BOARD OF INTERMEDIATE EDUCATION, A.P., TADEPALLI, GUNTUR. INTERMEDIATE PUBLIC ADVANCED SUPPLEMENTARY EXAMINATIONS, MAY/JUNE - 2023

103 – 12 – 5

Room No.   9

Full Signature of the Invigilators

1   Chr. Ramya

2

Full Signature of the Student

B. Vijaya Durga

PART - I

Answer Book Number   2 6 4

NAME   BACCHA VIJAYA DURGA

REGISTER NUMBER   2303220528

DATE OF EXAM   27.05.2023

SUBJECT CODE   132

SUBJECT   MATHEMATICS PAPER-I(B)

MEDIUM   ENGLISH

CENTRE NO. & NAME   03079-NARAYANA JR COLLEGE,SHANTHI NAGAR,KAKINADA

BACKLOG

BOARD OF INTERMEDIATE EDUCATION, A.P., TADEPALLI, GUNTUR

INTERMEDIATE PUBLIC ADVANCED SUPPLEMENTARY EXAMINATIONS, MAY/JUNE - 2023.

PART II

BACKLOG

Q.P. Code :193

Answer Book Number   2 6 4

Serial number of Answer Book in the Bundle							
1	2	3	4	5	6	7	8
9	10	11	12	13	14	15	

1 Signature of Examiner	Number
P. Odeya	2319406

2 Signature of CE / SUB Expert	Number

3 Signature of Scrutinizer	Number
S~	231 3703

Q.No.	Marks	Q.No.	Marks	Q.No.	Marks	Q.No.	Marks
1	0	11	4	21		31	
2	0	12		22		32	
3	0	13	4	23		33	
4	0	14	1	24		34	
5	0	15	1	25		35	
6	02	16	0	26		36	
7	0	17	0	27		37	
8	0	18	0	28		38	
9	0	19	0	29		39	
10	0	20	2	30		40	
TOTAL	2	TOTAL	12	TOTAL	1	TOTAL	

TOTAL MARKS   15

Section-C

18   Let the Given Points be $A(1,3)$ $B(0,-2)$ $C(-3,1)$

$$SA = SB = SC$$

Now, $SA = SB$

$$[(x-1)^2 + (y-3)^2 = (x-0)^2 + (y+3)^2$$

$$x^2 + 1 - 2x + y^2 + 9 - 6y = x^2 + y^2 + 9 + 6y$$

$$-2x - 6y + 1 = 0$$

$$2x + 6y - 1 = 0 \quad —①$$

Now, $SB = SC$

$$(x-0)^2 + (y+3)^2 = (x+3)^2 + (y-1)^2$$

$$x^2 + y^2 + 9 + 6y = x^2 + 9 + 6x + y^2 + 1 - 2y \quad \text{[By me} \atop \text{B.v. Durga]}$$

$$\Rightarrow (x-1)^2 + (y-3)^2 = (x-0)^2 + (y+2)^2$$

Ch.v Ramya

$$\Rightarrow x^2 + 1 - 2x + y^2 + 9 - 6y = x^2 + y^2 + 4 + 4y$$

$$\Rightarrow -2x - 4y - 6 = 0$$

$$\Rightarrow 2x + 4y + 6 = 0 \quad —① \Rightarrow x + 2y + 3 = 0 \quad —①$$

Now, $SB = SC$

$$\Rightarrow (x-0)^2 + (y+2)^2 = (x+3)^2 + (y-1)^2$$

$$\Rightarrow x^2 + y^2 + 4 + 4y = x^2 + 9 + 6x + y^2 + 1 - 2y$$

$$\Rightarrow 6y - 6x$$

$$\Rightarrow 4 + 4y - 9 - 6x + 1 + 2y = 0$$

$$\Rightarrow 6y - 6x - 4 = 0$$

$$\Rightarrow 3y - 3x - 2 = 0 \quad —②$$

Sloving equation ① and ②

$$\begin{array}{ccc} x & y & z \\ 2 & 3 & 2 \\ -3 & -2 & 3 & -3 \end{array}$$

$$\Rightarrow \frac{x}{-4+9} = \frac{y}{9+2} = \frac{z}{-3-6}$$

$$\Rightarrow \frac{x}{5} = \frac{y}{11} = \frac{z}{-9}$$

$$\Rightarrow x = \frac{5}{-9} \qquad y = \frac{11}{-9}$$

$$\Rightarrow x = 5/9 \qquad y = -11/9$$

$$\therefore S(x,y) = \left(-5/9, -11/9\right)$$

20. Given circle $x^2 + y^2 = a^2$ ——①

Given line $lx + my = 1$

Subting (1) in equation ①

$\Rightarrow x^2 + y^2 = a^2(1)^2$

$\Rightarrow x^2 + y^2 = a^2(lx + my)^2$

$\Rightarrow x^2 + y^2 = a^2(l^2x^2 + m^2y^2 + 2lx + 2my]$

$\Rightarrow x^2 + y^2 = a^2l^2x^2 + a^2m^2y^2 + 2alx + 2amy$

$\Rightarrow a^2l^2x^2 + a^2m^2y^2 + 2alx + 2amy - x^2 - y^2 = 0$

$\Rightarrow x^2(a^2l^2 - 1) + y^2(a^2m^2 - 1) + 2alx + 2amy = 0$

∴ right angle at the orgin is

x^2 coffe $+ y^2$ coffe $= 0$

$\Rightarrow a^2l^2 - 1 + (a^2m^2 - 1) = 0$

$\Rightarrow a^2l^2 + a^2m^2 = 0$

$\Rightarrow 2a^2 = -l^2m^2$

$\Rightarrow a^2 = \dfrac{-l^2m^2}{2}$

∴ the condition for the chord $lx + my = 1$ is

$a^2 = \dfrac{-(l^2m^2)}{2}$

23. Given curve $x^{2/3} + y^{2/3} = a^{2/3}$

diff w.r.t.ing "x"

