PRISM WORLD

Std.: 10 (English) **Maths - I** **Marks: 40**

Date: **Time: 2 hour**

Chapter: 1 to 6

Q.1 A) Solve Multiple choice questions. **(4)**

1) The times, in seconds taken by 150 athletes to run a 110 m hurdle race are tabulated below:

class	13.8 - 14	14 - 14.2	14.2 - 14.4	14.4 - 14.6	14.6 - 14.8	14.8 -15
frequency	2	4	5	71	48	20

The number of athletes who completed the race in less than 14.6 seconds is

a. 11 b. 71 c. 82 d. 130

2) Find the number of possibilities in the following. One number is selected from 1 to 5 written on a card.

a. 6 b. 3 c. 5 d. 4

3) Which of the following quadratic equations has roots 3, 5 ?

a. $x^2 - 15x + 8 = 0$ b. $x^2 + 8x - 15 = 0$

c. $x^2 + 3x + 5 = 0$ d. $x^2 - 8x + 15 = 0$

4) The 30th term of the A.P 10, 7, 4, ... is

a. 87 b. 77 c. -77 d. -87

B) Solve the following questions. **(4)**

1) Find the value of discriminant for the following quadratic equations.

$2y^2 - y + 2 = 0$

2) Write an A.P. whose first term is a and common difference is d in each of the following.

a = 10, d = 5

3) Make the classes exclusive 11-20, 21-30.

4) Complete the following table using given information.

Sr No.	**FV**	**Premium/ discount/ par**	**MV**
i	Rs. 100	Premium Rs. 10	**a**
ii	Rs. 25	**b**	Rs. 16
iii	**c**	at par	Rs. 5

Q.2 A) Complete the following Activities. (Any Two) **(4)**

1) Factorise $\sqrt{2x^2} + 7x + 5\sqrt{2} = 0$ by completing the following activity

Solution:

$\sqrt{2x^2} + 7x + 5\sqrt{2} = 0$

$\therefore \quad \sqrt{2x^2} + 5x + 2x + 5\sqrt{2} = 0$

$\therefore \quad x(\sqrt{2}x + 5) + \sqrt{2}$ _____ $= 0$

$\therefore \quad$ _____ $(x + \sqrt{2}) = 0$

$\therefore \quad$ _____ $= 0$ or $x + \sqrt{2} = 0$

$\therefore \quad x =$ _____ or $x = -\sqrt{2}$

$\therefore \quad$ The roots of the given quadratic equation are _____ and $-\sqrt{2}$.

2) Nazama is a proprietor of a firm, registered under GST. She has paid GST of Rs. 12,500 on purchase and collected Rs. 14,750 on sale. What is the amount of ITC to be claimed? What is the amount of GST payable?

Tax paid while purchase = Rs. 12,500
i.e. Tax Input Credit (ITC) = Rs. 12,500
Tax collected while sale (output tax) = Rs. 14,750

$\therefore \quad$ GST = _____

= 14,750 – _____

$\therefore \quad$ GST = _____

$\therefore \quad$ Input tax credit for Nazma is Rs. 12,500 and GST to be paid is Rs._____

3) Complete the activity to find the value of x.

$3x + 2y = 11$ ... (I) and
$2x + 3y = 4$ ... (II)

Solution

Multiply equation (I) by 3 and equation (II) by 2.

_____ × (3x + 2y = 11) ∴ 9x + 6y = 33

_____ × (2x + 3y = 4) ∴ 4x + 6y = 8

Subtract (II) and (I)

_____ x = 25

∴ x = _____

B) Solve the following questions. (Any four) **(8)**

1) Form the given table, find the median number of rooms occupied per day in a hotel:

Number of rooms occupied	Number of days (f)	(c.f.) (less than type)
0 - 10	5	5
10 - 20	15	20
20 - 30	25	45
30 - 40	10	55
40 - 50	5	60

2) Form the quadratic equation from its roots
0 and 4

3) Which of the following sequences are A.P ? If it is an A.P, find next two terms. 2, - 2, - 6, - 10, ...

4) For certain simultaneous equations, if
i. D = -5, D_x = 15, D_y = 10
ii. D = 4, D_x = 2, D_y = 8
find the values of x and y.

5) A bag contains 50 cards. Each card bears only one number from 1 to 50. One card is drawn at random from the bag. Write the sample space. Also write the events A, B and find the number of sample points in them.

(i) Condition for event A : The number on the card is divisible by 6.
(ii) Condition for event B : The number on the card is a complete square.

Q.3 A) Complete the following Activity (Any one) **(3)**

1) Solve the following simultaneous equations using Cramer's method.

