INTERMEDIATE PART-II (12th CLASS)

MATHEMATICS PAPER-II

GROUP-I

SUBJECTIVE

TIME ALLOWED: 2.30 Hours 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.

 $8 \times 2 = 16$

(i) If
$$g(x) = \frac{1}{x^2}$$
, find $g \circ g(x)$

- (ii) Define Continuous Function.
- (iii) Evaluate $\lim_{x\to 0} \frac{x}{\tan x}$
- (iv) Define Increasing and Decreasing Function.

(v) Differentiate
$$\left(\sqrt{x} - \frac{1}{\sqrt{x}}\right)^2$$
 w.r.t 'x'.

(vi) Find
$$\frac{dy}{dx}$$
 if $y^2 + x^2 - 4x = 5$

(vii) Differentiate
$$\cos^{-1} \frac{x}{a}$$
 w.r.t 'x'.

(viii) Find
$$\frac{dy}{dx}$$
 if $y = \sinh^{-1}(x^3)$

(ix) Find
$$\frac{dy}{dx}$$
 if $y = \ell n (\tan hx)$

(x) Find
$$f'(x)$$
 if $f(x) = \ln (9 - x^2)$

(xi) Find
$$y_2$$
 if $y = \ln (1 + x)$

(xii) Find
$$\frac{dy}{dx}$$
 if $x^2 - y^2 - 6y = 0$

3. Attempt any eight parts.

 $8 \times 2 = 16$

(i) Find dy if
$$y = x^2 - 1$$
 when x changes from 3 to 3.02.

(ii) Evaluate
$$\int \frac{\sqrt{y(y+1)}}{y} dy$$

(iii) Evaluate
$$\int \frac{1}{1 + \cos x} dx$$

(iv) Evaluate
$$\int a^{x^2} \cdot x \, dx$$

(v) Evaluate
$$\int \frac{x^2}{4+x^2} dx$$

(vi) Evaluate the integral
$$\int x \, \ell nx \, dx$$

(vii) Evaluate
$$\int_{-1}^{1} (x^{\frac{1}{3}} + 1) dx$$

(viii) Evaluate
$$\int_{0}^{3} \frac{dx}{x^2 + 9}$$

(ix) Find the area above the
$$x$$
-axis and under the curve $y = 5 - x^2$ from $x = -1$ to $x = 2$

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

(xi) Indicate the solution region by shading the in-equality
$$2x + 3y \le 12$$

4. Attempt any nine parts.

 $9 \times 2 = 18$

- (i) Find the coordinates of the point that divides the join of A(-6, 3) and B(5, -2) in the ratio 2:3 internally.
- (ii) The points A(-5, -2) and B(5, -4) are ends of a diameter of a circle. Find the centre and radius of the circle.
- (iii) Find an equation of the line having y-intercept -7 and slope -5.
- (iv) Find an equation of the line through (5, -8) and perpendicular to the join of A(-15, -8), B(10, 7)
- (v) Find the distance from the point P(6, -1) to the line 6x 4y + 9 = 0.
- (vi) Find an equation of the circle with centre at (5, -2) and radius 4.
- (vii) Write an equation of the parabola with Focus (-3, 1) and directrix x = 3.
- (viii) Find an equation of the ellipse having centre at (0, 0), focus (0, -3) and one vertex (0, 4).
- (ix) Find an equation of the hyperbola with centre (0, 0) focus (6, 0) vertex (4, 0).
- (x) Find a unit vector in the direction of the vector $\underline{v} = 2\hat{\underline{i}} + 6\underline{j}$.
- (xi) Find α , so that $\left| \alpha \underline{i} + (\infty + 1) \underline{j} + 2\underline{k} \right| = 3$
- (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) Prove 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.

$$3\times10=30$$

- 5.(a) Prove that $\underset{x \to 0}{Lim} \frac{a^x 1}{x} = \log_e a$
 - (b) If $x = a(\theta + \sin \theta)$, $y = a(1 + \cos \theta)$ then show that $y^2 \frac{d^2 y}{dx^2} + a = 0$
- 6.(a) Evaluate $\int \left(\frac{1-\sin x}{1-\cos x}\right) e^x dx$
 - (b) Find an equation of the line through the intersection of the lines x + 2y + 3 = 0, 3x + 4y + 7 = 0 and making equal intercepts on the axes.
- 7. (a) Evaluate $\int_{2}^{3} \frac{3x^{2} 2x + 1}{(x 1)(x^{2} + 1)} dx$
 - (b) Graph the feasible region of the following system of linear inequalities also and find the corner points $2x + 3y \le 18$, $x + 4y \le 12$, $3x + y \le 12$ $x \ge 0$, $y \ge 0$
- 8. (a) Find an equation of the circle which passes through the points A(5, 10), B(6, 9), C(-2, 3)
 - (b) Using vector method prove that the Altitudes of a triangle are concurrent.
- 9.(a) Find the Foci Eccentricity and Vertices of the ellipse $9x^2 + y^2 = 18$
 - (b) Find volume of the Tetrahedron with vertices (2, 1, 8), (3, 2, 9), (2, 1, 4) and (3, 3, 10)

