MARKING SCHEME

GENERAL MATHEMATICS 9TH

SECTION-A

Total Time: 20 minutes Total Marks:15

1	2	3	4	5	6	7	8	9	10
C	A	C	B	A	A	B	A	B	A
11	12	13	14	15					
B	C	C	B	D					

Time: 2Hours 40 Minutes

SECTION-B

Total Marks: 36

Q1. Attempt any 9 of the following short questions. Each question carries equal marks.

i. Hafsa got 84% of the total marks in her annual examination. If she had obtained 861 marks. Find out total marks in the examination?

Solution:

84% of x=861 (1)

$\frac{84}{100} \times x = 861$ (1)

$x = 861 \times \frac{100}{84}$ (1)

x=1025 (1)

ii. Hafeez had trade goods worth Rs.175,000 and a cash amount of Rs. 90,000. If his wife possessed jewelry worth Rs. 84,000, find the amount of zakat payable by him?

Solution:

Value of trade goods=175,000
Cash amount= 90,000
Value of Jewelry = 84,000 (1)

Total amount =175,000+90,000+84,000 (1)
Total amount =349,000

Zakat Rate =2.5%

Zakat Payable =2.5% of 349,000

Zakat Payable $=\frac{1}{40} \times 349{,}000$

Zakat Payable =8725

iii. Ali bought 8 dozen eggs at the rate of Rs. 70 per dozen. 6 eggs were found broken. He sold remaining eggs at the rate of Rs. 7 per egg. Find his profit or loss.

Solution:

Cost price=70×8

Cost Price=560

Total number of eggs=8 dozen

Total number of eggs=8× 12

Total number of eggs =96

Number of broken eggs=6

Remaining eggs =96-6

Remaining eggs =90

Sale price=90×7

Sale price=630

Sale Price> Cost Price

So, Profit has occurred

Profit= Sale Price− Cost Price

Profit= 630-560

Profit=70

iv. Mr. Jawad deposits Rs. 90,000 in a Profit Loss Saving (PLS) account. If the profit rate is 12% then how much profit would he get after two months.

Solution:

Profit for one month $= \frac{Principal\ Amount \times Rate\ of\ profit}{12}$

Profit for one month $= 90{,}000 \times \frac{12}{100} \times \frac{1}{12}$

Profit for one month = 900

Profit for two months = 900×2

Profit for two months = 1800

1

v. If the worth of the property of a person is Rs. 5,000,000. How much tax would he pay at the rate of 5%.

Solution:

Total value of Property=5,000,000

Tax Rate = 5%

1

Tax= Rate× Value of property

1

Tax = 5% × 5,000,000

Tax = $\frac{5}{100} \times 5{,}000{,}000$

1

Tax=250,000

1

vi. Simplify: $\sqrt{\frac{X^a}{X^c}} \times \sqrt{\frac{X^c}{X^a}} \times \sqrt{\frac{X^a}{X^b}}$

Solution:

$$\sqrt{\frac{X^a}{X^c}} \times \sqrt{\frac{X^c}{X^a}} \times \sqrt{\frac{X^a}{X^b}} = \sqrt{X^a X^{-c}} \times \sqrt{X^c X^{-a}} \times \sqrt{X^a X^{-b}}$$

1

$$= \sqrt{X^a . X^{-c} \times X^c . X^{-a} \times X^a X^{-b}}$$

$$= \sqrt{X^a . X^{-a} \times X^c . X^{-c} \times X^b X^{-b}}$$

1

$$= \sqrt{X^{a-a} . X^{c-c} . X^{b-b}}$$

$$= \sqrt{X^0 \times X^0 \times X^0}$$

1

$$= \sqrt{1 \times 1 \times 1}$$

$$= \sqrt{1}$$

1

$$= \mp 1$$

vii. $\log_8 x = \frac{4}{3}$

Solution:

$\log_8 x = \frac{4}{3}$

$\therefore \log_a y = x$

2

$\therefore y = a^x$

$x = 8^{\frac{4}{3}}$

$x = (2^3)^{\frac{4}{3}}$

$x = 2^4$

$x = 16$

1

1

viii. Find the 12th term of an Arithmetic Progression (AP)

18, 15, 12, 9, . . .