$\Rightarrow x^{2/3} + y^{2/3} dx = a^{2/3} dx$

$\Rightarrow x^{2/3} dx + y^{2/3} dx = a^{2/3} dx$

$\Rightarrow \dfrac{2}{3} x^{2/3 - 1} + \dfrac{2}{3} y^{2/3 - 1} \dfrac{dy}{dx} = 0$

$\Rightarrow \dfrac{2}{3} x^{-1} + \dfrac{2}{3} y^{-1} \dfrac{dy}{dx} = 0$

$\Rightarrow \dfrac{2}{3} y^{-1} \dfrac{dy}{dx} = -\dfrac{2}{3} x^{-1}$

$\Rightarrow \dfrac{dy}{dx} = \dfrac{-2/3 \, x^{-1}}{2/3 \, y^{-1}}$

slope of tangent is $(dy/dx) /_{P(x_1, y_1)}$

$\Rightarrow = \dfrac{x^{-1}}{y^{-1}}$

equation of tangent is $y - y_1 = m(x - x_1)$

$\Rightarrow y - y_1 = \dfrac{x_1^{-1}}{y_1^{-1}} (x - x_1)$

$\Rightarrow y_1^{-1} y - y_1^{-1} y_1 = x \, x_1^{-1} - x_1 x_1^{-1}$

$\Rightarrow y y_1^{-1} + x x_1^{-1} = x x_1^{-1} + y_1 y_1^{-1}$

$\Rightarrow y \, y_i^{-1} + x x_i^{-1} = x \cdot x_i^{-1} + y_i y_i^{-1}$

beving both sides with $x \cdot x_i^{-1} + y_i y_i^{-1}$

$\Rightarrow \dfrac{y \, y_i^{-1}}{x \cdot x_i^{-1} + y_i y_i^{-1}} + \dfrac{x x_i^{-1}}{x x_i^{-1} + y_i y_i^{-1}} = \dfrac{x_1 x_i^{-1} + y_1 y_i^{-1}}{x \cdot x_i^{-1} + y_1 y_i^{-1}}$

$\Rightarrow \dfrac{y}{x \cdot x_i^{-1} + y} + \dfrac{x}{x + y y_i^{-1}} = 1$

$\Rightarrow \boxed{\dfrac{1}{x x_i^{-1}} + \dfrac{1}{y \, y_i^{-1}} = 1}$

$\therefore$ the length of AB is $\dfrac{1}{x \cdot x_i^{-1}} + \dfrac{1}{y \cdot y_i^{-1}} = 1$

Blank

Section-B

13. Given Straight line $ax + by + c = 0$ — ①

$$bx + cy + a = 0$$ — ②

$$cx + ay + b = 0$$ — ③

Now,

$$\begin{vmatrix} a & b & c \\ b & c & a \\ c & a & b \end{vmatrix}$$

$a(c+a^2) + b \cdot c$

$\Rightarrow a(a^2 - cb) + b(b^2 - ca) + c[c^2 - ab] = 0$

$\Rightarrow a^3 - acb + b^3 - cab + c^3 - abc = 0$

$\Rightarrow a^3 + b^3 + c^3 - 3abc = 0$

$\Rightarrow a^3 + b^3 + c^3 = 3abc$

Hence, Proved that,

$$\Rightarrow a^3 + b^3 + c^3 = 3abc$$

Blank

11. Let $P(x, y)$ be the locus point

let the three points be $A(1,2)$ $B(2,-3)$ $C(-2,3)$

Coundition :-

$$PA^2 + PB^2 = 2PC^2$$

$$(x-1)^2 + (y-2)^2 + (x-2)^2 + (y+3)^2 = 2[(x+2)^2 + (y-3)^2]$$

$$\Rightarrow x^2 + 1 - 2x + y^2 + 4 - 4y + x^2 + 4 - 4x + y^2 + 9 + 6y = 2[x^2 + 4 + 4x + y^2 + 9 - 6y]$$

$$\Rightarrow 2x^2 + 2y^2 - 6x + 2y + 18 = 2x^2 + 8 + 8x + 2y^2 + 18 - 12$$

$$\Rightarrow 2x^2 + 2y^2 - 6x + 12y + 18 - 2x^2 - 8 - 8x - 2y^2 - 18 + 12y = 0$$