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Paper C	1000200	INTERMEDIA	2017 (A)		No:	
Number		1	IL PARI-			D: 30 Minutes
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think is Cutting as given	You have four choice correct, fill that circl or filling two or mor in objective type que ES are not filled. De	s for each objective te in front of that que te circles will result testion paper and les	type question uestion numb in zero mark ave others bla	n as A, B, C and er. Use marked in that question ank. No credit	d D. The cho r or pen to fil n. Attempt a will be award	ice which you I the circles. s many questions
	If $f(x) = \frac{1}{x}$ then	$f^{-1}(x) =$	(A) x	(B) $\frac{1}{x}$) Does not exist
(2)	$\underset{x \to 2}{Limit} \frac{x-2}{\sqrt{x} - \sqrt{2}} =$		(A) $\sqrt{2}$	(B) 0	(C) $-\sqrt{2}$	(D) $2\sqrt{2}$
(3)	If $y = \cos x$, $u = \sin x$	$\frac{dx}{du}$ then $\frac{dy}{du}$ =				
	No.	(B) -cot x	(C)	$-\tan x$	(D) - cos e	c x
(4)	$\frac{d}{dx} \left(\tan^{-1} \sqrt{\frac{1 - \cos x}{1 + \cos x}} \right)$	$\left(\frac{sx}{sx}\right)$ =		(B) $\frac{1}{2}$		
(5)	If $f(x) = \cos hx$	then $(f(x))^2 - (f(x))^2$	$f'(x)^2 =$	(A) 1	(B) 0 (C	$\frac{1}{2}$ (D) 2^2
(6)	A function $f'(x) > f(x)$ (A) Differential		ng (C)		(D) Zero	
(7)	$\frac{d}{dx}(a^x) =$		(A) a^x	(B) $a^{3x} \ell n a$	(C) $\frac{a^x}{\ell n a}$	(D) $a^x \ell n a$
(8)	$\int \frac{1}{x \ell n x} dx =$	(A) $(\ell nx)^2 + c$	(B) $-\frac{1}{x^2}\ell n$	$ix + c$ (C) ℓn	$a(\ell nx) + c$	(D) $\frac{\left(\ell nx\right)^2}{2} + c$
(9)	$\int e^{\tan x} Sec^2 x \ dx =$	$(A) - e^{\tan x} +$	c (B) e ^{tan x}	+ c (C) e ^{sec x} +	- c (D) e ^{cos}	c + c
(10)	-x1 + x	(A) $\frac{\pi}{6}$	- 7	(C) $\frac{\pi}{3}$	(D) π	
(11)		Ferential equation $\frac{d}{dt}$	· ·			
(12)		(B) $y = ce^{-x}$ to, then $y - interce$				*
(12)		(B) $-\frac{b}{c}$				
(13)	The distance of poi	nt $(-1,3)$ from	x - axis is:	(A) -1	(B) 3	(C) 2 (D) -4
(14)	If $(3, 5)$ is the mid (A) $a = 4$, $b = 2$	d point of $(5, a)$ and (B) $a = 3, b$	$d(b, 7) \text{ then}$ $b = 3 \qquad (C)$	a = 7, b = 2	(D) $a = 3$,	<i>b</i> = 1
(15)		$-\frac{1}{3}$ and ℓ_2 with slo				
	(A) $\frac{\pi}{4}$	(B) $\frac{\pi}{3}$	(C)	$\frac{\pi}{2}$	(D) π	
(16)		tion of inequality:- (B) $x - y > 0$	1	(C) $3x + 5$	< 7 (D)	$2x + y \le 6$
(17)	Equation of tangen	t to the circle $x^2 +$	$y^2 = 4$ at (1)	$\sqrt{3}$) is:-		
		(B) $\sqrt{3} x - y$				
(18)		is of the ellipse $\frac{x^2}{a^2}$	U			¥
(19)		ector whose magnitu				
(20)	The projection of	$-2\hat{i} + 3\hat{j} + 7\hat{k} \text{on}$	$2\hat{j} + \hat{k}$ is:-	(A) $\frac{13}{5}$	(B) $\frac{13}{4}$ (C)	$\frac{13}{\sqrt{5}}$ (D) 13

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Paper C	ode		2017 (A)	Roll	No:	
Number	: 4193	INTERMEDIA	TE PART-I	I (12 th CLAS	SS)	
MATH	EMATICS PAP	ER-II			ALLOWED	
GROU			ECTIVE		IMUM MAR	
think is Cutting as given	You have four choices correct, fill that circle or filling two or more in objective type que ES are not filled. Do	e in front of that que circles will result i stion paper and lea	estion numbe in zero mark i ve others blan	r. Use marker n that question ik. No credit w	or pen to fill the Attempt as n will be awarded	he circles. 1any questions
(1)	(2, 1) is in the solu (A) $2x + y \ge 0$	tion of inequality:- (B) $x - y >$	1	(C) $3x + 5y$	< 7 (D) 2x	: + v ≤ 6
(2)	Equation of tangent				(-)	
20160	$(A) \sqrt{3} x + y = 4$	(B) $\sqrt{3}x - y$	= 4 (C) x	$-\sqrt{3}y = 4$	(D) $x + \sqrt{3}y = 0$	= 4
(3)	Length of minor axis					
(4)	A unit vector is a ve	ctor whose magnitud	le is:-	(A) 0 (I	B) 1 (C) 2	(D) $\frac{1}{2}$
(5)	The projection of -	$2\hat{i} + 3\hat{j} + 7\hat{k} \text{on}$	$2\hat{j} + \hat{k}$ is:-	(A) $\frac{13}{5}$	(B) $\frac{13}{4}$ (C) $\frac{1}{3}$	$\frac{13}{\sqrt{5}}$ (D) 13
(6)	If $f(x) = \frac{1}{x}$ then	$f^{-1}(x) =$	(A) x	(B) $\frac{1}{x}$	(C) 1 (D) I	Does not exist
(7)	$\underset{x \to 2}{Limit} \frac{x-2}{\sqrt{x} - \sqrt{2}} =$		(A) $\sqrt{2}$	(B) 0	(C) $-\sqrt{2}$	(D) $2\sqrt{2}$
(8)	If $y = \cos x$, $u = \sin x$	x then $\frac{dy}{du} =$				
	(A) $\cos x \sin x$		(C) -	tan x	(D) $-\cos ec x$	
	$\frac{d}{dx} \left(\tan^{-1} \sqrt{\frac{1 - \cos}{1 + \cos}} \right)$	· ·				
(10)	If $f(x) = \cos hx$	then $(f(x))^2 - ($	$f'(x)\big)^2 =$	(A) 1	(B) 0 (C)	$\frac{1}{2}$ (D) 2^2
(11)	A function $f'(x)$: (A) Differential	> 0 then it is:-			(D) Zero	2
(12)	$\frac{d}{dx}(a^x) =$			(B) $a^{3x} \ell n a$		(D) $a^x \ell na$
(13)	$\int \frac{1}{x \ell n x} dx =$	(A) $(\ell nx)^2 + c$	(B) $-\frac{1}{x^2}\ell nx$	$x + c$ (C) ℓn	$(\ell nx) + c$ (D	$0) \frac{(\ell nx)^2}{2} + c$
(14)	$\int e^{\tan x} Sec^2 x \ dx =$	$(A) - e^{\tan x} +$	c (B) $e^{\tan x}$ +	c (C) e ^{sec x} +	c (D) e ^{cos x} +	c
(15)	$\int_{-\infty}^{\infty} \frac{dx}{1+x^2} =$	(A) $\frac{\pi}{6}$	(B) $\frac{\pi}{4}$	(C) $\frac{\pi}{3}$	(D) π	
(16)	The solution of diffe	erential equation $\frac{dy}{dx}$	=-y is:-			
(17)	(A) $y = e^{-ax}$ If $a \neq 0$ and $b \neq$	DO ATT	The second secon	$= e^{s}$ $ax + by + c = 0$	Control of the contro	
	(A) $\frac{b}{c}$	(B) $-\frac{b}{c}$	(C) -	$\frac{c}{b}$	(D) $\frac{c}{h}$	
(18)	The distance of poin	t(-1, 3) from $x-$	axis is:-	(A) -1 (B	3) 3 (C) 2	(D) -4
(19)	If $(3, 5)$ is the mid (A) $a = 4$, $b = 2$	point of $(5, a)$ and	(b, 7) then:-		30 D	10.10
(20)	If ℓ_1 with slope $-$	•				
	(A) $\frac{\pi}{4}$	(B) $\frac{\pi}{3}$	(C) -	7	(D) π	
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Paper Code		2017 (A)	Roll No:
Number:	4195	INTERMEDIATE PART-II (12 ^{tt}	CLASS)
MATHEM	IATICS PA	PER-II	TIME ALLOWED: 30 Minutes

