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| Q.P. SET CODE |
| B |

MT - X

Seat No.

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2015 __ __ 1100 - MT - X - MATHEMATICS (71) ALGEBRA - SET - B (E)

Time : 2 Hours

(Pages 4)

Max. Marks : 40

Note :

- (i) All questions are compulsory.
- (ii) Use of calculator is not allowed.

Q.1. Solve ANY Five of the following :

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- (i) For the given sequence, find the next four terms : 2, 4, 8, 16,

- (ii) Find the value of discriminant of the following equation :
$$\sqrt{3}x^2 + 2\sqrt{2}x - 2\sqrt{3} = 0 .$$

- (iii) Determine whether the given value of 'x' is a root of given quadratic equation : $x^2 + x - 1 = 0$, $x = 2$.

- (iv) Write one solution of the equation $2x + y = 10$.

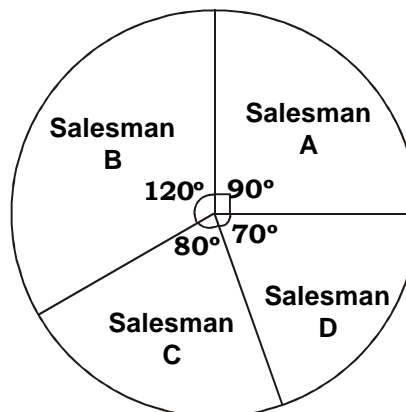
- (v) One card is drawn from a well- shuffled pack of 52 cards. Find the probability of getting the jack of hearts.

- (vi) For a certain frequency distribution the values of Mean and Mode are 54.6 and 54 respectively. Find the value of median.

Q.2. Solve ANY FOUR of the following :**8**

- (i) Find the twenty fifth term of the A. P. : 12, 16, 20, 24,
- (ii) Solve the following quadratic equation by factorization method :
 $7x^2 + 4x - 20 = 0$.
- (iii) Find the first three terms of the sequence for which S_n is given below : $S_n = \frac{n^2(n+1)^2}{4}$
- (iv) What is the equation of Y - axis? Hence, find the point of intersection of Y - axis. and the line $y = 3x + 2$.
- (v) Sachin buys fish from a shop for his aquarium. The shopkeeper takes out one fish at random from a tank containing 5 male fish and 8 female fish. What is the probability that the fish taken out is a male fish?

- (vi) The sales due to salesmen in a week are given below by the pie diagram. Study the diagram and answer the following questions if the total sale due to salesman A is Rs. 18000.
- (a) Find the salesman with highest sale.
- (b) Find the total sale.

**Q.3. Solve ANY THREE of the following :****9**

- (i) Find t_n for an Arithmetic Progression where $t_3 = 22$, $t_{17} = -20$.
- (ii) Solve the following quadratic equations by completing square :
 $3y^2 + 7y + 1 = 0$.

(iii) A die is thrown then find the probability of getting.

- (i) an odd number
- (ii) a perfect square
- (iii) a number greater than 3

(iv) Represent the following data by histogram.

| | | | | | | |
|------------------------------|---------|---------|---------|---------|---------|-------|
| Price of sugar per kg (in ₹) | 18 - 20 | 20 - 22 | 22 - 24 | 24 - 26 | 26 - 28 | Total |
| Number of weeks | 4 | 8 | 22 | 12 | 6 | 52 |

(v) Draw frequency polygon for the following data on land holding :

| | | | | | | | |
|------------------|---------|---------|---------|---------|---------|---------|---------|
| Area in hectares | 11 - 20 | 21 - 30 | 31 - 40 | 41 - 50 | 51 - 60 | 61 - 70 | 71 - 80 |
| No. of farmers | 58 | 103 | 208 | 392 | 112 | 34 | 12 |

Q.4. Solve ANY TWO of the following :

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(i) Neela saves in a 'Mahila Bachat gat' Rs. 2 on the first day, Rs. 4 on the second day, Rs. 6 on the third day and so on. What will be her saving in the month of February 2010 ?

(ii) Solve the following simultaneous equations :

$$\frac{2}{x} + \frac{6}{y} = 13; \quad \frac{3}{x} + \frac{4}{y} = 12$$

(iii) Two dice are thrown, find the probability of getting :

- (i) The sum of the numbers on their upper faces is divisible by 9.
- (ii) The sum of the numbers on their upper faces is at the most 3.
- (iii) The number on the upper face of the first die is less than the number on the upper face of the second die.

Q.5. Solve ANY TWO of the following :

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- (i) Tinu takes 9 days more than his father to do a certain piece of work. Together they can do the work in 6 days. How many days will tinu take to do that work.
- (ii) Monthly hostel charges in a college comprises of two parts, one fixed part for the stay in the hostel and the varying part depending on the number of days one has taken food in the mess. Ram takes food for 20 days and pays Rs. 1700 as hostel charges and Rahim takes food for 24 days and pays Rs. 1900 as hostel charges. Find the fixed charges and the cost of the food per day.
- (iii) For the data given find median number of packages received per day by a post office.
Below is given frequency distribution of no. of packages received at a post office per day.

| | | | | | | |
|-----------------|---------|---------|---------|---------|---------|---------|
| No. of packages | 10 - 20 | 20 - 30 | 30 - 40 | 40 - 50 | 50 - 60 | 60 - 70 |
| No. of days | 2 | 8 | 16 | 24 | 30 | 20 |

Best Of Luck 🍀