$$\Rightarrow -6x + 2y - 8 - 8x + 12y = 0$$

$$\Rightarrow -14x + 14y - 8 = 0$$

$$\Rightarrow 14x - 14y + 8 = 0$$

$$\Rightarrow 7x - 7y + 4 = 0$$

∴ the equation of locus of P is $7x - 7y + 4 = 0$

15. Given $f(x) = \cos ax$

$f(x+h) = \cos a(x+h)$

first principle

$$f(x) = \lim_{h \to 0} \frac{f(x+h) - f(x)}{h}$$

$\Rightarrow f(x) = \lim_{h \to 0} \frac{\cos a(x+h) - \cos ax}{h}$

$\Rightarrow f(x) = \lim_{h \to 0} \frac{\cos ax + ah - \cos ax}{h}$

$\Rightarrow f(x) = \lim_{h \to 0} \frac{\cos ax + \cos ah - \cos ax}{h}$

$\Rightarrow f(x) = \lim_{h \to 0} \frac{\cos^2 ax + \cos ah}{h}$

$\Rightarrow f(x) = \lim_{h \to 0} \frac{h[\cos^2 ax + \cos a]}{h}$

$\Rightarrow f(x) = \cos^2 ax + \cos a$

$\Rightarrow f(x) = \cos^2 a [\cos^2 x + \cos]$

$\therefore f(x) = a [\cos^2 x + \cos]$

14. Given,

$$f(x) = \begin{cases} \dfrac{x^2-9}{x^2-2x-3} & \text{if } 0 < x < 5 \text{ and } x \neq 3 \\ 1.5 & \text{if } x = 3 \end{cases}$$

$\Rightarrow f(x) = \lim\limits_{x \to 3} \dfrac{x^2-9}{x^2-2x-3}$

$\Rightarrow f(x) = \lim\limits_{x \to 3} \dfrac{x^2-9}{x^2-2x-2x-3}$

$\Rightarrow f(x) = \dfrac{(3)^2-9}{(3)^2-2(3)-3}$

$\Rightarrow f(x) = \dfrac{9-9}{9-6-3}$

$\Rightarrow f(x) = \dfrac{9-9}{9-9}$

$\Rightarrow f(x) = 0$

Section-A

2. Given Straight line $5x - 3y - 4 = 0$ ①
                                $10x - 6y - 9 = 0$ ②

Solving ① & ②

x	y	1	
-3	-4	5	-3
-6	-9	-10	-6

$$\frac{x}{27-24} = \frac{y}{-40+45} = \frac{1}{-30-30}$$

$$\Rightarrow \frac{x}{3} = \frac{y}{5} = \frac{1}{0}$$

$$\Rightarrow x = 3 \quad y = 5$$

∴ distance between the Parallel line
is $(x,y) = (3,5)$

5 Given,

$$f(x) = \lim_{x \to 0} \frac{3^x - 1}{\sqrt{1+x} - 1}$$

7. $f(x) = 1 + x + x^2 + \dots + x^{100}$

$\Rightarrow f'(x) = 1 + x + 2x + \dots + 100 x^{99}$

So,

$\Rightarrow f'(1) = 1 + 1 + 2(1) + \dots + 100 (1)^{99}$

$\Rightarrow f(1) = 1 + 1 + 2 + \dots + 100 \, 1^{99}$

$\Rightarrow f(1) = 2 + 2x + \dots 100 x^{99}$

3. Given Point $[5, 4, 2]$ $(6, 2, -1)$ $(8, -2, 7)$

$\quad\quad\quad\quad\quad\quad x_1 \, y_1 \, z_1 \quad\quad x_2 \, y_2 \, z_2 \quad x_3 \, y_3 \, z_3$

equation of collinear $= \sqrt{(x_1 + x_2 + x_3)} + \sqrt{(y_1 + y_2 + y_3)} + \sqrt{(z_1 + z_2 + z_3)}$

$\Rightarrow \sqrt{5 + 6 + 8} + \sqrt{(4 + 2 + (-2))} + \sqrt{(2 + (-1) + 7)}$

$\Rightarrow \sqrt{19} + \sqrt{(6 - 2)} + \sqrt{(-2 + 7)}$

$\Rightarrow \sqrt{19} + \sqrt{(4)} + \sqrt{5}$

$\Rightarrow \sqrt{19 + 4 + 5}$

$\Rightarrow \sqrt{28}$

$\Rightarrow 14\sqrt{2}$

6. Given,

$\quad f(x) = \lim_{x \to \infty} \dfrac{x^2 + 5x + 2}{2x^2 - 5x + 1}$

$\quad f(x) = \lim_{x \to \infty} \dfrac{x[x + 5 + 2]}{x[2x - 5 + 1]}$

8   Given, derivative,

$\Rightarrow f(x) = \dfrac{\sin(x+a)}{\cos x}$

4. Give   plane   equation $2x-y+z=6$ —①

$x+y+2z=7$ —②

Sloving ① & ②

x	y	1
-1	1	2	-1
1	2	1	1

$\Rightarrow \dfrac{x}{2-1} = \dfrac{y}{1-4} = \dfrac{1}{2+1}$

$\Rightarrow \dfrac{x}{-3} = \dfrac{y}{3} = \dfrac{1}{3}$

$\Rightarrow x = \dfrac{-3}{3} \qquad y = \dfrac{3}{3}$

$\Rightarrow x = (-1) \qquad y = (1)$

∴ The   angle   between   the   plane $(x,y) = (-1,1)$

9   Given, approximate value is $\sqrt{82}$

10   Given, fucation

$$y = f(x) = x^2 + 4 \qquad (-3, 3]$$
$$\qquad\qquad\qquad\qquad\qquad \underset{x}{} \underset{y}{}$$