(2)

(8)

OBJECTIVE MAXIMUM MARKS: 20 GROUP-I 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. Use marker or pen to fill the circles. Cutting or filling two or more circles will result in zero mark in that question. Attempt as many questions as given in objective type question paper and leave others blank. 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) $\int_{-1+x^2}^{\infty} \frac{dx}{1+x^2} =$ (A) $\frac{\pi}{6}$ (B) $\frac{\pi}{4}$ (C) $\frac{\pi}{3}$ (D) π

The solution of differential equation $\frac{dy}{dx} = -y$ is:-(A) $y = e^{-ax}$ (B) $y = ce^{-x}$ (C) $y = e^{x}$ (D) If $a \ne 0$ and $b \ne 0$, then y-intercept of the line ax + by + c = 0 is: (3)

(A) $\frac{b}{c}$ (B) $-\frac{b}{c}$ (C) $-\frac{c}{b}$ (D) $\frac{c}{b}$ The distance of point (-1, 3) from x-axis is:- (A) -1 (B) 3 (C) 2

(4)

(5) If (3, 5) is the mid point of (5, a) and (b, 7) then: (B) a = 3, b = 3 (C) a = 7, b = 2 (D) a = 3, b = 1(A) a = 4, b = 2

If ℓ_1 with slope $-\frac{1}{3}$ and ℓ_2 with slope 3 then the angle between ℓ_1 and ℓ_2 lines is:-(6)

(B) $\frac{\pi}{3}$ (D) π (2, 1) is in the solution of inequality:-(7)

(C) 3x + 5y < 7 (D) $2x + y \le 6$ (A) $2x + y \ge 0$ (B) x - y > 1

Equation of tangent to the circle $x^2 + y^2 = 4$ at $(1, \sqrt{3})$ is:-(B) $\sqrt{3}x - y = 4$ (C) $x - \sqrt{3}y = 4$ (D) $x + \sqrt{3}y = 4$

Length of minor axis of the ellipse $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$ is:- (A) 2a (B) a (C) 2b (D) b(9)

(A) 0 (B) 1 (C) 2 (D) $\frac{1}{2}$ (10)A unit vector is a vector whose magnitude is:-

The projection of $-2\hat{i} + 3\hat{j} + 7\hat{k}$ on $2\hat{j} + \hat{k}$ is:- (A) $\frac{13}{5}$ (B) $\frac{13}{4}$ (C) $\frac{13}{\sqrt{5}}$ (D) 13 (11)

(12) If $f(x) = \frac{1}{x}$ then $f^{-1}(x) =$ (A) x (B) $\frac{1}{x}$ (C) 1 (D) Does not exist

 $\lim_{x \to 2} \frac{x-2}{\sqrt{x-\sqrt{2}}} =$ (A) $\sqrt{2}$ (B) 0 (C) $-\sqrt{2}$ (D) $2\sqrt{2}$ (13)

(14) If $y = \cos x$, $u = \sin x$ then $\frac{dy}{dx} =$ $(B) - \cot x$ (C) $-\tan x$ (D) $-\cos ec x$

 $(15) \quad \frac{d}{dx} \left[\tan^{-1} \sqrt{\frac{1 - \cos x}{1 + \cos x}} \right] =$ (A) 1 (B) $\frac{1}{2}$ (C) 0

If $f(x) = \cos hx$ then $(f(x))^2 - (f'(x))^2 =$ (A) 1 (B) 0 (C) $\frac{1}{2}$ (D) 2^2 (16)

(17)A function f'(x) > 0 then it is:-

(A) Differential (B) Increasing (C) Decreasing $\frac{d}{dx}(a^x) =$ (A) a^x (B) $a^{3x} \ell na$ (C) $\frac{a^x}{\ell na}$ (D) $a^x \ell na$ (18)

(19) $\int \frac{1}{x \ell n x} dx = (A) (\ell n x)^2 + c (B) - \frac{1}{x^2} \ell n x + c (C) \ell n (\ell n x) + c (D) \frac{(\ell n x)^2}{2} + c$

(A) $-e^{\tan x} + c$ (B) $e^{\tan x} + c$ (C) $e^{\sec x} + c$ (D) $e^{\cos x} + c$ $\int e^{\tan x} Sec^2 x dx =$ (20)

