## Section B (Any four)

Question 5

  a. Determine the A.P whose third term is 16 and 7th term exceeds the 5th term by 12. **[3]**

  b. Mr. Krishna opens a recurring deposit account of 600/- per month at 12% p.a. If he is paid 7668/- as maturity amount, how many installments does he need to pay? **[3]**

  c. Use graph paper for this question.
(i) Plot the points P (0, 2) and Q (3, 2). Reflect P in the x-axis to get P' and Q in the origin to get Q'.
(ii) Write the geometrical name of PQP'Q'

    (i)   Find the perimeter and area of PQP'Q' **[4]**

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Question 6

  a. Use properties of proportion to solve for x: $\dfrac{x^4 + 9}{6x^2} = \dfrac{25}{24}$ **[3]**

  b. If $A = \begin{bmatrix} 0 & 2 \\ -2 & 3 \end{bmatrix}$ $B = \begin{bmatrix} 1 & 4 \\ -3 & 3 \end{bmatrix}$ $C = \begin{bmatrix} 3 & 4 \\ 4 & -1 \end{bmatrix}$. Find $(A – B) C$ **[3]**

  c. Prove that**:** $\dfrac{Cos\ A\ Cot\ A}{1 – Sin\ A} = 1 + Cosec\ A$ **[4]**

Question 7

  a. Solve : $\sqrt{\dfrac{x}{3}} + 6\sqrt{\dfrac{3}{x}} = 5$ **[3]**

  b. In ΔPQR, MN is parallel to QR and $\dfrac{PM}{MQ} = \dfrac{2}{3}$ **[3]**

    (i)   Find MN/QR
    (ii)   Prove that ΔOMN and ΔORQ are similar
    (iii) Find, area ΔOMN: area ΔORQ
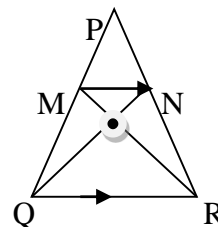
  c. In ΔABC, A (3, 5), B (7, 8) and C (1, – 10). Find the equation of the median through A. **[4]**
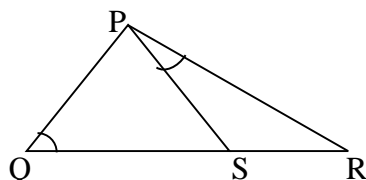
Question 8

  a. Some members of a club decided to go for a picnic and hired a bus for Rs.6000. If 5 more members had joined, it would have cost each one Rs.40 less for the bus. How many members went for the picnic? **[3]**

  b. Find the arithmetic mean of the following data: **[3]**

Classes	1- 50	50 - 100	100 -150	150 -200	200- 250	250- 300
F	4	8	16	13	6	3

c. From a solid cylinder of height 24 cm and radius 7cm, a conical cavity of same radius and height are made. Calculate the volume and surface area of the remaining solid. **[4]**

Question 9

a. Vaseem opens a recurring deposit with a bank for 3 years and deposits 500/- per month. The interest value of this account is Rs.2220. Find the rate of interest paid by the bank and the maturity value. **[3]**

b. In ΔPQR, S is a point on QR so that $\angle Q = \angle$ SPR. If QS = 5cm and SR = 4cm, find PR. **[3]**


c. Hundred identical cards are numbered from 1 to 100. The cards are well shuffled and then a card is drawn. Find the probability that the number on card drawn is:

(i) a multiple of 5   (ii) a multiple of 6

(iii) between 40 and 60   (iv) greater than 85 **[4]**

Question10

a. Facorise the polynomial: $2x^3 + 3x^2 - 9x - 10$ **[3]**

b. In the figure, ΔABD is inscribed in the circle. EDC, EA and BC are tangents to the circle. $\angle$E = 40º, $\angle$ADB = 60º. Find $\angle$EDA, $\angle$ DBA and $\angle$ BCD.
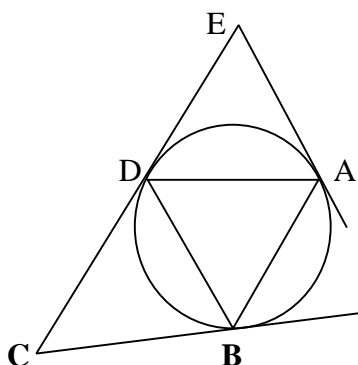
c. A deck of cards is well shuffled and one card is selected random. Find the probability that it is (i) a red card or a queen   (ii) a multiple of 3
(ii) A red face card   (iv) a nine and an ace **[4]**

Question11

a. When a building under construction was observed from a point P, 100 m from its base, the angle of elevation of the top was 30º. After its completion when it was again observed from the same point, the angle changed to 60º. How much higher

was the building raised, from the time it was first observed ($\sqrt{3}$ = 1.732) **[4]**

a. The marks obtained by 100 students in a mathematics test are given below.
   Draw an ogive for the given distribution and use the ogive to estimate
   (i) median
   (ii) upper quartile
   (iii)Number of students failed, if the pass percentage was 50 **[6]**

Marks	0 - 10	10 - 20	20 - 30	30-40	40-50	50-60	60-70	70-80	80-90	90-100
Number of students	3	7	12	17	23	14	9	6	5	4