D) 2

(5) $\frac{d}{dx}(2^x) =$ (A) $x2^{x-1}$ (B) $2^x \ell n2$ (C) $\frac{2^x}{\ell n2}$ (D) $\frac{\ell n2}{2^x}$

(6) $\frac{d}{dx}(\sin^{-1} kx) =$ (A) $\frac{1}{\sqrt{1-x^2}}$ (B) $\frac{-1}{\sqrt{1-x^2}}$ (C) $\frac{1}{\sqrt{1+x^2}}$ (D) $\frac{-1}{\sqrt{1+x^2}}$

(7) $\int \frac{dx}{x^2+9} =$ (A) $\frac{1}{3}\sin^{-1}\frac{x}{3}$ (B) $\frac{1}{3}\tan^{-1}\frac{x}{3}$ (C) $\frac{1}{3}\cos^{-1}\frac{x}{3}$ (D) $\frac{1}{3}\cot^{-1}\frac{x}{3}$

(8) $\int \frac{e^x}{e^x - 2}\,dx =$
(A) $\ell n(e^x - 2) + c$ (B) $\ell n(e^x - 3) + c$ (C) $e^x - 2 + c$ (D) e^x

(9) $\int_0^{\pi} \cos x\,dx =$ (A) 0 (B) -1 (C) 2 (D) 1

(10) $\int e^x(\sec^2 x + \tan x)\,dx =$ (A) $e^x \sec^2 x$ (B) $e^x \sec x$ (C) $e^x \tan x$ (D) $e^x \tan^2 x$

(11) The distance of the point $(-1, 2)$ from $x-$axis is: (A) 1 (B) -1 (C) -2 (D) 2

(12) Slope of the line $3x - 5y + 2 = 0$ is: (A) $\frac{3}{5}$ (B) $\frac{-3}{5}$ (C) $\frac{3}{2}$ (D) $\frac{2}{3}$

(13) Slope of $y-$axis is: (A) Zero (B) 1 (C) 2 (D) Undefined

(14) The distance of the line $2x - 5y + 13 = 0$ from the point $(0, 0)$ is:
(A) $\frac{13}{29}$ (B) $\frac{13}{\sqrt{29}}$ (C) 13 (D) 2

(15) $(2, 1)$ is in the solution of inequality:
(A) $2x + y > 0$ (B) $x - y > 1$ (C) $3x + 5y < 3$ (D) $2x + y \geq 6$

(16) The radius of the circle $(x-5)^2 + (y-3)^2 = 8$ is:
(A) 64 (B) 4 (C) 8 (D) $\sqrt{8}$

(17) An angle inscribed in a semi-circle is:
(A) 0 (B) $\frac{\pi}{2}$ (C) π (D) 2π

(18) Equation of tangent to circle $x^2 + y^2 = a^2$ at $P(x_1, y_1)$ is:
(A) $xx_1 + yy_1 = a^2$ (B) $xx_1 - yy_1 = a^2$ (C) $\frac{x}{x_1} = \frac{y}{y_1}$ (D) $\frac{x}{x_1} = \frac{-y}{y_1}$

(19) $\underline{i} \cdot \underline{j} =$
(A) 0 (B) $\hat{i}$ (C) $\hat{j}$ (D) $\hat{k}$

(20) The projection of a vector $\underline{b}$ along vector $\underline{a}$ is:
(A) $\frac{\bar{b} \cdot \bar{a}}{|\underline{b}|}$ (B) $\frac{\bar{b} \cdot \bar{a}}{|\underline{a}|}$ (C) $\bar{a} \cdot \bar{b}$ (D) $\frac{\bar{a}}{\bar{b}}$

Paper Code Number: 4193	2022 (2^{nd}-A)	Roll No: (97)

INTERMEDIATE PART-II (12^{th} CLASS)

MATHEMATICS PAPER-II TIME ALLOWED: 30 Minutes

GROUP-I **OBJECTIVE** 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 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. No credit will be awarded in case BUBBLES are not filled. Do not solve question on this sheet of OBJECTIVE PAPER.

Q.No.1

(1) The radius of the circle $(x-5)^2+(y-3)^2=8$ is:

(A) 64 (B) 4 (C) 8 (D) $\sqrt{8}$

(2) An angle inscribed in a semi-circle is:

(A) 0 (B) $\frac{\pi}{2}$ (C) π (D) 2π

(3) Equation of tangent to circle $x^2+y^2=a^2$ at $P(x_1, y_1)$ is:

(A) $xx_1+yy_1=a^2$ (B) $xx_1-yy_1=a^2$ (C) $\frac{x}{x_1}=\frac{y}{y_1}$ (D) $\frac{x}{x_1}=\frac{-y}{y_1}$

(4) $\underline{i}\cdot\underline{j}=$

(A) 0 (B) $\hat{i}$ (C) $\hat{j}$ (D) $\hat{k}$

(5) The projection of a vector $\underline{b}$ along vector $\underline{a}$ is:

(A) $\frac{\vec{b}\cdot\vec{a}}{|\underline{b}|}$ (B) $\frac{\vec{b}\cdot\vec{a}}{|\underline{a}|}$ (C) $\vec{a}\cdot\vec{b}$ (D) $\frac{\vec{a}}{\vec{b}}$

(6) $\lim_{\theta\to 0}\frac{\sin 7\theta}{\theta}$ (A) $\frac{1}{7}$ (B) 1 (C) 7 (D) -7

(7) The function $f(x)=(x+2)^2$ is:

(A) Even (B) Odd (C) Both even and odd (D) Neither even nor odd

(8) $\frac{d}{dx}(x^n-2)=$ (A) $n(x^{n-1}-2)$ (B) nx^{n-1} (C) $(n-2)x^{n-1}$ (D) x^n

(9) If $f(x)=\frac{1}{x^2}$ then $f'(-1)=$ (A) 1 (B) -1 (C) $\frac{1}{2}$ (D) 2

(10) $\frac{d}{dx}(2^x)=$ (A) $x2^{x-1}$ (B) $2^x\ell n2$ (C) $\frac{2^x}{\ell n2}$ (D) $\frac{\ell n2}{2^x}$

(11) $\frac{d}{dx}(\sin^{-1}hx)=$ (A) $\frac{1}{\sqrt{1-x^2}}$ (B) $\frac{-1}{\sqrt{1-x^2}}$ (C) $\frac{1}{\sqrt{1+x^2}}$ (D) $\frac{-1}{\sqrt{1+x^2}}$

(12) $\int\frac{dx}{x^2+9}=$ (A) $\frac{1}{3}\sin^{-1}\frac{x}{3}$ (B) $\frac{1}{3}\tan^{-1}\frac{x}{3}$ (C) $\frac{1}{3}\cos^{-1}\frac{x}{3}$ (D) $\frac{1}{3}\cot^{-1}\frac{x}{3}$

(13) $\int\frac{e^x}{e^x-2}dx=$

(A) $\ell n(e^x-2)+c$ (B) $\ell n(e^x-3)+c$ (C) e^x-2+c (D) e^x

(14) $\int_0^{\pi}\cos x\,dx=$ (A) 0 (B) -1 (C) 2 (D) 1

(15) $\int e^x(\sec^2 x+\tan x)\,dx=$ (A) $e^x\sec^2 x$ (B) $e^x\sec x$ (C) $e^x\tan x$ (D) $e^x\tan^2 x$

(16) The distance of the point $(-1, 2)$ from $x-$axis is: (A) 1 (B) -1 (C) -2 (D) 2

(17) Slope of the line $3x-5y+2=0$ is: (A) $\frac{3}{5}$ (B) $\frac{-3}{5}$ (C) $\frac{3}{2}$ (D) $\frac{2}{3}$

(18) Slope of $y-$axis is: (A) Zero (B) 1 (C) 2 (D) Undefined

(19) The distance of the line $2x-5y+13=0$ from the point $(0, 0)$ is:

(A) $\frac{13}{29}$ (B) $\frac{13}{\sqrt{29}}$ (C) 13 (D) 2

(20) $(2, 1)$ is in the solution of inequality:

(A) $2x+y>0$ (B) $x-y>1$ (C) $3x+5y<3$ (D) $2x+y\geq 6$

Paper Code Number: 4195	2022 (2nd-A)	Roll No: (98)

INTERMEDIATE PART-II (12th CLASS)

MATHEMATICS PAPER-II TIME ALLOWED: 30 Minutes

GROUP-I **OBJECTIVE** 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 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. No credit will be awarded in case BUBBLES are not filled. Do not solve question on this sheet of OBJECTIVE PAPER.

Q.No.1

(1) The distance of the point $(-1, 2)$ from $x-$axis is: (A) 1 (B) -1 (C) -2 (D) 2

(2) Slope of the line $3x - 5y + 2 = 0$ is: (A) $\frac{3}{5}$ (B) $\frac{-3}{5}$ (C) $\frac{3}{2}$ (D) $\frac{2}{3}$

(3) Slope of $y-$axis is: (A) Zero (B) 1 (C) 2 (D) Undefined

(4) The distance of the line $2x - 5y + 13 = 0$ from the point $(0, 0)$ is:

(A) $\frac{13}{29}$ (B) $\frac{13}{\sqrt{29}}$ (C) 13 (D) 2

(5) $(2, 1)$ is in the solution of inequality:

(A) $2x + y > 0$ (B) $x - y > 1$ (C) $3x + 5y < 3$ (D) $2x + y \geq 6$

(6) The radius of the circle $(x-5)^2 + (y-3)^2 = 8$ is:

(A) 64 (B) 4 (C) 8 (D) $\sqrt{8}$

(7) An angle inscribed in a semi-circle is:

(A) 0 (B) $\frac{\pi}{2}$ (C) π (D) 2π

(8) Equation of tangent to circle $x^2 + y^2 = a^2$ at $P(x_1, y_1)$ is:

(A) $xx_1 + yy_1 = a^2$ (B) $xx_1 - yy_1 = a^2$ (C) $\frac{x}{x_1} = \frac{y}{y_1}$ (D) $\frac{x}{x_1} = \frac{-y}{y_1}$

(9) $\underline{i} \cdot \underline{j} =$

(A) 0 (B) $\hat{i}$ (C) $\hat{j}$ (D) $\hat{k}$

(10) The projection of a vector $\underline{b}$ along vector $\underline{a}$ is:

(A) $\frac{\underline{b} \cdot \underline{a}}{|\underline{b}|}$ (B) $\frac{\underline{b} \cdot \underline{a}}{|\underline{a}|}$ (C) $\vec{a} \cdot \vec{b}$ (D) $\frac{\vec{a}}{\vec{b}}$

(11) $\lim_{\theta \to 0} \frac{\sin 7\theta}{\theta}$ (A) $\frac{1}{7}$ (B) 1 (C) 7 (D) -7