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P	aper Co		INTERMEDIA	2017 (A)	Roll I	No:	
N	umber:	4197	INTERMEDIA	TE PARI-II	(12 CLAS	13)	
G N th C as B	ROUld ote: You ink is of utting of given UBBLI O.No.1	ou have four choice correct, fill that circl or filling two or mor in objective type que ES are not filled. D	OBJI es for each objective le in front of that qu re circles will result i estion paper and lea o not solve question	estion number in zero mark in ve others blan on this sheet o	MAX as A, B, C and . Use marker a that question k. No credit w f OBJECTIVI	a. Attempt as maxill be awarded E PAPER.	KS: 20 which you e circles. any question in case
	(1)	If $f(x) = \cos hx$	then $(f(x))^2 - (f'(x))^2$	$(x)^2 =$	(A) 1	(B) 0 (C) $\frac{1}{2}$	(D) 2 ²
	(2)	A function $f'(x) >$					
	(3)	$\frac{d}{dx}(a^x) =$		(A) a*	(B) $a^{3x} \ell n a$	(C) $\frac{a^x}{\ell na}$	(D) $a^x \ell na$
	(4)	$\int \frac{1}{x \ell n x} dx =$	(A) $(\ell nx)^2 + c$	$(B) - \frac{1}{x^2} \ell n x$	$+c$ (C) ℓn	$(\ell nx) + c$ (D)	$\frac{(\ell nx)^2}{2} + \epsilon$
	(5)	$\int e^{\tan x} Sec^2 x \ dx =$	$(A) - e^{\tan x} +$	c (B) $e^{\tan x} + e^{-x}$	c (C) $e^{\sec x}$ +	c (D) $e^{\cos x} + e^{\cos x}$	
	(6)	$\int_{-\infty}^{\infty} \frac{dx}{1+x^2} =$	(A) $\frac{\pi}{6}$ (B) $\frac{\pi}{4}$	(C) $\frac{\pi}{3}$	(D) n	7	
	(7)	The solution of diffe	erential equation $\frac{dy}{dx}$	=-y is:-			
	(8)	(A) $y = e^{-ax}$	(B) $y = ce^{-x}$ e^{-x} 0, then $y - interce$	(C) y	ax + by + c = 0	is:-	
	(9) (10)	The distance of poi If (3, 5) is the mid	ont $(-1,3)$ from $x-1$ d point of $(5,a)$ and (B) $a=3$, b	-axis is:- (b, 7) then:-	(A) -1 (E	3) 3 (C) 2	
	(11)		$-\frac{1}{3}$ and ℓ_2 with slo			$_{1}$ and ℓ_{2} lines is	:-
		(A) $\frac{\pi}{4}$	(B) $\frac{\pi}{3}$	(C) $\frac{\pi}{2}$	<u> </u>	(D) π	
	(12)	(2, 1) is in the solution (A) $2x + y \ge 0$	ution of inequality:- (B) $x - y >$	1	(C) $3x + 5y$	< 7 (D) 2x	+ <i>y</i> ≤ 6
	(13)	Equation of tangen	t to the circle $x^2 + y$ (B) $\sqrt{3}x - y$	$v^2 = 4$ at $(1, \sqrt{10})$	$\sqrt{3}$) is:-		
	(14)	Length of minor ax	x is of the ellipse $\frac{x^2}{a^2}$	$+\frac{y^2}{b^2} = 1 \text{ is:-}$	(A) 2a	(B) a (C)	2b (D) b
	(15)	A unit vector is a v	ector whose magnitude	de is:-	(A) 0 (B) 1 (C) 2	(D) $\frac{1}{2}$
	(16)	The projection of	$-2\hat{i} + 3\hat{j} + 7\hat{k} \text{on}$	$2\hat{j} + \hat{k}$ is:-	(A) $\frac{13}{5}$	(B) $\frac{13}{4}$ (C) $\frac{1}{}$	$\frac{3}{5}$ (D) 13
	(17)		$n f^{-1}(x) =$				
	(18)	$-\sqrt{x}-\sqrt{z}$	(A) 1	$\sqrt{2}$ (B) 0	(C) -	$-\sqrt{2}$ (D) 2	2
	(19)	If $y = \cos x$, $u = \sin x$		13,544		Colorado	
		(A) $\cos x \sin x$	(B) $-\cot x$	(C) -	tan x	(D) $-\cos ec x$	
	(20)	$\frac{d}{dx}\left(\tan^{-1}\sqrt{\frac{1-c}{1+c}}\right)$	$\left(\frac{\cos x}{\cos x}\right)$	(A) 1	(B) $\frac{1}{2}$	(C) 0	(D) -1

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Roll No: _____

INTERMEDIATE PART-II (12th CLASS)

MATHEMATICS PAPER-II

SUBJECTIVE

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

SECTION-I

 $8 \times 2 = 16$

2. Attempt any eight parts.

(i) Define the term Odd Function and Even function.

- (ii) Find Domain and Range of function $g(x) = \sqrt{x+1}$
- (iii) Evaluate $\lim_{x \to 0} \frac{\sqrt{x+a} \sqrt{a}}{x}$
- (iv) Differentiate w.r.t. $x \left(\sqrt{x} \frac{1}{\sqrt{x}} \right)^2$
- (v) Find $\frac{dy}{dx}$ if $y = \sqrt{x + \sqrt{x}}$
- (vi) Find f'(x) if $f(x) = e^{\sqrt{x}-1}$
- (vii) What is a Stationary Point?
- (viii) Differentiate $x^{-3} + 2x^{\frac{-3}{2}} + 3$ w.r.t. x.
- (ix) Find $\frac{dy}{dx}$ if $y^3 2xy^2 + x^2y + 3x = 0$
- (x) Differentiate Sin3x w.r.t Cos2x
- (xi) Find $\frac{dy}{dx}$ if $y = \tanh x^2$
- (xii) Find the first two derivatives of Cos(ax + b)

Attempt any eight parts.