$$f(x) = x^2 + 4$$

$$f(3) = (3)^2 + 4$$

$$f(3) = 9 + 4$$

$$f(3) = 13$$

$$f = 13 - 3$$

$$\boxed{f = 10}$$

$$y = f(x)$$

$$y = 10$$

1.   The equation of straight line is $x^2 + y^2 + 2gx + 2fy + c = 0$

th let the points be $(-4, 5]$

$$\Rightarrow (-4)^2 + (5)^2 + 2g(-4) + 2f(5) + c = 0$$

$$\Rightarrow 16 + 25 - 8g + 10f + c = 0$$

$$\Rightarrow -8g + 10f + c + 41 = 0$$

$$\Rightarrow 8g - 10f + c + 41 = 0$$

Secation-A

1. $\dfrac{x}{a} + \dfrac{y}{a} = 1$

$-4 + 5 - 1 = 0$

$x +$

Section-B

16. Given line $S - f(t) = 8t + t^3$

(i) velocity at time $t = 2\,sec$ is $20\,\dfrac{m}{s}$

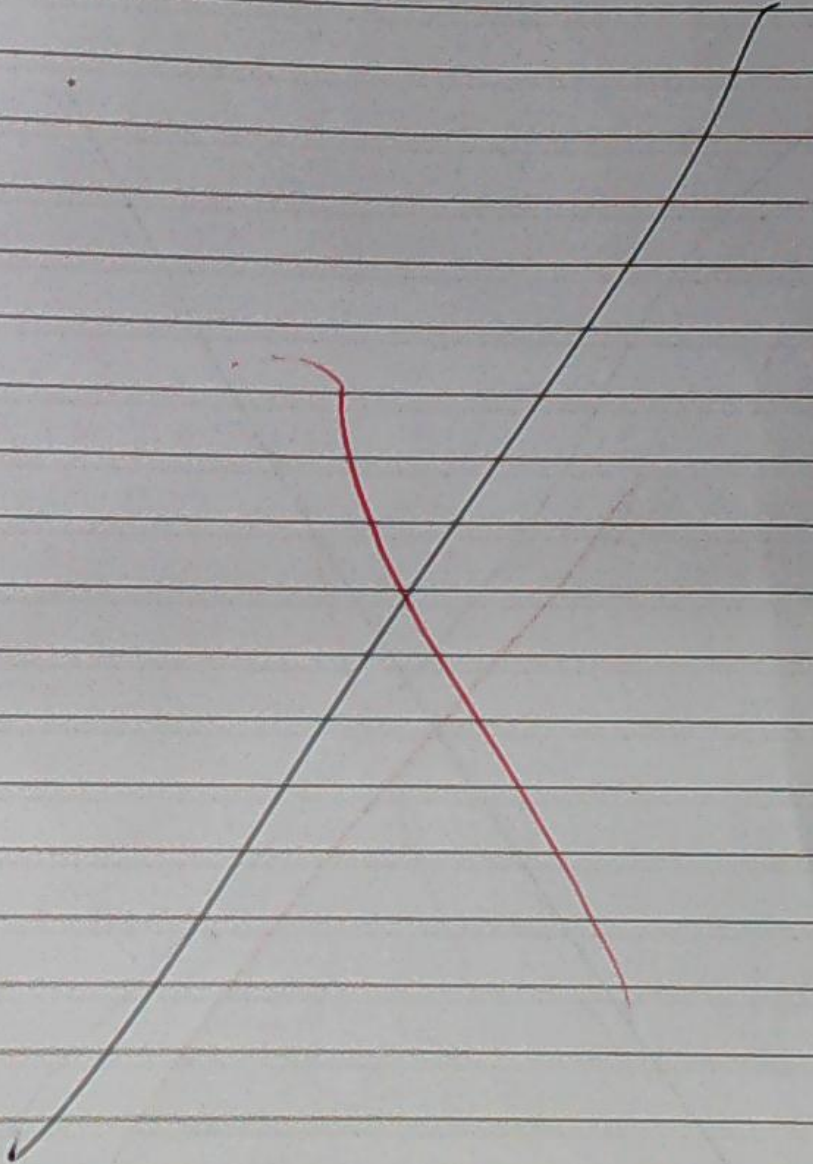(ii) acceleration at $t = 2\,sec$ is $12\,\dfrac{m}{s}$