(12) The function $f(x) = (x+2)^2$ is:

(A) Even (B) Odd (C) Both even and odd (D) Neither even nor odd

(13) $\frac{d}{dx}(x^n - 2) =$ (A) $n(x^{n-1} - 2)$ (B) nx^{n-1} (C) $(n-2)x^{n-1}$ (D) x^n

(14) If $f(x) = \frac{1}{x^2}$ then $f'(-1) =$ (A) 1 (B) -1 (C) $\frac{1}{2}$ (D) 2

(15) $\frac{d}{dx}(2^x) =$ (A) $x2^{x-1}$ (B) $2^x \ell n 2$ (C) $\frac{2^x}{\ell n 2}$ (D) $\frac{\ell n 2}{2^x}$

(16) $\frac{d}{dx}(\sin^{-1} hx) =$ (A) $\frac{1}{\sqrt{1-x^2}}$ (B) $\frac{-1}{\sqrt{1-x^2}}$ (C) $\frac{1}{\sqrt{1+x^2}}$ (D) $\frac{-1}{\sqrt{1+x^2}}$

(17) $\int \frac{dx}{x^2+9} =$ (A) $\frac{1}{3}\sin^{-1}\frac{x}{3}$ (B) $\frac{1}{3}\tan^{-1}\frac{x}{3}$ (C) $\frac{1}{3}\cos^{-1}\frac{x}{3}$ (D) $\frac{1}{3}\cot^{-1}\frac{x}{3}$

(18) $\int \frac{e^x}{e^x - 2}\, dx =$

(A) $\ell n(e^x - 2) + c$ (B) $\ell n(e^x - 3) + c$ (C) $e^x - 2 + c$ (D) e^x

(19) $\int_0^{\pi} \cos x\, dx =$ (A) 0 (B) -1 (C) 2 (D) 1

(20) $\int e^x(\sec^2 x + \tan x)\, dx =$ (A) $e^x \sec^2 x$ (B) $e^x \sec x$ (C) $e^x \tan x$ (D) $e^x \tan^2 x$

Paper Code Number: 4197	2022 (2^{nd}-A) INTERMEDIATE PART-II (12^{th} CLASS)	Roll No: 99

MATHEMATICS PAPER-II TIME ALLOWED: 30 Minutes

GROUP-I **OBJECTIVE** 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 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. No credit will be awarded in case BUBBLES are not filled. Do not solve question on this sheet of OBJECTIVE PAPER.**

Q.No.1

(1) $\frac{d}{dx}(\sin^{-1} hx) =$ (A) $\frac{1}{\sqrt{1-x^2}}$ (B) $\frac{-1}{\sqrt{1-x^2}}$ (C) $\frac{1}{\sqrt{1+x^2}}$ (D) $\frac{-1}{\sqrt{1+x^2}}$

(2) $\int \frac{dx}{x^2+9} =$ (A) $\frac{1}{3}\sin^{-1}\frac{x}{3}$ (B) $\frac{1}{3}\tan^{-1}\frac{x}{3}$ (C) $\frac{1}{3}\cos^{-1}\frac{x}{3}$ (D) $\frac{1}{3}\cot^{-1}\frac{x}{3}$

(3) $\int \frac{e^x}{e^x-2}\,dx =$

(A) $\ell n(e^x-2)+c$ (B) $\ell n(e^x-3)+c$ (C) e^x-2+c (D) e^x

(4) $\int_0^{\pi} \cos x\,dx =$ (A) 0 (B) -1 (C) 2 (D) 1

(5) $\int e^x(\sec^2 x + \tan x)\,dx =$ (A) $e^x \sec^2 x$ (B) $e^x \sec x$ (C) $e^x \tan x$ (D) $e^x \tan^2 x$

(6) The distance of the point $(-1, 2)$ from $x-$axis is: (A) 1 (B) -1 (C) -2 (D) 2

(7) Slope of the line $3x - 5y + 2 - 0$ is: (A) $\frac{3}{5}$ (B) $\frac{-3}{5}$ (C) $\frac{3}{2}$ (D) $\frac{2}{3}$

(8) Slope of $y-$axis is: (A) Zero (B) 1 (C) 2 (D) Undefined

(9) The distance of the line $2x - 5y + 13 = 0$ from the point $(0, 0)$ is:

(A) $\frac{13}{29}$ (B) $\frac{13}{\sqrt{29}}$ (C) 13 (D) 2

(10) $(2, 1)$ is in the solution of inequality:

(A) $2x + y > 0$ (B) $x - y > 1$ (C) $3x + 5y < 3$ (D) $2x + y \geq 6$

(11) The radius of the circle $(x-5)^2 + (y-3)^2 = 8$ is:

(A) 64 (B) 4 (C) 8 (D) $\sqrt{8}$

(12) An angle inscribed in a semi-circle is:

(A) 0 (B) $\frac{\pi}{2}$ (C) π (D) 2π

(13) Equation of tangent to circle $x^2 + y^2 = a^2$ at $P(x_1, y_1)$ is:

(A) $xx_1 + yy_1 = a^2$ (B) $xx_1 - yy_1 = a^2$ (C) $\frac{x}{x_1} = \frac{y}{y_1}$ (D) $\frac{x}{x_1} = \frac{-y}{y_1}$

(14) $\underline{i} \cdot \underline{j} =$

(A) 0 (B) $\hat{i}$ (C) $\hat{j}$ (D) $\hat{k}$

(15) The projection of a vector $\underline{b}$ along vector $\underline{a}$ is:

(A) $\frac{\vec{b} \cdot \vec{a}}{|\underline{b}|}$ (B) $\frac{\vec{b} \cdot \vec{a}}{|\underline{a}|}$ (C) $\vec{a} \cdot \vec{b}$ (D) $\frac{\vec{a}}{\vec{b}}$

(16) $\lim_{\theta \to 0} \frac{\sin 7\theta}{\theta}$ (A) $\frac{1}{7}$ (B) 1 (C) 7 (D) -7

(17) The function $f(x) = (x+2)^2$ is:

(A) Even (B) Odd (C) Both even and odd (D) Neither even nor odd

(18) $\frac{d}{dx}(x^n - 2) =$ (A) $n(x^{n-1}-2)$ (B) nx^{n-1} (C) $(n-2)x^{n-1}$ (D) x^n

(19) If $f(x) = \frac{1}{x^2}$ then $f'(-1) =$ (A) 1 (B) -1 (C) $\frac{1}{2}$ (D) 2

(20) $\frac{d}{dx}(2^x) =$ (A) $x2^{x-1}$ (B) $2^x \ell n2$ (C) $\frac{2^x}{\ell n2}$ (D) $\frac{\ell n2}{2^x}$

2023 (2nd A) Roll No: 100

INTERMEDIATE PART-II (12th CLASS)

MATHEMATICS PAPER-II TIME ALLOWED: 2.30 Hours

GROUP-I **SUBJECTIVE** MAXIMUM MARKS: 80

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

SECTION-I

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

(i) Define even function and give one example.

(ii) If $f(x) = 2x + 1$ then find $f^{-1}(x)$

(iii) Evaluate $\lim_{x \to 0} \frac{1 - \cos x}{\sin^2 x}$

(iv) If $f(x) = 2x^2 + x - 5$ then find Left hand and Right hand limits of $f(x)$ at $x = 1$

(v) Find $\lim_{x \to -1} \left[\frac{x^3 + x^2}{x^2 - 1} \right]$

(vi) If $y = \left(\sqrt{x} - \frac{1}{\sqrt{x}} \right)^2$ then find $\frac{dy}{dx}$

(vii) If $x = 1 - t^2$, $y = 3t^2 - 2t^3$ then find $\frac{dy}{dx}$

(viii) If $y = a^{\sqrt{x}}$ then find $\frac{dy}{dx}$

(ix) If $y = \frac{x}{\ell nx}$ then find $\frac{dy}{dx}$

(x) Find y_2 if $y = \sqrt{x} + \frac{1}{\sqrt{x}}$

(xi) Define increasing and decreasing function.

(xii) Apply Maclaurin's series expansion to prove that $e^{2x} = 1 + 2x + \frac{4x^2}{2!} + \frac{8x^3}{3!} + \text{------}$

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

(i) Find dy of the function defined as $f(x) = x^2$ when $x = 2$ and $dx = 0.01$

(ii) By using differentials find $\frac{dy}{dx}$ if $x + 2y^2 = 16$

(iii) Evaluate $\int x\sqrt{x^2 - 1}\, dx$

(iv) Evaluate $\int \frac{dx}{\sqrt{x+1} - \sqrt{x}}$

(v) Evaluate $\int (\sqrt{x} + 1)^2\, dx \qquad x > 0$

(vi) Evaluate $\int \frac{(1 - \sqrt{x})^2}{\sqrt{x}}\, dx$

(vii) Solve the differential equation $\frac{dy}{dx} = -y$

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

(ix) Find the mid point of the line segment joining the two points $A(3, 1)$; $B(-2, -4)$

(x) Find an equation of the vertical line through $(-5, 3)$

(xi) Convert $4x + 7y - 2 = 0$ in normal form.

(xii) Find the distance from the point $P(6, -1)$ to the line $6x - 4y + 9 = 0$

P.T.O.

4. Attempt any nine parts. **$9 \times 2 = 18$**

(i) What is a convex region?

(ii) Graph the solution set of linear inequality in xy–plane, $3x + 7y \geq 21$

(iii) Find the centre and radius of the circle $4x^2 + 4y^2 - 8x + 12y - 25 = 0$

(iv) Determine whether the point $P(-5, 6)$ lies outside, on or inside the circle $x^2 + y^2 + 4x - 6y - 12 = 0$

(v) Find the equation of tangent to the circle $x^2 + y^2 = 25$ at point $(5\cos\theta,\ 5\sin\theta)$

(vi) Find the focus and directrix of the parabola $(x-1)^2 = 8(y+2)$

(vii) Find the equation of the ellipse with vertex $(0, 4)$, focus $(0, -3)$ and centre $(0, 0)$

(viii) Find vertices and eccentricity of hyperbola $25x^2 - 16y^2 = 400$

(ix) Find a unit vector in the direction of $\underline{v} = -\frac{\sqrt{3}}{2}\underline{i} - \frac{1}{2}\underline{j}$

(x) Let $\underline{v} = 3\underline{i} - 2\underline{j} + 2\underline{k}$, $\underline{w} = 5\underline{i} - \underline{j} + 3\underline{k}$ find $|3\underline{v} + \underline{w}|$

(xi) Find a real number α so that $\underline{u} = 2\alpha\underline{i} - \underline{j} - \underline{k}$ and $\underline{v} = \underline{i} + \alpha\underline{j} + 4\underline{k}$ are perpendicular.