 $8 \times 2 = 16$

- (i) Using differential find $\frac{dy}{dx}$ if xy + x = 4
- (ii) Evaluate $\int x (\sqrt{x} + 1) dx$
- (iii) Evaluate $\int \sqrt{1-\cos 2x} \ dx$.
- (iv) Evaluate $\int \cos x \left(\frac{\ln \sin x}{\sin x} \right) dx$
- (v) Find $\int x \cos x \, dx$
- (vi) Evaluate $\int \ln x \, dx$
- (vii) Evaluate $\int_{1}^{1} \left(x^{\frac{1}{3}} + 1\right) dx$
- (viii) Solve the differential equation x dy + y(x 1) dx = 0
- (ix) Find the area below the curve $y = 3\sqrt{x}$ and above the x axis between x = 1 and x = 4.
- (x) Evaluate $\int_{-\frac{\pi}{6}}^{\frac{\pi}{3}} Cost \ dt$
- (xi) Define Objective Function.
- (xii) Graph the solution region of $2x + 3y \le 12$

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

- (i) Find the slope and inclination of the line joining the points (4, 6), (4, 8).
- (ii) Find equation of the line bisecting the first and third quadrants.
- (iii) Convert 2x - 4y + 11 = 0 in slope intercept form.
- (iv) Check whether the lines are concurrent. x + 3y - 2 = 0, 2x - y + 4 = 0, x - 11y + 14 = 0
- (v) Find measure of angle of the lines represented by the equation $3x^2 + 7xy + 2y^2 = 0$
- (vi) Find equation of circle with centre (5, -2) and radius 4.
- Find the directrix of the parabola $v^2 = 8x$ (vii)
- (viii) Find equation of ellipse having Foci $(\pm 3, 0)$ and minor axis of length 10.
- (ix) Find an equation of hyperbola having Foci $(0, \pm 6)$ and e = 2.
- (x) State Parallel Vectors.
- Find the unit vector in the direction of vector $\underline{v} = [3, -4]$ (xi)
- (xii) Define Vector product of two Vectors.
- Find constant α such that the vectors $\underline{i} 2 \alpha \underline{j} \underline{k}$, $\underline{i} \underline{j} + 2k$ and $\alpha \underline{i} 2\underline{j} + \underline{k}$ are (xiii) coplanar.

NOTE: - Attempt any three questions.

$$3 \times 10 = 30$$

5.(a) If
$$f(x) = \begin{cases} 3x & \text{if } x \le -2 \\ x^2 - 1 & \text{if } -2 < x < 2 \\ 3 & \text{if } x \ge 2 \end{cases}$$
 discuss continuity at $x = 2$

- If $y = \tan(p \tan^{-1} x)$ show that $(1 + x^2)y_1 p(1 + y^2) = 0$ (b)
- 6.(a) Evaluate $\int \sqrt{x^2 a^2} dx$
 - (b) Find equation of line through the point (2, -9) and intersection of lines 2x + 5y 8 = 0 and 3x - 4y - 6 = 0
- 7. (a) Evaluate $\int_{0}^{\frac{\pi}{4}} (1 + \cos^2 \theta) \tan^2 \theta \ d\theta$
 - (b) Minimize z = 2x + y subject to constraints $x + y \ge 3$, $7x + 5y \le 35$ $x \ge 0$, $y \ge 0$

$$x \ge 0, \quad y \ge 0$$

- Find an equation of the parabola whose focus is F(-3, 4) and directrix is 3x 4y + 5 = 08. (a)
 - Prove that in any triangle ABC $b^2 = c^2 + a^2 2caCosB$; by Vector Method. (b)
- Find the points of intersection of the conics $3x^2 + 5y^2 = 60$ and $9x^2 + y^2 = 124$ 9.(a)
 - Find the area of the triangle with vertices A(1, -1, 1), B(2, 1, -1) and C(-1, 1, 2) by using Vectors. (b)

Paper Co	ode		2017 (A)	Roll No:
Number:	1100	INTERMEDIA	TE PART-II (12 th (CLASS)
	EMATICS PAP	ER-II		TIME ALLOWED: 30 Minutes
GROUI	P-II	OBJE	CTIVE	MAXIMUM MARKS: 20
think is c Cutting of as given i	correct, fill that circle or filling two or more in objective type que	e in front of that que e circles will result in stion paper and leav	estion number. Use m n zero mark in that qu	C and D. The choice which you narker or pen to fill the circles. uestion. Attempt as many questions redit will be awarded in case CTIVE PAPER.
	$x = at^2$, $y = 2at$ are	e parametric equation	s of a:-	
			(C) Parabola	The state of the s
(2)	$\lim_{n\to\infty} \left(1+\frac{1}{n}\right)^{2n} =$		(A) e^2 (B) e^{-1}	(C) $e^{-\frac{1}{2}}$ (D) e^3
(3)	$\frac{d}{dx}\left(\frac{a}{x}\right)$ (where a	is constant) is:-	(A) $\frac{1}{x}$ (B) $-\frac{a}{x}$	(C) $\frac{a}{x^2}$ (D) $-\frac{a}{x^2}$
(4)	$\frac{d}{dx}\sinh x =$		A) $\frac{e^x - e^{-x}}{2}$ (B) $\frac{e^x}{2}$	$\frac{+e^{-x}}{2}$ (C) $e^x - e^{-x}$ (D) $e^x + e^{-x}$
(5)	If $y = e^{2x}$ then y_2	=	(A) e^{2x-1} (B) $2e^{2x}$	(C) xe^{2x-1} (D) $4e^{2x}$
(6)	$\frac{d}{dx}\left(a^{f(x)}\right) =$			
	(A) $f'(x)a^{f(x)} \ln a$	(B) $f'(x)a^{f(x)}$	(C) $\frac{f'(x)a^{f(x)}}{\ell na}$	(D) $a^{f(x)}\ell na$
(7)	$\frac{d}{dx} \left(-Co\sec x \right) =$	(A) Co	ot^2x (B) $Co\sec x$ C	ot x (C) Cot x (D) Tan x Sec x
(8)	$\int Sin x Cos x dx =$	(A) Sinx	$+c$ (B) $\frac{Cos^2x}{2}+c$	(C) $\frac{Sin^2x}{2} + c$ (D) $\left(\frac{Sinx}{2}\right)^2 + c$
(9)	$\int e^x \left(Cos x + Sin x \right)$	dx =		
	(•)		$+c$ (C) $e^{-x}Sinx +$	c (D) $e^x Sin x + c$
(10)	$\int_{0}^{1} \frac{dx}{1+x^2} =$	(A) -	$\frac{\pi}{2}$ (B) $\frac{\pi}{3}$ (C	C) $-\frac{\pi}{3}$ (D) $\frac{\pi}{4}$
(11)	The degree of the di	fferential equation $\frac{a}{a}$	$\frac{d^2y}{dx^2} + \frac{dy}{dx} - 3x = 0 \text{ is:}$	- (A) 1 (B) 2 (C) 0 (D) 3
(12)		two variables repres B) Ellipse		(D) Straight line
(13)	The slope of the line	through the points (-2, 4) and (5, 11) is	:- (A) -1 (B) 0 (C) 1 (D) 2
(14)	Slope of a line $3x -$	2y + 5 = 0 is:-	(A) $\frac{2}{3}$ (B) $-\frac{1}{3}$	$\frac{2}{3}$ (C) $\frac{3}{2}$ (D) $-\frac{3}{2}$
(15)			+4y + 10 = 0 from	3 2 2
(16)	2x + 3y < 5 is satisf	sfied by:-	(A) (1, 1) (B) (1, 2	2) (C) (2, 3) (D) (-1, 1)
(17)	The length of the dia	meter of circle x^2 +	$y^2 - 6x + 8y = 0$ is	:- (A) 4 (B) 10 (C) 13 (D) 12
(18)	The mid point of the	line segment joining	the foci of an ellipse is	
(19)	The angle between the	he vectors $2\underline{i} - 3\underline{j} +$	\underline{k} and $2\underline{i} - \underline{j} - \underline{k}$ is	(-
	(A) $\frac{\pi}{6}$	B) $\frac{\pi}{4}$	(C) $\frac{\pi}{2}$	(D) π
(20)	Projection of $\underline{a} = \underline{i}$			
	$(A) - \frac{1}{\sqrt{2}} \tag{1}$		(C) $\frac{3}{\sqrt{2}}$	(D) $\frac{1}{2}$

