Mathematics - I
Practice Paper - II

Time : 2 Hrs. **Total Marks : 40**

Q. 1 (A) Solve the following questions. (Any four) **[4 Marks]**

1. In an exam 50 students passed in English. 60 students passed in Mathematics. 40 students passed in both the subjects. None of them fail in both the subjects. Find the number of students who passed at least in one of the subjects.
2. If $P(y) = y^2 - 3\sqrt{2}\,y + 1$ then find $P(3\sqrt{2})$.
3. Using the property $\frac{a}{b} = \frac{ak}{bk}$, fill in the blanks of the following.

   $\frac{5}{7} = \frac{....}{28} = \frac{35}{....} = \frac{....}{3.5}$
4. Ajay is younger than Vijay by 5 years. Sum of their ages is 25 years. What is Ajay's age ?
5. If class mark is 8 and class width is 4 then find the class.
6. For $x + 1 = 0$, what is the value of polynomial $2x^3 + 2x$?

Q. 1 (B) Solve the following questions. (Any Two) **[4 Marks]**

1. Divide polynomial $3x^3 - 8x^2 + x + 7$ by $x - 3$ using synthetic division method and write quotient and remainder.
2. If $\frac{a}{b} = \frac{2}{3}$ then find value of $\frac{a^3 + b^3}{b^3}$
3. The sum of digits in a two-digit number is 9. The number obtained by interchanging the digits exceeds the original number by 27. Find the two digit number.

Q. 2 (A) Choose the correct alternatives. **[4 Marks]**

1. If the Face Value of a share is ₹ 100 and market value is ₹ 75, then which of the following statements is correct ?

   (a) The share is at premium of ₹ 175 (b) The share is at discount of ₹ 25

   (c) The share is at premium of ₹ 25 (d) The share is at discount of ₹ 75
2. For an given A. P. $t_7 = 4$, $d = -4$ then $a = ...$

   (A) 6 (B) 7 (C) 20 (D) 28
3. One of the roots of equation. $x^2 + mx - 5 = 0$ is 2; find m.

   (a) -2 (b) $-\frac{1}{2}$ (c) $\frac{1}{2}$ (d) 2

4. If $n(A) = 2, P(A) = \frac{1}{5}$, then $n(S) = ?$

(a) 10 (b) $\frac{5}{2}$ (c) $\frac{2}{5}$ (d) $\frac{1}{3}$

Q. 2 (B) Solve the following questions. (Any two) **[4 Marks]**

1. Find 25^{th} term of A.P. 12, 16, 20, 24, ...
2. α, β are roots of $n^2 - 2n - 9 = 0$ then find (i) $\alpha^2 + \beta^2$ (ii) $\alpha^3 + \beta^3$
3. $49x - 57y = 172; 57x - 49y = 252$

Q. 3 (A) Complete the following activities. (Any Two) **[4 Marks]**

1. Points are to be recognized on X – Y Plane to draw graph of equation $2x + 3y = 12$. So, fill the boxes given below and identify points.

x	☐	3	6	☐
y	4	☐	☐	6
(x, y)	☐	☐	☐	☐

2. If $x = 3$ is a root of equation $kx^2 - 10x + 3 = 0$ then complete following activity and find k.

☐ is a root of quardratic equation $kx^2 - 10x + 3 = 0$

$\therefore$ Put $x =$ ☐ in equation.

$K \times$ ☐ $- 10 \times$ ☐ $+ 3 = 0$

$\therefore$ ☐ + ☐ $+ 3 = 0$

$\therefore$ $K \times$ ☐ + ☐ $= 0$

$\therefore$ $K = \frac{\square}{\square} = \square$

3. Shares of FV ₹ 5 are purchased at a premium of ₹ 20. Then, complete the following activity and find number of shares purchased for ₹ 20,000

MV = ₹ ☐

No. of Shares $= \frac{\square}{\square} = \square$

Q. 3 (B) Solve the following questions. (Any two) **[4 Marks]**

1. The taxi fare is ₹ 14 for the first kilometer and ₹ 2 for each additional kilometre. What will be the fare for 10 kilometres ?
2. If roots of equation $3y^2 + ky + 12 = 0$ are real and equal then find k.
3. Solve : $5x + 2y = -3$; $x + 5y = 4$

Q. 4 Solve the following questions (Any three) **[9 Marks]**

1. Sum of first 55 terms in an A.P. is 3300. Find its 28^{th} term.
2. Solve the following simultaneous equation : $99x - 101y = 499$; $101x + 99y = 501$
3. Vaibhav has purchased 200 shares of FV ₹ 125 at premium of ₹ 35. Company declared 30 % dividend. Find rate of return on his investment.
4. Suyash scored 10 marks more in second test than that in the first. 5 times the score of the second test is the same as square of the score in the first test. Find his score in the first test.

Q. 5 Solve the following questions (Any One) **[4 Marks]**

1. The maximum bowling speed (kms/hour) of 33 players at a cricket coaching centre is given below

Bowling Speed (kms/hr)	85 – 100	L 100 – 115	115 – 130	130 – 145
No. of Players	9	11	8	5
	f_1	f_m	f_2	

Find the modal bowling speed of a player.

2. There are six cards in a box, each bearing a number from 0 to 5. Find the probability of each of the following events, that a card drawn shows,
   (1) a natural number. (2) a number less than 1.
   (3) a whole number. (4) a number is greater than 5.

Q. 6 Solve the following questions. (Any One) **[3 Marks]**

1. Electricity used by some families is shown in the following table. Find the mode for use of electricity.

Use of electricity (Unit)	0 - 20	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120
No. of families	13	50	70	100	80	17

2. Mr. Suresh sold shares of FV ₹ 80 at the discount of ₹ 20 and received ₹ 5,992.92. The brokerage charged was 0.1 % and GST on brokerage is 18 %, then find the number of shares he sold.

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