6x - 4y = - 12
8x - 3y = - 2

D = $\begin{vmatrix} 6 & -4 \\ 8 & -3 \end{vmatrix}$

= (6 $\times$ - 3) - (- 4 $\times$ 8)

= -18 - (- 32)
= -18 + 32

$\therefore$ D = _____

Dx = $\begin{vmatrix} -12 & -4 \\ -2 & -3 \end{vmatrix}$

= (- 12 $\times$ - 3) - (- 4 $\times$ - 2)

= 36 - 8

$\therefore$ Dx = _____

Dy = $\begin{vmatrix} 6 & -12 \\ 8 & -2 \end{vmatrix}$

= (6 $\times$- 2) - (- 12 $\times$ 8)

= -12 - (- 96)
= -12 + 96

$\therefore$ Dy = _____

By Cramer's rule

x = $\frac{Dx}{D}$ = _____ = 2 and

y = _____ = $\frac{84}{14}$ = 6

$\therefore$ x = _____ and y = _____is the solution of given simultaneous equations.

2) Solve the following equations. $(x^2 + x)(x^2 + x - 2) = 24$

$(x^2 + x)(x^2 + x - 2) = 24$
Substituting $x^2 + x = m$ we get
$m(m - 2) = 24$

$\therefore$ $m^2 - 2m - 24 = 0$

$\therefore$ _____ = 0

$\therefore$ $m(m - 6) + 4(m - 6) = 0$

$\therefore$ $(m - 6)(m + 4) = 0$

$\therefore$ $m - 6 = 0$ or $m + 4 = 0$

$\therefore$ Substituting m = _____

$\therefore$ $x^2 + x - 6 = 0$ or $x^2 + x + 4 = 0$

$\therefore$ $x^2 + x - 6 = 0$ ....(i) or $x^2 + x + 4 = 0$ .....(ii)

From (i) From (ii)

$\therefore$ _____ $x^2 + x + 4 = 0$

$\therefore$ $x(x + 3) - 2(x + 3) = 0$ a=1, b=1, c=4

$\therefore$ $(x + 3)(x - 2) = 0$ $b^2 - 4ac = 1^2 - 4 \times 1 \times 4$

$= 1 - 16$

$\therefore$ $x + 3 = 0$ or $x - 2 = 0$ = _____ < 0

$\therefore$ x = _____ or x = _____ as $b^2 - 4ac$ is negative, roots are not real so, discarded.

B) Solve the following questions. (Any two) **(6)**

1) Which term of the following A.P. is 560? 2, 11, 20, 29, ...

2) A person has paid Rs. 15,075 for buying 100 shares. In that Rs. 75 is the brokerage. So the buyer has to pay 18% GST on Rs. 75. Let us find the amount of GST he paid to the broker and prepare the contract note. (Market Value = Rs. 150 Face Value = Rs. 100)

3) Three coins are tossed simultaneously. Find the probability of following events.

i. Getting exactly two heads.
ii. Getting at least two heads.
iii. Getting no head.
iv. Getting at the most two tails.

4) The following table shows the investment made by some families. Show the information by a histogram.

Investment (Thousand Rupees)	10-15	15-20	20-25	25-30	30-35
No. of families	30	50	60	55	15

Q.4 Solve the following questions. (Any two) **(8)**

1) In the following table,the toll paid by drivers and the number of vehicles is shown. Find the mean of the toll by 'assumed mean' method.

Toll (Rupees)	300 - 400	400 - 500	500 - 600	600 - 700	700 - 800
No. of vehicles	80	110	120	70	40

2) A manufacture marks an article at Rs. 5000. He sells it to a wholesaler at a discount of 25% on the marked price and the wholesaler sells it to a retailer at a discount of 15% on the marked price.The reailer sells it to a consumer at the price. If all the sales are intra-state and the rate of GST is 12%

i. the amount inclusive of tax (under GST) which the wholesaler pays for the article.

ii. the amount inclusive of tax (under GST) which the retailer pays for the article.

iii. the amount of tax (under GST) which the wholesaler pays to the Central Government.

iv. the amount of tax (under GST) which the retailer pays to the State Government.

3) Out of 555 km. Vishal travelled certain distance by bus and remaining distance by car. Bus travels with an average speed of 60 km/hr and the average speed of car is 75 km/hr. He takes total 8 hours to complete the journey. Find the distance that Vishal travelled by bus.

Q.5 Solve the following questions. (Any one) **(3)**

1) A bag contains in all 50 balls. Some of them are white, some are blue and some are red. The number of white balls is 11 times the number of blue balls. The number of red balls is less than the number of white balls. Also, the number of red balls is more than the number of blue balls. If one of the balls is selected at random from the bag, what is the probability that it is red?

2) Two types of boxes A, B are to be placed in a truck having capacity of 10 tons. When 150 boxes of type A and 100 boxes of type B are loaded in the truck, it weighs 10 tons. But when 260 boxes of type A are loaded in the truck, it can still accommodate 40 boxes of type B, so that it is fully loaded. Find the weight of each type of box.