Paper Co	ode		2017 (A)	R	oll No:		
Number	1101	INTERMEDIA	TE PART-	·II (12th CI	LASS)		
	EMATICS PAPE	ER-II	ECTIVE	TI	ME ALLO	WED: 30 M MARKS: 2	
Note:	You have four choices correct, fill that circle or filling two or more in objective type ques ES are not filled. Do	for each objective in front of that qu circles will result tion paper and lea not solve question	type question testion numb in zero mark eve others bla on this sheet	n as A, B, C er. Use man in that ques ank. No cree t of OBJEC	and D. The ker or pen to stion. Attem dit will be av TIVE PAPE	choice which to fill the circ pt as many q warded in cas R.	you les. uestions e
(1)	2x + 3y < 5 is satisfi		III A POR CONTROL OF C			(D) (-1, 1	
(2)	The length of the diam					10 (C) 13	(D) 12
(3)	The mid point of the li (A) Vertex (E)	ne segment joining B) Centre	the foci of a (C) Directri		illed:-)) Minor axis	i	
(4)	The angle between the	T100		$\underline{j} - \underline{k}$ is:-			
	(A) $\frac{\pi}{6}$ (B)	3) $\frac{\pi}{4}$	(C) $\pi/2$		(D) π		
(5)	Projection of $\underline{a} = \underline{i} -$	177	0.00				
	$(A) - \frac{1}{\sqrt{2}} \qquad (B)$	3) $\frac{1}{\sqrt{2}}$	(C) $\frac{3}{\sqrt{2}}$		(D) $\frac{1}{2}$		
(6)		1761 - 1770 - 17	ons of a:- (C) Parabol	a (I	O) Hyperbola	í	
(7)	$\lim_{n\to\infty}\left(1+\frac{1}{n}\right)^{2n}=$		(A) e ²	(B) e ⁻¹	(C) $e^{-\frac{1}{2}}$	(D) e ³	
(8)	$\frac{d}{dx}\left(\frac{a}{x}\right)$ (where a is	s constant) is:-	(A) $\frac{1}{x}$	(B) $-\frac{a}{x}$	(C) $\frac{a}{x^2}$	(D) $-\frac{a}{x^2}$	
(9)	$\frac{d}{dx} \sinh x =$		$(A) \frac{e^x - e^x}{2}$	(B) $\frac{e^x}{2}$	$\frac{e^{-x}}{2}$ (C) e	$e^x - e^{-x}$ (D)	$e^x + e^{-x}$
(10)	If $y = e^{2x}$ then y_2	=	(A) e^{2x-1}	(B) $2e^{2x}$	(C) xe^{2x-1}	(D) $4e^{2x}$	
(11)	$\frac{d}{dx}\left(a^{f(x)}\right) =$. ((x)			
	(A) $f'(x)a^{f(x)} \ln a$	(B) $f'(x)a^{f(x)}$	(C) $\frac{f'(\cdot)}{f'(\cdot)}$	lna	(D) $a^{f(x)}\ell n$	a	
(12)	$\frac{d}{dx}\big(-Co\sec x\big) =$	(A) (Cot^2x (B)	Cosecx Cot	x (C) Cot	x (D) Tan x	Sec x
(13)	$\int Sin x Cos x dx =$	(A) Sin	x + c (B)	$\frac{Cos^2x}{2} + c$	(C) $\frac{Sin^2x}{2}$ +	c (D) $\left(\frac{Sin}{2}\right)$	$\left(\frac{x}{c}\right)^2 + c$
(14)	$\int e^x (Cos x + Sin x)$	dx =					
	$(A) - e^x Sin x + c$	(B) $e^{-x}Cos x$	c + c (C)	$e^{-x}Sinx + c$	(D) $e^x S$	lin x + c	
(15)	$\int_{0}^{1} \frac{dx}{1+x^2} =$	(A)	$-\frac{\pi}{2}$ (B)	$\frac{\pi}{3}$ (C)	$-\frac{\pi}{3}$	(D) $\frac{\pi}{4}$	
(16)	The degree of the dis	ferential equation	$\frac{d^2y}{dx^2} + \frac{dy}{dx} -$	3x = 0 is:-	(A) 1 (B) 2 (C) 0	(D) 3
(17)	A linear equation in (A) Circle	two variables repre B) Ellipse		la (I	O) Straight li	ne	
(18)	The slope of the line	through the points	(-2, 4) and	(5, 11) is:-	(A) - 1	(B) 0 (C)	(D) 2
(19)	Slope of a line $3x -$	2y + 5 = 0 is:-	(A) $\frac{2}{3}$	(B) $-\frac{2}{3}$	(C) $\frac{3}{2}$	(D) $-\frac{3}{2}$	
(20)	The perpendicular di (A) 0 (stance of the line 3 B) 1	3x + 4y + 10 (C) 2	= 0 from (0, 0) is:- 0) 3	00 (MULTAN	ð