Solution:

$a_1 = 18$

$d = 15 - 18$

$d = -3$

$a_{12} = ?$

1

Since,

$a_n = a_1 + (n-1)d$

2

$a_{12} = 18 + (12-1)(-3)$

$a_{12} = 18 + (11)(-3)$

$a_{12} = 18 - 33$

$a_{12} = -15$

1

ix. Find three geometric means between $\frac{1}{27}$ and 3.

Solution:

Let G_1, G_2, G_3 be 3 Geometric means between $\frac{1}{27}$ and 3.

Then,

$\frac{1}{27}, G_1, G_2, G_3, 3$ are in Geometric mean.

$a_1 = a = \frac{1}{27}$, n=5, $a_n = 3$, r=?

Then,

$$a_n = a_1 r^{n-1}$$
$$3 = \frac{1}{27} r^{5-1}$$
$$3 = \frac{1}{27} r^4$$
$$3 \times 27 = r^4$$
$$81 = r^4$$
$$(3)^4 = (r)^4$$

2

So,

r=3

Therefore,

$G_1 = ar = \frac{1}{27} \times 3 = \frac{1}{9}$

$G_2 = ar^2 = \frac{1}{9} \times 3 = \frac{1}{3}$

$G_3 = ar^3 = \frac{1}{3} \times 3 = 1$

1

Hence,

$\frac{1}{9}, \frac{1}{3}$ and 1 are 3 Geometric mean between $\frac{1}{27}$ and 3.

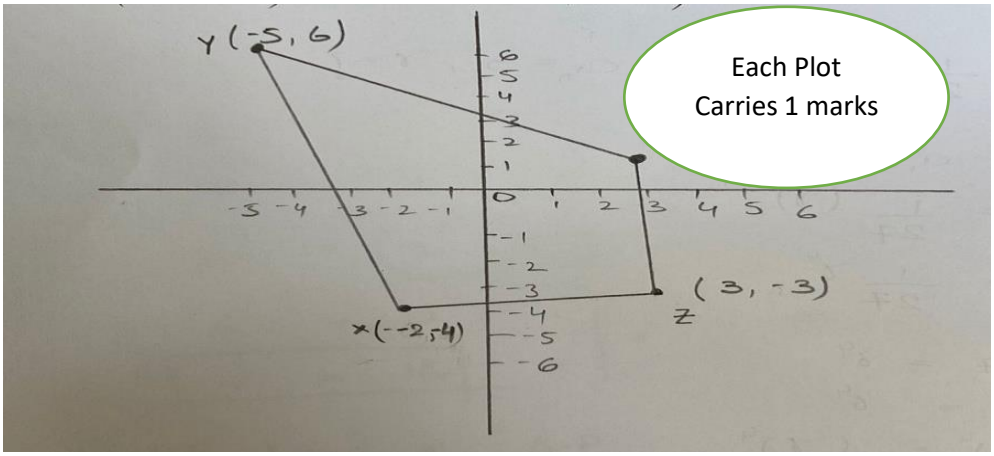
X. Plot the points W, X, Y and Z in the XY plane: W (3,1), X (-2, -4), Y (-5,6), Z (3, -3).

Solution:

W (3, 1) , X(-2,-4)

Y (-5, 6) , Z(3, -3)

Diagram:



xi. Salam has a post-paid connection. Last month he consumed a total of 3 hours and 20 minutes time for calls. If per 30 seconds call charges is Rs.0.50, then what was his bill?

Solution:

Consumed time= 3hrs and 20 minutes

Consumed time in minutes= 200 minutes

Call charges per 30 seconds =Rs.0.5

Call Charges per minute= Rs.1.0

Cost of 200 minutes=Rs.200

Line Rent=Rs. 499

Line Rent= Rs. 699

xii. If X = {1, 2, 3} and Y={4, 5, 6}, Write an ONTO function from X to Y.

Solution:

$X = \{1, 2, 3\}$

$Y = \{4, 5, 6\}$

$X \times Y = \{(1,4), (1,5), (1,6), (2,4), (2,5), (2,6), (3,4), (3,5), (3,6)\}$

$R = \{(1,4), (2,5), (3,6)\}$

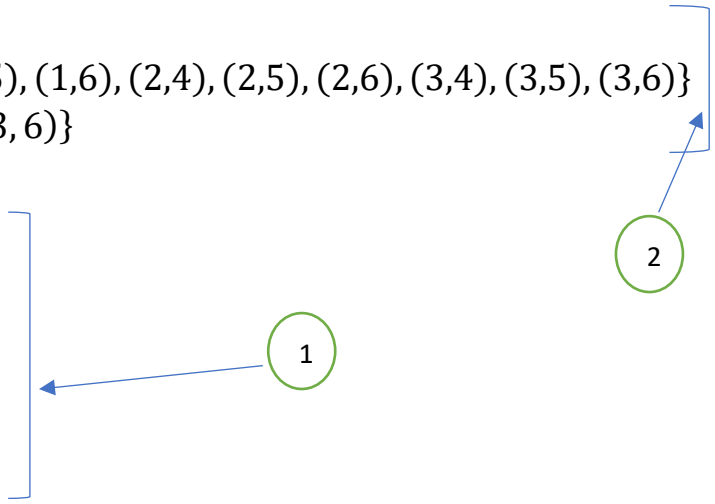
Domain ={1, 2, 3}

Domain= X

So, R is a function

Range = {4,5,6}

Range = Y



So, R is onto function from X to Y.

Section-C

Total Marks:24

Q2. 10 men take 12 hours to spray insecticides on fruit trees spread over 40 hectares. How many men will be required to spray 32 hectares area in 8 hours?

Solution:

Men
10
x
10:x

HOURS
12
8
8:12 ❶

1

Men
10
x
10:x

Area
40
32
40:32 ❷

1

Taking Compound Proportion

10:x
10:x

8:12
40:32

2

Product of means = Product of Extremes

$$x \times 8 \times 40 \qquad 10 \times 12 \times 32$$

$$x = \frac{10 \times 12 \times 32}{8 \times 40}$$

$$x = 12$$

2

Q3. Draw the graph of equation:

3x + y = 6

Solution:

3x + y = 6

y = 6 - 3x

1

1

X	0	1	2	-1	-2
y	6	3	0	9	12

Using

y=6-3x

Put x=0

y=6-3(0)

y=6-0

y=6

1

Put x=1

y=6-3(1)

y=6-3

y=3

1

Put x=-1

y=6-3(-1)

y=6+3

y=9

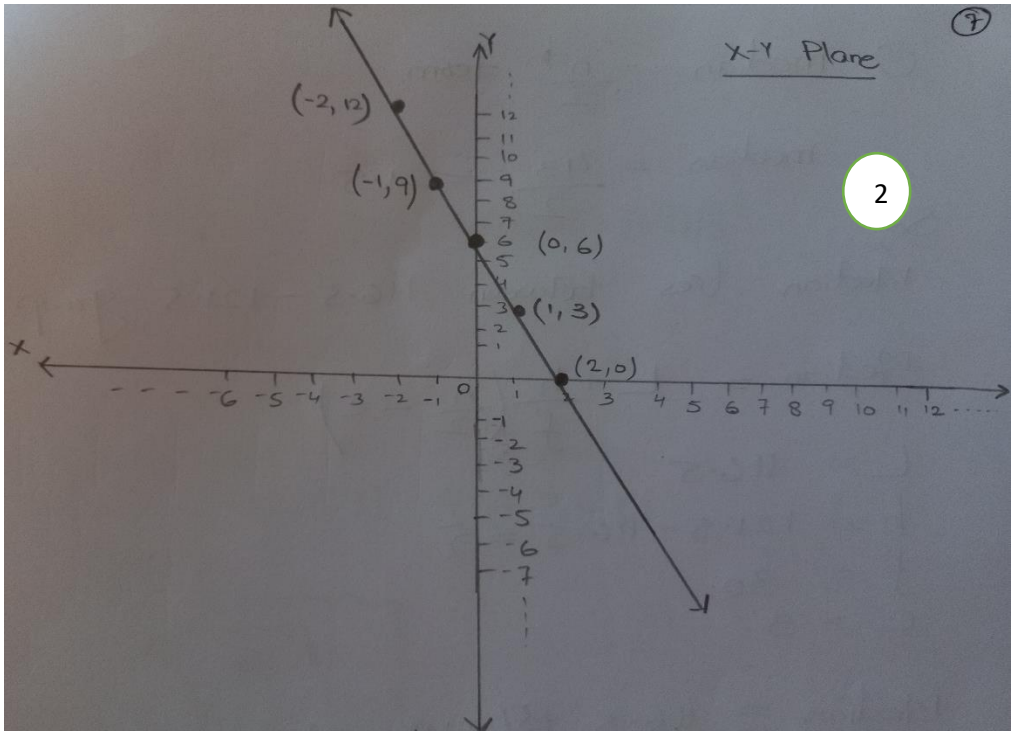
1

Put x=-2

y=6-3(-2)

y=6+6

y=12; (-2,12)



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Q4. From the following distribution

Daily Wages (In Rupees)	112 – 116	117 – 121	122 – 126	127 – 131	132 - 136
Number of Workers	3	20	11	4	5

i. Construct a table.
ii. Find the class boundaries for each group
iii. Calculate Median wages.