(xii) If $\underline{u} = 2\underline{i} - \underline{j} + \underline{k}$ and $\underline{v} = 4\underline{i} + 2\underline{j} - \underline{k}$ find $\underline{v} \times \underline{u}$

(xiii) Prove that $\underline{u} \cdot (\underline{v} \times \underline{w}) + \underline{v} \cdot (\underline{w} \times \underline{u}) + \underline{w} \cdot (\underline{u} \times \underline{v}) = 3\underline{u} \cdot (\underline{v} \times \underline{w})$

SECTION-II

NOTE: Attempt any three questions. **$3 \times 10 = 30$**

5.(a) Find the $\lim_{x \to 0} \frac{1 - \cos px}{1 - \cos qx}$

(b) If $y = \sqrt{\tan x + \sqrt{\tan x + \sqrt{\tan x}}} + \ldots\ldots\ldots$, prove that $(2y-1)\frac{dy}{dx} = \sec^2 x$

6.(a) Show that $\int \sqrt{a^2 - x^2}\,dx = \frac{a^2}{2}\sin^{-1}\left(\frac{x}{a}\right) + \frac{x}{2}\sqrt{a^2 - x^2} + c$

(b) Find the family of lines through the point of intersection of the lines $3x - 4y - 10 = 0$ and $x + 2y - 10 = 0$. Find the member of the family which is parallel to a line with slope $\frac{-2}{3}$.

7. (a) Solve the differential equation $2e^x \tan y\,dx\ (1 - e^x)\sec^2 y\,dy = 0$

(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) Find an equation of the line through the point $(2, -9)$ and the intersection of the lines $2x + 5y - 8 = 0$ and $3x - 4y - 6 = 0$

(b) Show that the lines $3x - 2y = 0$ and $2x + 3y - 13 = 0$ are tangents to the circle $x^2 + y^2 + 6x - 4y = 0$

9.(a) Find an equation of the tangent to the parabola $y^2 = -6x$ which is parallel to the line $2x + y + 1 = 0$. Also find the point of tangency.

(b) In any triangle ABC, prove that $\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$

2022 (2nd-A) Roll No: 102

INTERMEDIATE PART-II (12th CLASS)

MATHEMATICS PAPER-II TIME ALLOWED: 2.30 Hours

GROUP-II **SUBJECTIVE** MAXIMUM MARKS: 80

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

SECTION-I

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

(i) Define the term odd and even function.

(ii) Prove the identity $\cosh^2 x - \sinh^2 x = 1$

(iii) Evaluate $\lim_{x \to 3} \frac{x-3}{\sqrt{x} - \sqrt{3}}$

(iv) Find the domain and the range of function $g(x) = \sqrt{x+1}$

(v) Given that $f(x) = x^3 - 2x^2 + 4x - 1$

(vi) Find the derivative of $\frac{1}{\sqrt{x+a}}$ w.r.t. x

(vii) Find $\frac{dy}{dx}$ if $y^2 - xy - x^2 + 4 = 0$

(viii) Differentiate w.r.t. x $\cos\sqrt{x} + \sqrt{\sin x}$

(ix) Find $\frac{dy}{dx}$ if $y = x\cos y$

(x) Differentiate $y = e^{f(x)}$ w.r.t. x

(xi) Write Maclaurin Series Expansion.

(xii) Find y_4 if $y = \sin 3x$

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

(i) Use differentials to approximate the values of $\sqrt[4]{17}$

(ii) Evaluate $\int \sin^2 x \, dx$

(iii) Evaluate $\int \frac{dx}{x(\ell n 2x)^3}$ $(x > 0)$

(iv) Evaluate $\int \sin^{-1} x \, dx$

(v) Evaluate $\int e^{2x}[-\sin x + 2\cos x] \, dx$

(vi) Evaluate $\int_0^{\frac{\pi}{4}} \sec x \, (\sec x + \tan x) \, dx$

(vii) Find the area between the x-axis and the curve $y = \cos\frac{1}{2}x$ from $x = -\pi$ to $x = \pi$.

(viii) Solve the differential equation $\frac{dy}{dx} = \frac{y}{x^2}$

(ix) Find the point three-fifth of the way along the line segment from $A(-5, 8)$ to $B(5, 3)$.

(x) Find k, so that the line joining $A(7, 3)$; $B(k, -6)$ and the line joining $C(-4, 5)$ and $D(-6, 4)$ are perpendicular.

(xi) Find the point of intersection of the lines $3x + y + 12 = 0$ and $x + 2y - 1 = 0$

(xii) Find the lines represented by $3x^2 + 7xy + 2y^2 = 0$

P.T.O.

4. **Attempt any nine parts.** $9 \times 2 = 18$

(i) Graph the solution set of inequality $x + 2y < 6$

(ii) What is feasible region?

(iii) Write an equation of circle with centre $(-3, 5)$ and radius 7.

(iv) Write down equation of normal to circle $x^2 + y^2 = 25$ at $(4, 3)$.

(v) Describe the term Latusrectum of the parabola.

(vi) Find the foci and eccentricity of the ellipse $x^2 + 4y^2 = 16$.

(vii) Determine the vertices and centre of $\frac{y^2}{16} - \frac{x^2}{9} = 1$

(viii) Find an equation of the tangent line to $y^2 = 4ax$ at $(at^2, 2at)$

(ix) If $\underline{v} = 2\underline{i} + 6\underline{j}$, then find unit vector in the direction of $\underline{v}$.