Paper C	Code		2017 (A)		Roll No:	
Name	1106	INTERMEDIA		-II (12th C	T.ASS)	
Number	HEMATICS PAR	The property of the property o		TOURS NAMED OF STREET		WED: 30 Minutes
GROU	P-II	OBJ	ECTIVE	N	MAXIMUM	MARKS: 20
	You have four choice correct, fill that circl					
Cutting	or filling two or mor	e circles will result	in zero marl	k in that qu	estion. Attemp	t as many questions
Control of the second of the s	i in objective type que LES are not filled. Do					
Q.No.1						
(1)	A STATE OF THE PARTY OF THE PAR	(B) Ellipse	(C) Parabol	la (D) Hyperbola	
(2)	$\lim_{n\to\infty} \left(1+\frac{1}{n}\right)^{2n} =$		(A) e^2	(B) e^{-1}	(C) $e^{-\frac{1}{2}}$	(D) e ³
(3)	$\frac{d}{dx}\left(\frac{a}{x}\right)$ (where a	is constant) is:-	(A) $\frac{1}{x}$	(B) $-\frac{a}{x}$	(C) $\frac{a}{x^2}$	(D) $-\frac{a}{x^2}$
(4)	$\frac{d}{dx}\sinh x =$		$(A) \frac{e^x - e^x}{2}$	(B) $\frac{e^x}{}$	$\frac{+e^{-x}}{2}$ (C) e^x	$-e^{-x}$ (D) $e^x + e^{-x}$
	If $y = e^{2x}$ then y_2	=	(A) e^{2x-1}	(B) $2e^{2x}$	(C) xe^{2x-1}	(D) $4e^{2x}$
(6)	$\frac{d}{dx}\left(a^{f(x)}\right) =$					
	(A) $f'(x)a^{f(x)} \ln a$	(B) $f'(x)a^{f(x)}$	(C) $\frac{f'(\cdot)}{\cdot}$	$\frac{(x)a^{f(x)}}{\ell na}$	(D) $a^{f(x)}\ell na$	
(7)	$\frac{d}{dx}\big(-Co\sec x\big) =$	(A) (Cot^2x (B)	Cosecx Col	tx (C) Cotx	(D) Tanx Secx
(8)	$\int Sin x Cos x dx =$	(A) Sin	x+c (B)	$\frac{Cos^2x}{2} + c$	(C) $\frac{Sin^2x}{2} + c$	(D) $\left(\frac{Sinx}{2}\right)^2 + c$
(9)	$\int e^x \left(Cos x + Sin x \right)$	dx =				
	$(A) - e^x Sin x + c$		+ c (C)	$e^{-x}Sin x + c$	(D) e ^x Sin	x + c
(10)	$\int_{0}^{1} \frac{dx}{1+x^2} =$	(A) -	$-\frac{\pi}{2}$ (B)	$\frac{\pi}{3}$ (C)	$-\frac{\pi}{3}$ (1	σ) $\frac{\pi}{4}$
(11)	The degree of the di	fferential equation	$\frac{d^2y}{dx^2} + \frac{dy}{dx} -$	3x = 0 is:-	(A) 1 (B)	2 (C) 0 (D) 3
(12)	A linear equation in (A) Circle (two variables repre B) Ellipse		a (1	D) Straight line	
(13)	The slope of the line	through the points				
(14)	Slope of a line $3x -$	2y + 5 = 0 is:-	(A) $\frac{2}{3}$	(B) $-\frac{2}{3}$	(C) $\frac{3}{}$ (D	$(-\frac{3}{2})$
(15)	The perpendicular di			= 0 from (2
(16)	2x + 3y < 5 is satis	fied by:-	(A) (1, 1)	257		(D) (-1, 1)
(17)	The length of the dia					
(18)	The mid point of the			n ellipse is o		(0) 10 (0) 12
(19)	The angle between the	ne vectors $2i - 3j +$	075CKB-110C0078CMD-1-0	-A		
	(A) $\frac{\pi}{6}$ (I	3) $\frac{\pi}{4}$	(C) $\pi/2$	2	(D) π	
(20)	Projection of $\underline{a} = \underline{i}$	-k along $b = i +$	10.50		CHECOTO DESC	
	$(A) - \frac{1}{\sqrt{2}} \qquad (B)$	3) $\frac{1}{\sqrt{2}}$	(C) $\frac{3}{\sqrt{2}}$		(D) $\frac{1}{2}$	

16(Obj)(公公公)-2017(A)-3000 (MULTAN)