Section A

6 Given,

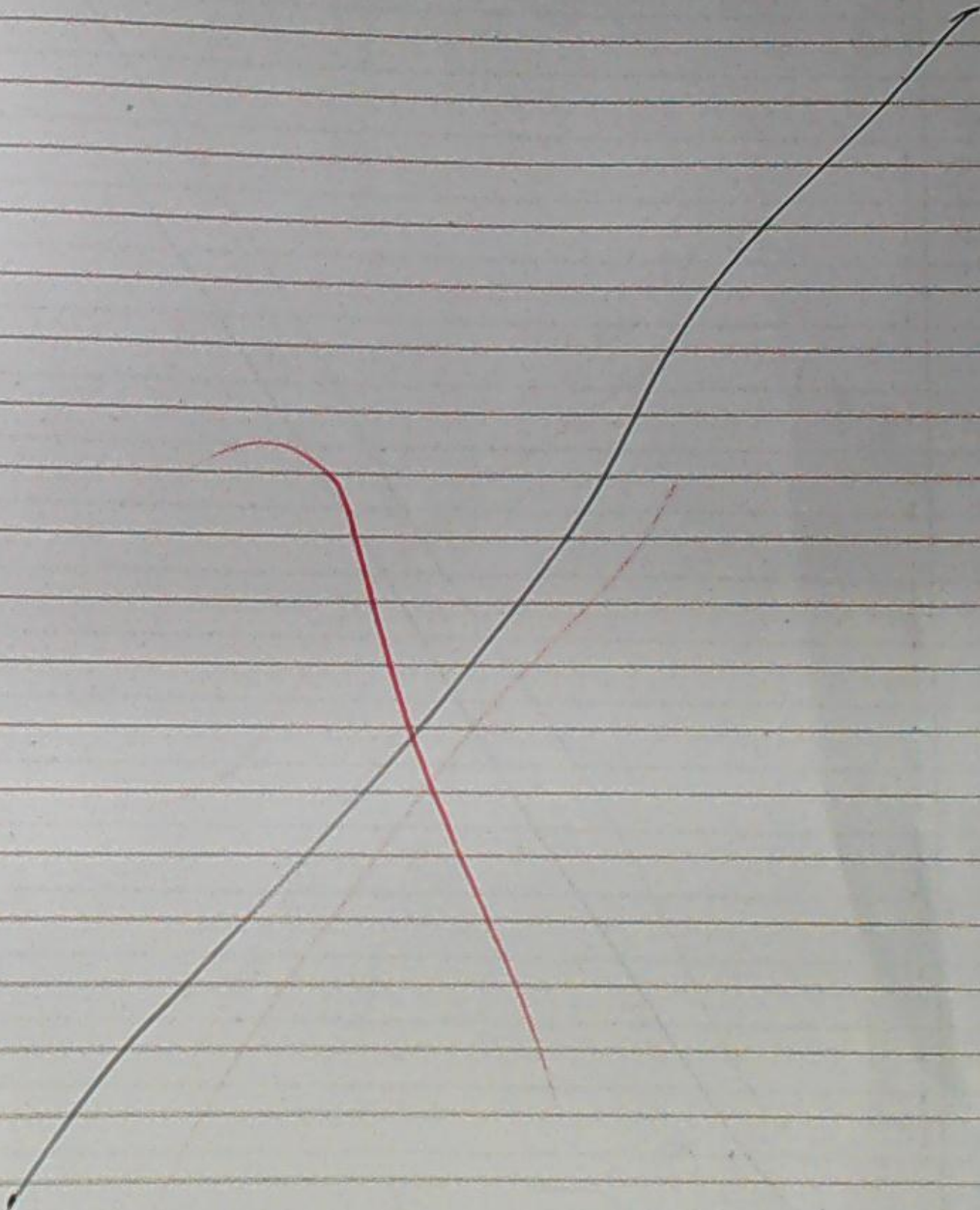$f(x) = \lim\limits_{x \to \infty} \dfrac{x^2 + 5x + 2}{2x^2 - 5x + 1}$