(x) Determine a vector whose magnitude is 4 and is parallel to $2\underline{i} - 3\underline{j} + 6\underline{k}$

(xi) Prove that in any triangle ABC, $b^2 = c^2 + a^2 - 2ca \cos B$

(xii) Find a vector perpendicular to each of the vectors $\underline{a} = 2\underline{i} + \underline{j} + \underline{k}$ and $\underline{b} = 4\underline{i} + 2\underline{j} - \underline{k}$

(xiii) Show that the vectors $\underline{i} - 2\underline{j} + 3\underline{k}$, $-2\underline{i} + 3\underline{j} - 4\underline{k}$ and $\underline{i} - 3\underline{j} + 5\underline{k}$ are coplanar.

SECTION-II

NOTE: Attempt any three questions. $3 \times 10 = 30$

5.(a) If $f(x) = \begin{cases} 2x + 5 & \text{if} \quad x \le 2 \\ 4x + 1 & \text{if} \quad x > 2 \end{cases}$ discuss continuity of $f(x)$ at $x = 2$

(b) If $x = \sin\theta$; $y = \sin m\theta$, show that $(1 - x^2)y_2 - x y_1 + m^2 y = 0$

6.(a) Show that $\int \sqrt{a^2 - x^2}\, dx = \frac{a^2}{2} \sin^{-1}\frac{x}{a} + \frac{x}{2}\sqrt{a^2 - x^2} + c$

(b) Find the distance between the parallel lines $2x + y + 2 = 0$ and $6x + 3y - 8 = 0$

7. (a) Find the general solution of the equation $\frac{dy}{dx} - x = x y^2$. Also find the particular solution if $y = 1$ when $x = 0$

(b) Minimize $z = 2x + y$ subject to the constraints $x + y \ge 3$, $7x - 5y \le 35$, $x \ge 0$, $y \ge 0$

8. (a) Find the condition that the lines $y = m_1 x + c_1$, $y = m_2 x + c_2$ and $y = m_3 x + c_3$ are concurrent.

(b) Show that the circles $x^2 + y^2 + 2x - 2y - 7 = 0$ and $x^2 + y^2 - 6x + 4y + 9 = 0$ touch externally.

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

(b) Prove that latusrectum of the ellipse $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$ is $\frac{2b^2}{a^2}$

Paper Code Number: 4192	2022 (2nd-A)	Roll No: 104

INTERMEDIATE PART-II (12th CLASS)

MATHEMATICS PAPER-II TIME ALLOWED: 30 Minutes

GROUP-II **OBJECTIVE** 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 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. No credit will be awarded in case BUBBLES are not filled. Do not solve question on this sheet of OBJECTIVE PAPER.**

Q.No.1

(1) $\lim_{x\to 0}\left(1+\frac{x}{2}\right)^{\frac{1}{x}} = ?$ (A) e (B) $\frac{1}{e}$ (C) $\sqrt{e}$ (D) $e^{\sqrt{x}}$

(2) If $f(x)=\frac{1}{x}$, $f(x)$ is discontinuous at:

(A) $x=0$ (B) $x=1$ (C) $x=-1$ (D) $x=-2$

(3) If $f(x)=\cos x$, then $f'\left(\frac{\pi}{2}\right)=?$ (A) 0 (B) -1 (C) 1 (D) $\frac{1}{2}$

(4) If $f'(x)<0$ then $f(x)$:

(A) Increases (B) Decreases (C) Constant (D) Exponential

(5) $\frac{d}{dx}(\cos 2\pi) = ?$ (A) 1 (B) -1 (C) 2 (D) 0

(6) $\frac{d}{dx}(\sec h^{-1}x) = ?$ (A) $\frac{1}{\sqrt{1-x^2}}$ (B) $\frac{1}{x\sqrt{x^2-1}}$ (C) $\frac{-1}{x\sqrt{1-x^2}}$ (D) $\frac{1}{x\sqrt{1-x^2}}$

(7) $2\int_a^b x\,dx = ?$ (A) b^2-a^2 (B) a^2-b^2 (C) $a-b$ (D) $b-a$

(8) $2\int \sin 2x\,dx = ?$ (A) $\frac{\cos 2x}{2}+c$ (B) $\frac{\sin 2x}{2}+c$ (C) $\frac{-\sin 2x}{2}$ (D) $-\cos 2x+c$

(9) Solution of $\frac{dy}{dx}=\sec^2 x$ is: (A) $y=\tan x$ (B) $y=\sec x$ (C) $y=\cos x$ (D) $y=\sin x$

(10) $\int_0^{\pi}\sin x\,dx = ?$ (A) 0 (B) 2 (C) -2 (D) 4

(11) Distance of a point (0, 0) from $x+y=1$ is: (A) 0 (B) 1 (C) $\frac{1}{2}$ (D) $\frac{1}{\sqrt{2}}$

(12) Lines represented by $ax^2+2hxy+by^2=0$ will be parallel:

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

(13) Inclination of a line $y=\sqrt{3}x+1$ is: (A) 30^o (B) 60^o (C) 45^o (D) 135^o

(14) The line $y=x+1$ passing through the point: (A) (0, 1) (B) (1, 0) (C) (1, 1) (D) (–1, –1)

(15) Inequality $x+2y<6$ is satisfied by: (A) (4, 1) (B) (1, 3) (C) (3, 1) (D) (1, 4)

(16) Diameter of a circle $x^2+y^2=9$ is: (A) 3 (B) 4 (C) 5 (D) 6

(17) Directrix of a parabola $x^2=-16y$ is: (A) $y=-4$ (B) $y=4$ (C) $x=4$ (D) $x=-4$