Solution:

3

Class limits	Frequency	Class Boundaries	Cumulative Frequency
112-116	3	111.5-116.5	3
117-121	20	116.5-121.5	33+20=23
122-126	11	121.5-126.5	23+11=34
127-131	4	126.5-131.5	34+4=38
132-136	5	131.5-136.5	38+5=43
	$\Sigma f = 43$		

Median=$\frac{n^{th}term}{2}$

Median= $\frac{43}{2}$ = 21.5

3

So,

Median Lies between 116.5-121.5 group

Median=$l + \frac{h}{f}\left(\frac{n}{2} - c\right)$

$l = 116.5$

$h = 121.5 - 116.5 = 5$

$f = 30$

$c = 3$

Median=116.5+ $\frac{5}{20}(21.5 - 3)$

Median=116.5+0.25(18.5)

Median=116.5+4.625

Median=121.125

Q5. If U = {1, 2 ,3 ,4, 5, 6, 7}, A = {1,2, 3}, B = {3, 4, 5}. Then with the help of Venn diagram verify Dorgan's Law:

(A U B)' = A'Π B'

Solution:

L.H.S= (A U B)'

$A \cup B = \{1,2,3\} \cup \{3,4,5\}$

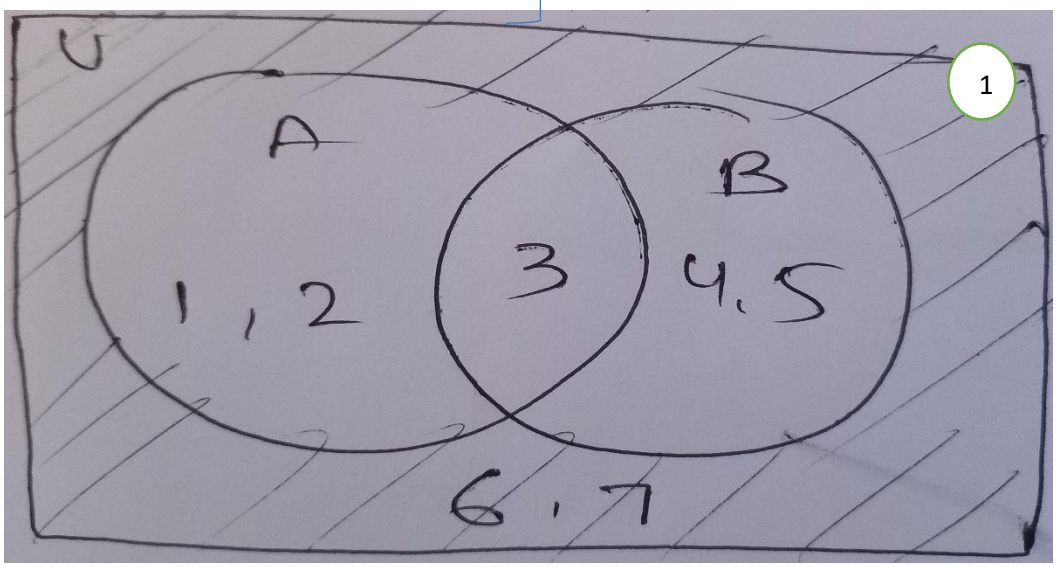
2

$A \cup B = \{1,2,3,4,5\}$

$(A \cup B)' = U - (A \cup B)$

$= \{1,2,3,4,5,6,7\} - \{1,2,3,4,5\}$

$= \{6,7\}$



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R.H.S= A'∩ B'

A' = U-A

A' ={1,2,3,4,5,6,7} - {1,2,3}

2

A' ={4,5,6,7}

B' = U-B

B’ ={1,2,3,4,5,6,7} - {3,4,5}

B’ ={1,2,6,7}

A’∩ B’={4,5,6,7} ∩ {1,2,6,7}

A’∩ B’= {6,7}