Paper C	
Numbe	1100 INTERMEDIATE DART II (12th CLASS)
GROU Note: think is Cutting as giver BUBBI	You have four choices for each objective type question as A, B, C and D. The choice which you correct, fill that circle in front of that question number. Use marker or pen to fill the circles. For filling two or more circles will result in zero mark in that question. Attempt as many questions in objective type question paper and leave others blank. No credit will be awarded in case LES are not filled. Do not solve question on this sheet of OBJECTIVE PAPER.
Q.No.1	$\frac{d}{dx}\left(a^{f(x)}\right) =$
(1)	\$500 T THE HOLD STATE
	(A) $f'(x)a^{f(x)} \ell na$ (B) $f'(x)a^{f(x)}$ (C) $\frac{f'(x)a^{f(x)}}{\ell na}$ (D) $a^{f(x)}\ell na$
(2)	$\frac{d}{dx}(-Co\sec x) = $ (A) Cot^2x (B) $Co\sec x \ Cot x$ (C) $Cot x$ (D) $Tanx \ Sec x$
(3)	$\int Sin x Cos x dx = $ (A) $Sin x + c$ (B) $\frac{Cos^2 x}{2} + c$ (C) $\frac{Sin^2 x}{2} + c$ (D) $\left(\frac{Sin x}{2}\right)^2 + c$
(4)	$\int e^x \left(\cos x + \sin x \right) dx =$
	(A) $-e^x Sin x + c$ (B) $e^{-x} Cos x + c$ (C) $e^{-x} Sin x + c$ (D) $e^x Sin x + c$
(5)	$\int_{0}^{1} \frac{dx}{1+x^{2}} = (A) -\frac{\pi}{2} (B) \frac{\pi}{3} (C) -\frac{\pi}{3} (D) \frac{\pi}{4}$
(6)	The degree of the differential equation $\frac{d^2y}{dx^2} + \frac{dy}{dx} - 3x = 0$ is:- (A) 1 (B) 2 (C) 0 (D) 3
(7)	A linear equation in two variables represents:- (A) Circle (B) Ellipse (C) Parabola (D) Straight line
(8)	The slope of the line through the points $(-2, 4)$ and $(5, 11)$ is:- $(A) - 1$ $(B) 0$ $(C) 1$ $(D) 2$
(9)	Slope of a line $3x - 2y + 5 = 0$ is:- (A) $\frac{2}{3}$ (B) $-\frac{2}{3}$ (C) $\frac{3}{2}$ (D) $-\frac{3}{2}$
(10)	The perpendicular distance of the line $3x + 4y + 10 = 0$ from $(0, 0)$ is:- (A) 0 (B) 1 (C) 2 (D) 3
(11)	2x + 3y < 5 is satisfied by:- (A) (1, 1) (B) (1, 2) (C) (2, 3) (D) (-1, 1)
(12)	The length of the diameter of circle $x^2 + y^2 - 6x + 8y = 0$ is:- (A) 4 (B) 10 (C) 13 (D) 12
(13)	The mid point of the line segment joining the foci of an ellipse is called:- (A) Vertex (B) Centre (C) Directrix (D) Minor axis
(14)	The angle between the vectors $2\underline{i} - 3\underline{j} + \underline{k}$ and $2\underline{i} - \underline{j} - \underline{k}$ is:-
	(A) $\frac{\pi}{6}$ (B) $\frac{\pi}{4}$ (C) $\frac{\pi}{2}$ (D) π
(15)	Projection of $\underline{a} = \underline{i} - \underline{k}$ along $\underline{b} = \underline{j} + \underline{k}$ is:-
	(A) $-\frac{1}{\sqrt{2}}$ (B) $\frac{1}{\sqrt{2}}$ (C) $\frac{3}{\sqrt{2}}$
(16)	$x = at^2$, $y = 2at$ are parametric equations of a:- (A) Circle (B) Ellipse (C) Parabola (D) Hyperbola
(17)	$\lim_{n \to \infty} \left(1 + \frac{1}{n} \right)^{2n} =$ (A) e^2 (B) e^{-1} (C) $e^{-\frac{1}{2}}$ (D) e^3
(18)	$\frac{d}{dx}\left(\frac{a}{x}\right)$ (where a is constant) is:- (A) $\frac{1}{x}$ (B) $-\frac{a}{x}$ (C) $\frac{a}{x^2}$ (D) $-\frac{a}{x^2}$
(19)	$\frac{d}{dx}\sinh x = (A)\frac{e^x - e^{-x}}{2} (B)\frac{e^x + e^{-x}}{2} (C)e^x - e^{-x} (D)e^x + e^{-x}$
(20)	If $y = e^{2x}$ then $y_2 =$ (A) e^{2x-1} (B) $2e^{2x}$ (C) xe^{2x-1} (D) $4e^{2x}$ $16(\text{Obj})(2x^2)-2017(\text{A})-3000$ (MULTAN)

BOARD OF INTERMEDIATE AND SECONDARY EDUCATION,

MULTAN

OBJECTIVE KEY FOR INTER (PART-I/II) Annual Examination, 2017.

Session

Name of	Subject	Mathematics

Grou	p: 1s			
Q. Nos.	Paper Code	Paper Code	Paper Code	Paper Code
	4191	4193	4195	4197
1.	В	AID	D	A
2.	D	D	В	В
3.	С	C	С	D
4.	В	В	В	c
5.	А	С	D	В
6.	В	В	С	D
7.	D	D	AID	В
8.	С	С	D	C
9.	B	В	С	В
10.	D	A	В	D
11.	В	B	C	C
12.	С	0	В	AID
13.	В	С	D	D
14.	D	в	C	C
15.	С	D	В	В
16.	AID	B	A	C
17.	D	C	В	В
18.	C	В	D	D
19.	В	D	c	c
20.	c	C	В	B

Q. Nos.	Paper Code	Paper Code	Paper Code	Paper Code
	4192	4194	4196	4198
1.	С	D	C	A
2.	A	В	A	В
3.	0	В	D	С
4.	B	F.c	В	D
5.	D	A	D	D
6.	A	C	A	Α
7.	В	A	В	D
8.	C	0	С	С
9.	D	В	D	С
10.	D	0	D	С
11.	A	A	A	D
12.	10	В	D	В
13.	C	С	С	B
14.	C	D	С	F.C
15.	С	D	С	A
16.	D	Α	D.	С
17.	В	D	B	A
18.	В	С	В	D
19.	F.c	C	F.C	В
20.	A	C.	A	D

سرمیفیکیٹ بابت تھیج سوالیہ پر چار مار کنگ Key

Q. F. c = full Credit

بم خضون المراه الدي المروش المراه الدي الدي الدي المروش المروش المراه المروش المراه الدي جان يومروش المروش المراه الدي المروش المروض ا