(18) Centre of a circle $(x-1)^2+(y+1)^2=25$ is: (A) (1, 1) (B) (1, 0) (C) (1, –1) (D) (0, 0)

(19) $\hat{j}\times\hat{i}=?$ (A) $\hat{k}$ (B) $\hat{i}$ (C) $\bar{O}$ (D) $-\hat{k}$

(20) $\hat{i}\,.\,2\hat{j}\times\hat{k}=?$ (A) 2 (B) 0 (C) –2 (D) 3

Paper Code Number: 4194	2022 (2nd-A)	Roll No: 105

INTERMEDIATE PART-II (12th CLASS)

MATHEMATICS PAPER-II TIME ALLOWED: 30 Minutes

GROUP-II **OBJECTIVE** 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 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. No credit will be awarded in case BUBBLES are not filled. Do not solve question on this sheet of OBJECTIVE PAPER.

Q.No.1

(1) $2\int \sin 2x\,dx = ?$ (A) $\frac{\cos 2x}{2} + c$ (B) $\frac{\sin 2x}{2} + c$ (C) $\frac{-\sin 2x}{2}$ (D) $-\cos 2x + c$

(2) Solution of $\frac{dy}{dx} = \sec^2 x$ is: (A) $y = \tan x$ (B) $y = \sec x$ (C) $y = \cos x$ (D) $y = \sin x$

(3) $\int_0^{\pi} \sin x\,dx = ?$ (A) 0 (B) 2 (C) -2 (D) 4

(4) Distance of a point $(0, 0)$ from $x + y = 1$ is: (A) 0 (B) 1 (C) $\frac{1}{2}$ (D) $\frac{1}{\sqrt{2}}$

(5) Lines represented by $ax^2 + 2hxy + by^2 = 0$ will be parallel:

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

(6) Inclination of a line $y = \sqrt{3}x + 1$ is: (A) 30° (B) 60° (C) 45° (D) 135°

(7) The line $y = x + 1$ passing through the point: (A) (0, 1) (B) (1, 0) (C) (1, 1) (D) (−1, −1)

(8) Inequality $x + 2y < 6$ is satisfied by: (A) (4, 1) (B) (1, 3) (C) (3, 1) (D) (1, 4)

(9) Diameter of a circle $x^2 + y^2 = 9$ is: (A) 3 (B) 4 (C) 5 (D) 6

(10) Directrix of a parabola $x^2 = -16y$ is: (A) $y = -4$ (B) $y = 4$ (C) $x = 4$ (D) $x = -4$

(11) Centre of a circle $(x-1)^2 + (y+1)^2 = 25$ is: (A) (1, 1) (B) (1, 0) (C) (1, −1) (D) (0, 0)

(12) $\hat{j} \times \hat{i} - ?$ (A) $\hat{k}$ (B) $\hat{i}$ (C) $\vec{O}$ (D) $-\hat{k}$

(13) $\hat{i} \,.\, 2\hat{j} \times \hat{k} = ?$ (A) 2 (B) 0 (C) −2 (D) 3

(14) $\lim_{x \to 0}\left(1 + \frac{x}{2}\right)^{\frac{1}{x}} = ?$ (A) e (B) $\frac{1}{e}$ (C) $\sqrt{e}$ (D) $e^{\sqrt{x}}$

(15) If $f(x) = \frac{1}{x}$, $f(x)$ is discontinuous at:

(A) $x = 0$ (B) $x = 1$ (C) $x = -1$ (D) $x = -2$

(16) If $f(x) = \cos x$, then $f'\left(\frac{\pi}{2}\right) = ?$ (A) 0 (B) -1 (C) 1 (D) $\frac{1}{2}$

(17) If $f'(x) < 0$ then $f(x)$:

(A) Increases (B) Decreases (C) Constant (D) Exponential

(18) $\frac{d}{dx}(\cos 2\pi) = ?$ (A) 1 (B) -1 (C) 2 (D) 0

(19) $\frac{d}{dx}(\sec h^{-1}x) = ?$ (A) $\frac{1}{\sqrt{1-x^2}}$ (B) $\frac{1}{x\sqrt{x^2-1}}$ (C) $\frac{-1}{x\sqrt{1-x^2}}$ (D) $\frac{1}{x\sqrt{1-x^2}}$

(20) $2\int_a^b x\,dx = ?$ (A) $b^2 - a^2$ (B) $a^2 - b^2$ (C) $a - b$ (D) $b - a$

Paper Code Number: 4196	2022 (2nd-A)	Roll No: 106

INTERMEDIATE PART-II (12th CLASS)

MATHEMATICS PAPER-II TIME ALLOWED: 30 Minutes

GROUP-II **OBJECTIVE** 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 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. No credit will be awarded in case BUBBLES are not filled. Do not solve question on this sheet of OBJECTIVE PAPER.