$= \dfrac{1 + 5(0) + 1}{2 - 5(0) + 1}$
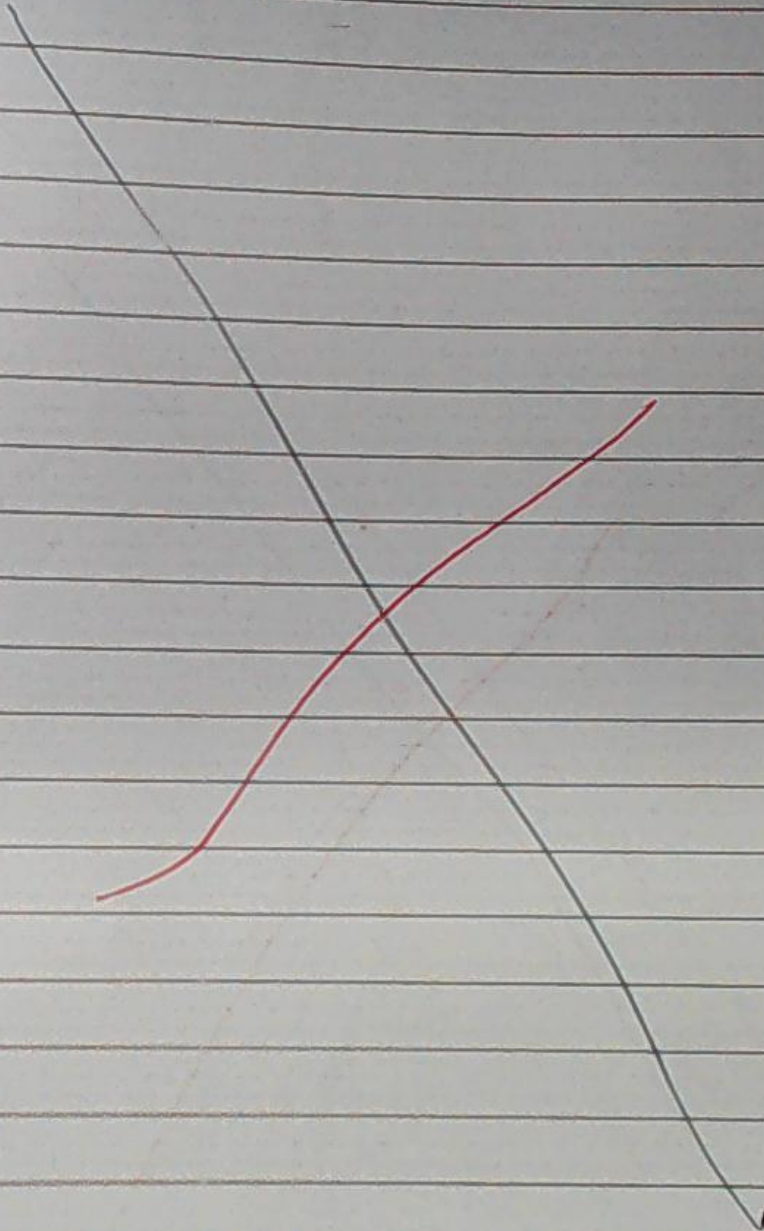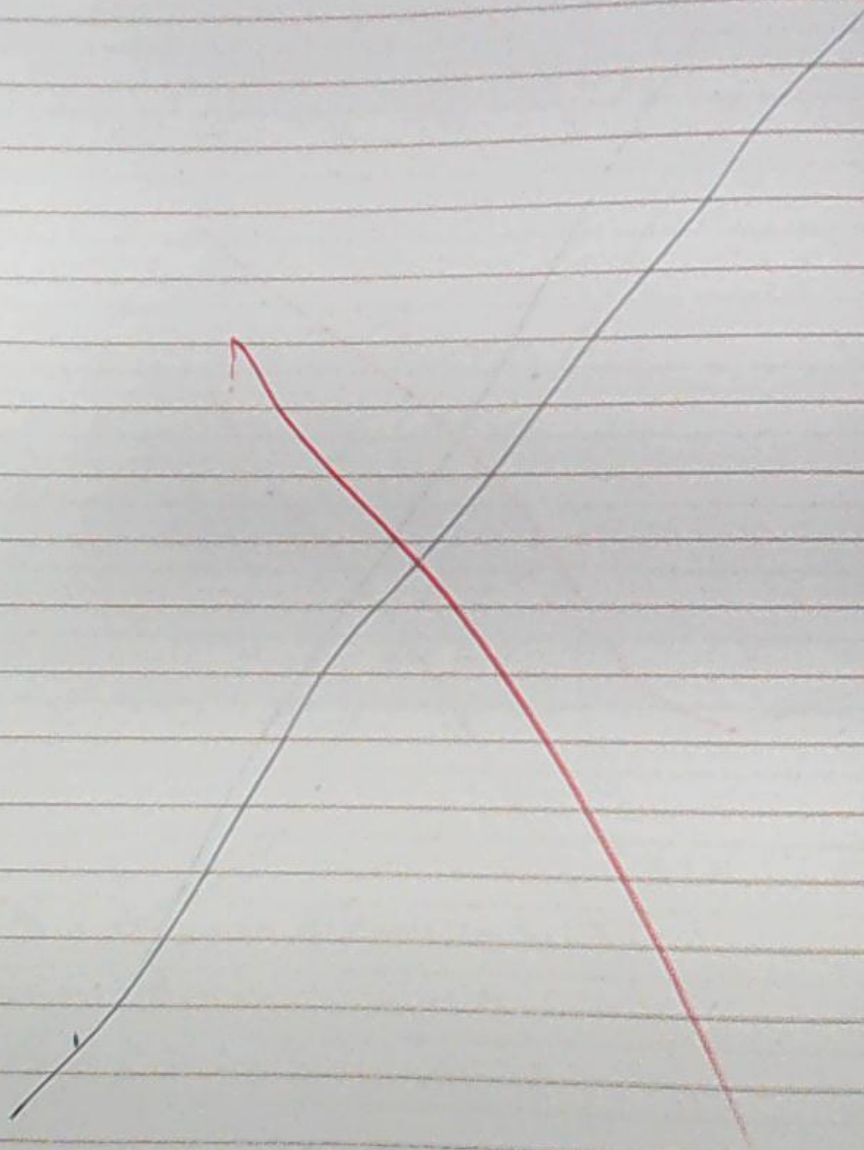
$= \dfrac{1}{2}$

