Time : 2 Hours]                                                                        [Total Marks : 40

1. (A) Solve *any four* of the following subquestions :                                          4

   (1) If $\sqrt{3}(\sqrt{7}-\sqrt{3})=\sqrt{a}+b$, then find the values of $a$ and $b$.

   (2) If $2x+y=9$ and $3x-y=6$, then find the value of $x$.

   (3) A football player scored 3, 4, 3, 5, 4, 5, 4 goals in 7 matches. Find the mean of the goals.

   (4) Find the value of $x$, if $\left|\frac{1}{2}x-5\right|=0$.

   (5) What is the ratio of 2 kg 700 g to 900 g?

   (6) How much education cess at 3% (2% + 1%) is levied on income tax ₹ 1,25,000.

 (B) Solve *any two* of the following subquestions :                                          4

   (1) Find the value of $x$, if $\frac{1}{x-2y}=\frac{1}{3}$ and $\frac{1}{x+2y}=\frac{1}{7}$

   (2) Decide whether $(x+1)$ is a factor of the polynomial $(x^3+x^2-x-1)$ or not.

   (3) A survey was conducted to know about milch animals owned by 80 families of a village. It was found that 44 families owned buffalo, 31 families owned cows and 5 families owned buffalo as well as cows. Draw a Venn diagram to represent this information.

2. (A) Choose the correct alternative :                                                       4

   (1) If for an A.P. $d=11$, then $t_{17}-t_{15}=\ldots\ldots$ .

    (A) 2   (B) 22   (C) 33   (D) 13

   (2) A trader sold an article for ₹ 8000 and collected GST ₹ 960. What is the rate of GST?

    (A) 28%   (B) 18%   (C) 12%   (D) 5%

   (3) What is the value of the discriminant for the quadratic equation $2x^2+5\sqrt{3}x+6=0$?

    (A) 27   (B) 123   (C) 48   (D) $25\sqrt{3}-48$

   (4) A die is rolled. What is the probability that the number on the upper surface is a multiple of 4?

    (A) $\frac{2}{3}$   (B) $\frac{1}{3}$   (C) $\frac{1}{2}$   (D) $\frac{1}{6}$

 (B) Solve *any two* of the following subquestions :                                          4

   (1) If the value of the derterminant $\begin{vmatrix} m & 2 \\ -3 & 7 \end{vmatrix}$ is 34, find the value of $m$.

   (2) How many two-digit numbers are divisible by 3?

   (3) Solve : $5x^2-22x-15=0$

3. (A) Complete *any two* of the folliowing activities :                                         4

   (1) Six faces of a die are as shown below :

    | $a$ | | $b$ | | $c$ | | $d$ | | $e$ | | $a$ |

   If the die is rolled once, find the probability of getting a vowel on the upper face

    (i) $S=$ ☐

    (ii) $\therefore n(S)=$ ☐

    (iii) Let $A$ be the event of getting a vowel on the upper face. Then $A=$ ☐   $\therefore n(A)=$ ☐

(iv) $P(A) = \dfrac{n(A)}{n(S)} = \dfrac{\square}{\square} = \boxed{\phantom{x}}$

(2) Sampatrao invested ₹ 12525 in shares of FV ₹ 10 when MV was ₹ 125. He paid 0.2% brokerage. How many shares did he buy?
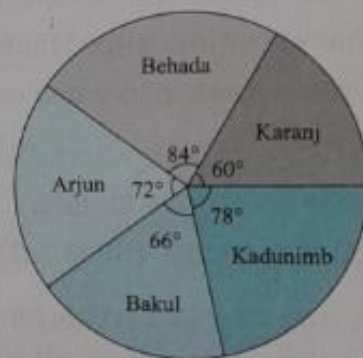
Brokerage per share $= \dfrac{\square}{100} \times \boxed{\phantom{x}} = ₹\,0.25$

Cost of one share $= ₹\,\boxed{\phantom{x}} + ₹\,0.25 = ₹\,\boxed{\phantom{x}}$

Number of shares bought $= \dfrac{₹\,\boxed{\phantom{x}}}{₹\,125.25} = 100$

(3) On an environment day, students planted 120 trees under plantation project. This information is given in the table and the pie diagram, Complete the activity based on it.

| Name of the tree | Measure of the central angle | Number of trees |
|---|---|---|
| Karanj | 60° | $\boxed{\phantom{xx}}$ |
| Behada | 84° | 28 |
| Arjun | $\boxed{\phantom{xx}}$ | 24 |
| Bakul | $\boxed{\phantom{xx}}$ | 22 |
| Kadunimb | 78° | $\boxed{\phantom{xx}}$ |
| Total | 360° | 120 |



(B) Solve *any two* of the following subquestions :

(1) Compare the quadratic equation $\sqrt{3}x^2 + 2\sqrt{2}x - 2\sqrt{3} = 0$ with $ax^2 + bx + c = 0$ and find the value of the discriminant. Determine the nature of the roots.

(2) Neela saves in a 'Mahila Bachat Gat' ₹ 5 on the first day, ₹ 7 on the second day, ₹ 9 on the third day and so on. What will be her savings in the month of August?

(3) Solve the following simultaneous equations :

$2x - 3y = 9;\ 2x + y = 13$

4. Solve *any three* of the folliowing subquestions :

(1) A trader sold electric fans costing ₹ 56,000 (with GST). Find the amount of (i) CGST (ii) SGST and the taxable value of electric fans, if the rate of GST is 12%

(2) The 9th term and the 21st term of an A.P. are 75 and 183 respectively. Find 81th term of the A.P.

(3) Solve the simultaneous equations $x + y = 4;\ 2x - 3y = -2$ graphically.

(4) Three horses A, B and C are in a race. A is twice as likely to win as B and B is twice as likely to win as C. What is their probabilities?

**5.** Solve *any one* of the folliowing subquestions :

4

(1) The amount collected by 15 students for flood relief fund is given below. Answer the following questions :

| Amount (in ₹) | Number of Students |
|---|---|
| 0–10 | 3 |
| 10–20 | 4 |
| 20–30 | 5 |
| 30–40 | 2 |
| 40–50 | 1 |

(i) How many students collected less than ₹ 20?

(ii) Find the mean amount collected by a student.

(iii) Find the probability of the students collecting the highest amount.

(iv) Find the total amount collected.

(2) A natural number is greater than three times its square root by 4. Find the number.

**6.** Solve *any one* of the folliowing subquestions :

3

(1) The coordinates of the point of intersection of the lines $ax + by = 7$ and $bx + ay = 5$ is (3, 1). Find the values of $a$ and $b$.

(2) The percentage of world population of countries is given in the following table. Find the value of $a$. If a pie diagram is to be drawn, what would be the measure of the central angle for USA.

| Country | India | China | Russia | USA | Others | Total |
|---|---|---|---|---|---|---|
| Percentage of population | 15 | 20 | $a$ | $a$ | 25 | 100 |