Q.No.1

(1) $\frac{d}{dx}(\cos 2\pi) = ?$ (A) 1 (B) -1 (C) 2 (D) 0

(2) $\frac{d}{dx}(\sec h^{-1}x) = ?$ (A) $\frac{1}{\sqrt{1-x^2}}$ (B) $\frac{1}{x\sqrt{x^2-1}}$ (C) $\frac{-1}{x\sqrt{1-x^2}}$ (D) $\frac{1}{x\sqrt{1-x^2}}$

(3) $2\int_a^b x\,dx = ?$ (A) $b^2 - a^2$ (B) $a^2 - b^2$ (C) $a - b$ (D) $b - a$

(4) $2\int \sin 2x\,dx = ?$ (A) $\frac{\cos 2x}{2} + c$ (B) $\frac{\sin 2x}{2} + c$ (C) $\frac{-\sin 2x}{2}$ (D) $-\cos 2x + c$

(5) Solution of $\frac{dy}{dx} = \sec^2 x$ is: (A) $y = \tan x$ (B) $y = \sec x$ (C) $y = \cos x$ (D) $y = \sin x$

(6) $\int_0^{\pi} \sin x\,dx = ?$ (A) 0 (B) 2 (C) -2 (D) 4

(7) Distance of a point (0, 0) from $x + y = 1$ is: (A) 0 (B) 1 (C) $\frac{1}{2}$ (D) $\frac{1}{\sqrt{2}}$

(8) Lines represented by $ax^2 + 2hxy + by^2 = 0$ will be parallel:

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

(9) Inclination of a line $y = \sqrt{3}x + 1$ is: (A) 30° (B) 60° (C) 45° (D) 135°

(10) The line $y = x + 1$ passing through the point: (A) (0, 1) (B) (1, 0) (C) (1, 1) (D) (–1, –1)

(11) Inequality $x + 2y < 6$ is satisfied by: (A) (4, 1) (B) (1, 3) (C) (3, 1) (D) (1, 4)

(12) Diameter of a circle $x^2 + y^2 = 9$ is: (A) 3 (B) 4 (C) 5 (D) 6

(13) Directrix of a parabola $x^2 = -16y$ is: (A) $y = -4$ (B) $y = 4$ (C) $x = 4$ (D) $x = -4$

(14) Centre of a circle $(x-1)^2 + (y+1)^2 = 25$ is: (A) (1, 1) (B) (1, 0) (C) (1, –1) (D) (0, 0)

(15) $\hat{j} \times \hat{i} = ?$ (A) $\hat{k}$ (B) $\hat{i}$ (C) $\bar{O}$ (D) $-\hat{k}$

(16) $\hat{i} \,.\, 2\hat{j} \times \hat{k} = ?$ (A) 2 (B) 0 (C) –2 (D) 3

(17) $\lim_{x \to 0}\left(1 + \frac{x}{2}\right)^{\frac{1}{x}} = ?$ (A) e (B) $\frac{1}{e}$ (C) $\sqrt{e}$ (D) $e^{\sqrt{x}}$

(18) If $f(x) = \frac{1}{x}$, $f(x)$ is discontinuous at:

(A) $x = 0$ (B) $x = 1$ (C) $x = -1$ (D) $x = -2$

(19) If $f(x) = \cos x$, then $f'\left(\frac{\pi}{2}\right) = ?$ (A) 0 (B) -1 (C) 1 (D) $\frac{1}{2}$

(20) If $f'(x) < 0$ then $f(x)$:

(A) Increases (B) Decreases (C) Constant (D) Exponential

Paper Code Number: 4198	2022 (2nd-A)	Roll No: 107

INTERMEDIATE PART-II (12th CLASS)

MATHEMATICS PAPER-II TIME ALLOWED: 30 Minutes

GROUP-II **OBJECTIVE** 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 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. No credit will be awarded in case BUBBLES are not filled. Do not solve question on this sheet of OBJECTIVE PAPER.

Q.No.1

(1) Diameter of a circle $x^2 + y^2 = 9$ is: (A) 3 (B) 4 (C) 5 (D) 6

(2) Directrix of a parabola $x^2 = -16y$ is: (A) $y = -4$ (B) $y = 4$ (C) $x = 4$ (D) $x = -4$

(3) Centre of a circle $(x-1)^2 + (y+1)^2 = 25$ is: (A) (1, 1) (B) (1, 0) (C) (1, –1) (D) (0, 0)

(4) $\hat{j} \times \hat{i} = ?$ (A) $\hat{k}$ (B) $\hat{i}$ (C) $\vec{O}$ (D) $-\hat{k}$

(5) $\hat{i} \,.\, 2\hat{j} \times \hat{k} = ?$ (A) 2 (B) 0 (C) –2 (D) 3

(6) $\lim\limits_{x \to 0}\left(1 + \frac{x}{2}\right)^{\frac{1}{x}} = ?$ (A) e (B) $\frac{1}{e}$ (C) $\sqrt{e}$ (D) $e^{\sqrt{x}}$

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(9) If $f'(x) < 0$ then $f(x)$:

(A) Increases (B) Decreases (C) Constant (D) Exponential

(10) $\frac{d}{dx}(\cos 2\pi) = ?$ (A) 1 (B) – 1 (C) 2 (D) 0

(11) $\frac{d}{dx}(\sec h^{-1} x) = ?$ (A) $\frac{1}{\sqrt{1-x^2}}$ (B) $\frac{1}{x\sqrt{x^2-1}}$ (C) $\frac{-1}{x\sqrt{1-x^2}}$ (D) $\frac{1}{x\sqrt{1-x^2}}$

(12) $2\int_a^b x\,dx = ?$ (A) $b^2 - a^2$ (B) $a^2 - b^2$ (C) $a - b$ (D) $b - a$

(13) $2\int \sin 2x\,dx = ?$ (A) $\frac{\cos 2x}{2} + c$ (B) $\frac{\sin 2x}{2} + c$ (C) $\frac{-\sin 2x}{2}$ (D) $-\cos 2x + c$

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