—— * The end * ——

.Ch.v.Ramya

VSH
CACD

CD
16

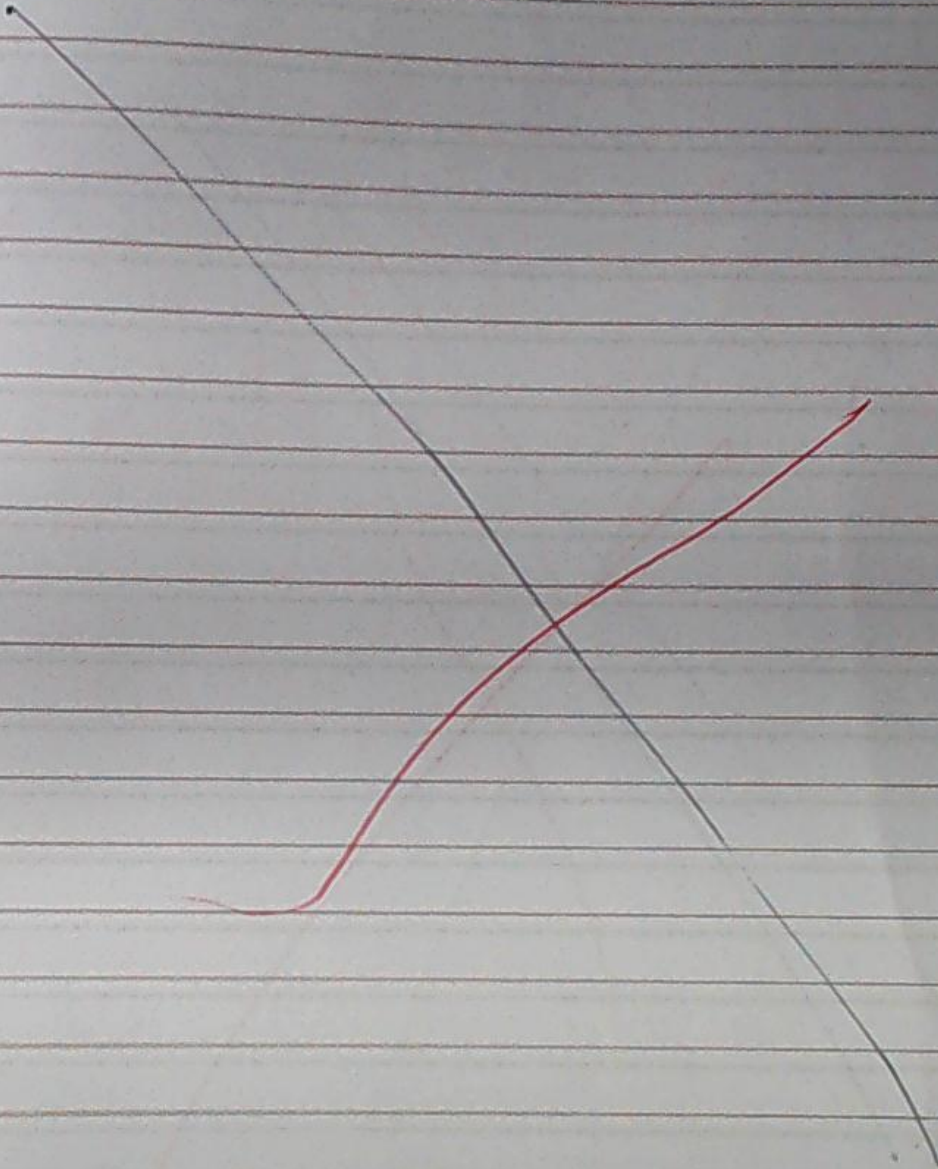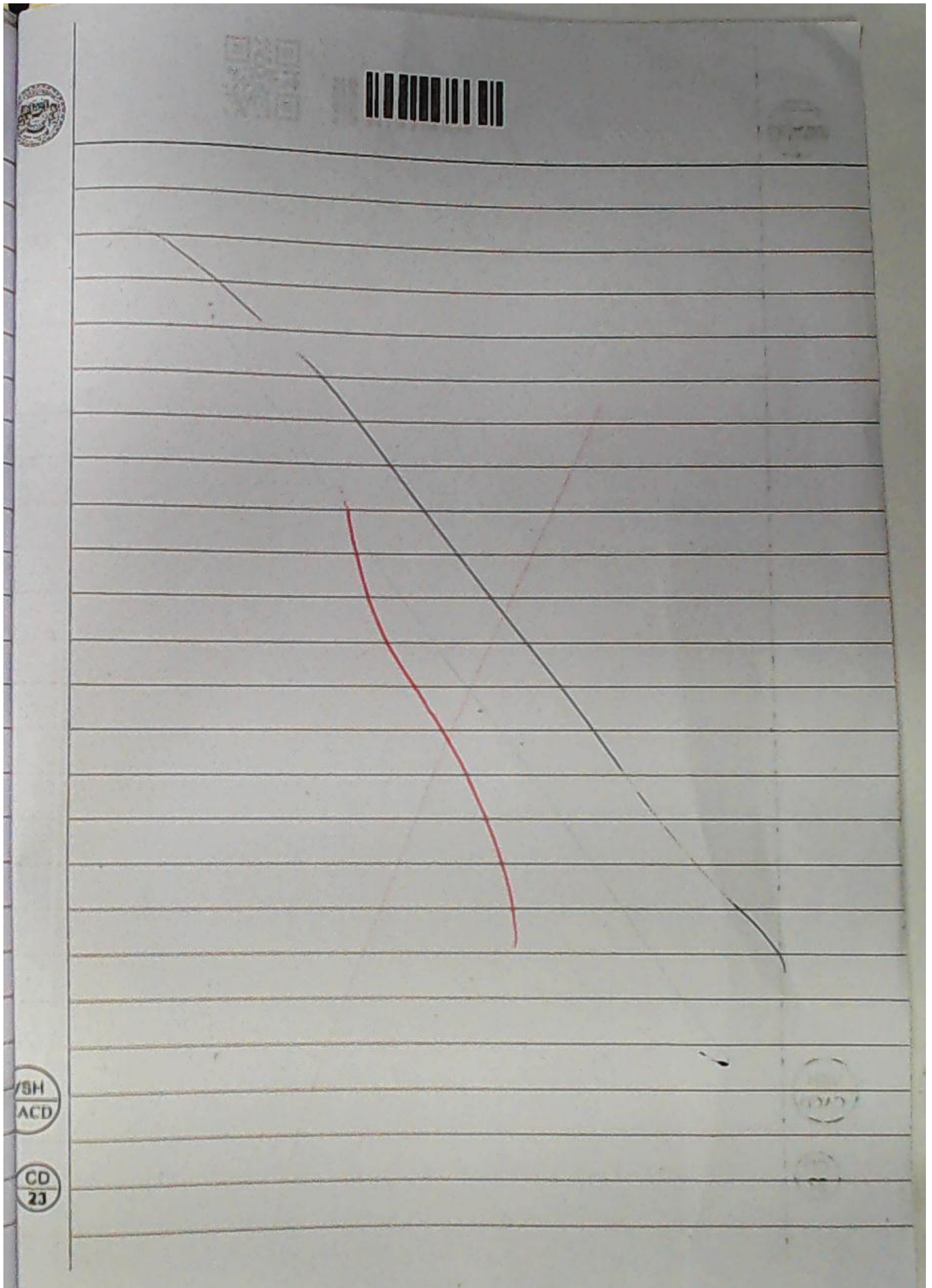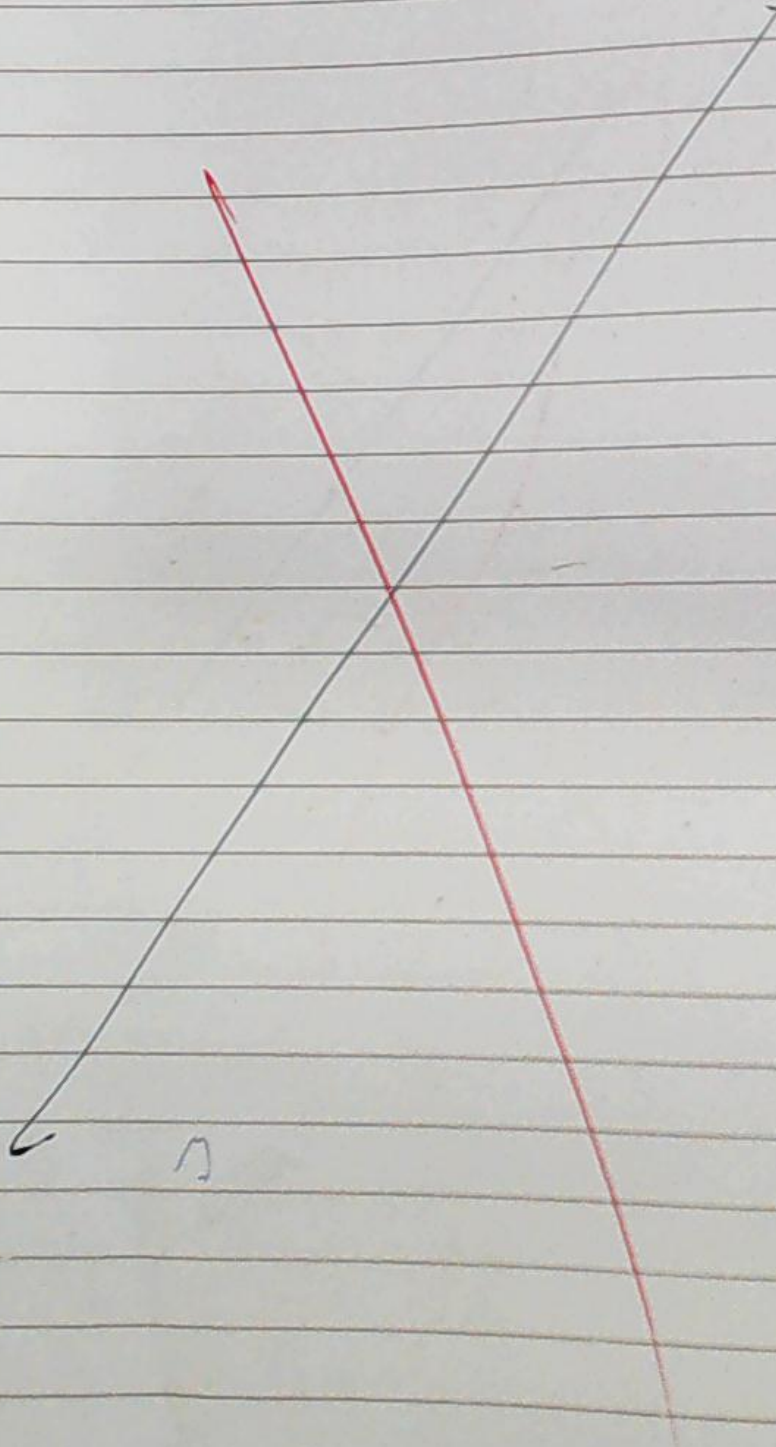# Board of Intermediate Education

Andhra Pradesh,Tadepalli, Guntur-522501.

IPASE June 2023 Re - Verification Marks

Roll No.   :   2303220528

Subject   :   MATHEMATICS PAPER-I(B)

Qno	Marks							
	M	A	B	C	D	E	F	Tot
1	0							0
2	0							0
3	0							0
4	0							0
5	0							0
6	2							2
7	0							0
8	0							0
9	0							0
10	0							0
11	4							4
12	NA							0
13	4							4
14	1							1
15	1							1
16	0							0
17	NA							0
18	NA							0
19	NA							0
20	2							2
21	NA							0
22	NA							0
23	1							1
24	NA							0
Grand Total								**15**

Roll Number: 2303220528

This is to inform you that your request for **Re-Verification cum supply of photo Copy** in

MATHEMATICS PAPER-I(B) of IPASE June 2023 has been processed under the following

provisions Viz.,

 1) Verified Posting and totalling of marks

2) Verified whether marks are awarded and posted for all correct answers.

3) Verified those answers which were not awarded marks.

4) Verified those answers which were awarded ZERO marks for correct answers.

It is informed that there is **no** provision for **Re-valuation**

After the above process it is found that there is **No Change** in your marks in

MATHEMATICS PAPER-I(B)

Controller of Examinations