MT

2018 ____ ____ 1100 **Seat No.** | | | | | | | |

MT - MATHEMATICS (71) Algebra - SEMI PRELIM - I - PAPER - V

Time : 2 Hours **(Pages 6)** **Max. Marks : 40**

Q.1. (A) Solve the following : (Any 4) **4**

1. Write the following ratio in the reduced form
Radius to the diameter of a circle.

2. In the following table, the information is given about the number of families and the siblings in the families less than 14 years of age. Find the mode of the data.

No. of siblings	1	2	3	4
Families	15	25	5	5

3. Observe the table given below. Check and decide, whether the individuals have to pay income tax

Sr. No.	**Individuals**	**Age**	**Taxable income** (₹)	**Will have to pay income tax or not**
1.	Miss. Nikita	27	₹ 2,34,000	
2.	Mr. Desilva	81	₹ 4,50,000	

4. For the following numbers write the ratio of first number to second number in the reduced form: 36, 90

5. Mukund's yield for 7 years was 10, 7, 5, 3, 9, 6, 9. Find the mean of yield per acre:

6. If 90% of income is used for daily expense 3% is deposited in bank. How much percent of income is held in hand?

Q.1. (B) Solve the following : (Any 2) **4**

1. Compare the following pairs of ratios: $\frac{9.2}{5.1}, \frac{3.4}{7.1}$

2. In a basket there are 10 tomatoes. The weight of each of these tomatoes in grams is as follows 60, 70, 90, 95, 50, 65, 70, 80, 85, 95.
Find the median of the weights of tomatoes.

3. Alka spends 90% of the money that she receives every month, and saves ₹ 120. How much money does she get monthly?

Q.2. (A) Solve the following : **4**

1. 15, 10, 5, ... In this A.P. the sum of first 10 terms is ..... .
(A) –75 (B) –125
(C) 75 (D) 125

2. The business between two GSTIN businessman is known as ..... .
(A) BB (B) B2B
(C) BC (D) B2C

3.

No. of trees planted by each student	1-3	4-6	7-9	10-12
No. of students	7	8	6	4

The above data is to be shown by a frequency polygon. The coordinates of the points to show number of students in the class 4-6 are . . . .
(A) (4, 8) (B) (3, 5)
(C) (5, 8) (D) (8, 4)

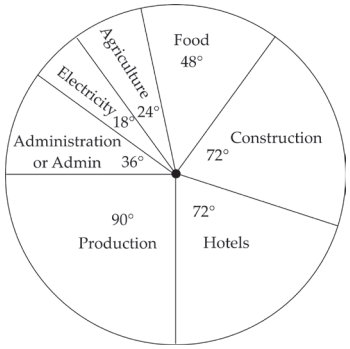
4. The NAV of a unit in mutual fund scheme is ₹ 10.65 then find the amount required to buy 500 such units.
(A) 5325 (B) 5235
(C) 532500 (D) 53250

Q.2. (B) Solve the following : (Any 2) **4**

1. Given Arithmetic Progression 12, 16, 20, 24, ...
Find the 24^{th} term of this progression.

2. 'Chetana Store' paid total GST of ₹ 1,00,500 at the time of purchase and collected GST ₹ 1,22,500 at the time of sale during 1st of July 2017 to 31st July 2017. Find the GST payable by Chetana Stores.

3. The pie diagram shows the proportions of different workers in a town. Answer the following questions with its help.



(i) If the total workers is 10,000; how many of them are in the field of construction?

(ii) How many workers are working in the administration?

Q.3. (A) Solve the following activity : (Any 2) **4**

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 (₹)	300-400	400-500	500-600	600-700	700-800
No. of Vehicles	80	110	120	70	40

Solution:

Assumed Mean (A) = 550

Toll collected ***(in rupees)***	**Class Mark** (x_i)	$d_i = x_i - A$ $= x_i -$ ☐	**No. of vehicles** (f_i)	$f_i d_i$
300 - 400	350	–200	80	–16000
400 - 500	☐	–100	110	☐
500 - 600	☐ ←A	0	120	0
600 - 700	650	100	70	7000
700 - 800	750	200	40	☐
Total			$N = \Sigma f_i$ $= 420$	$\Sigma f_i d_i =$ ☐

$\bar{d} = \frac{\square}{\sum f_i}$

$= \frac{\square}{420}$

$= -28.57$

Mean $(\bar{x})$ = **A** + $\bar{d}$

= 550 + (– 28.57)

= 521.43

∴ **Mean of the money collected is ₹ 521.43.**

2. Smita has invested ₹ 12,000 and purchased shares of FV ₹ 10 at a premium at ₹ 2. Final the number of shares she purchased. Complete the given activity to get the answer.

Solution:

Face value = ₹ 10, Premium = ₹ 2

∴ Market value = Face value + $\square$ = $\square$ + $\square$

= $\square$

∴ No. of Shares = $\frac{\text{Total Investment}}{\text{Market value}}$

$= \frac{12000}{\square}$

$= \square$

∴ Smita has purchased $\square$ shares.

3. First term and common difference of an A.P. are 6 and 3 respectively: Find S_{27}

Solution:

$a = 6$, $d = 3$, $S_{27} = ?$

$S_n = \frac{n}{2}\ [\square + (n-1)\ d]$

∴ $S_{27} = \frac{27}{2}\ [12 + (27-1)\square\ ]$

$= \frac{27}{2} \times \square$

$= 27 \times 45$

∴ $S_{27} = \square$

Q.3. (B) Solve the following activity : (Any 2) **4**

1. In an A.P. 17^{th} term is 7 more than 10^{th} term. Find the common difference?

2. Market value of a share is ₹ 200. If the brokerage rate is 0.3% then find the purchase value of the share.

3. Draw a histogram of the following data.

Height of student (cm)	135-140	140-145	145-150	150-155	30-35
No. of students	4	12	16	8	15

Q.4. Solve the following : (Any 3) **9**

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. In the natural numbers from 10 to 250, how many are divisible by 4?

3. Smt. Malhotra purchased solar panels for the taxable value of ₹ 85,000. She sold them for ₹ 90,000. The rate of GST is 5%. Find the ITC of Smt. Malhotra. What is the amount of GST payable by her ?

4. In an A.P., first term is – 5 and last term is 45. If sum of all the numbers in the A.P. is 120, then how many terms are there? What is the common difference.

Q.5 Solve the following : (Any 1) **4**

1. Anna Patil (Thane, Maharashtra) supplied vacuum cleaner to a shopkeeper in Vasai (Mumbai) for the taxable value of ₹ 14,000, and GST rate of 28%. Shopkeeper sold it to the customer at the same GST rate for ₹ 16,800 (taxable value) Find the following -
   (1) Amount of CGST and SGST shown in the tax invoice issued by Anna Patil.
   (2) Amount of CGST and SGST charged by the shopkeeper in Vasai.
   (3) What is the CGST and SGST payable by shopkeeper in Vasai at the time of filing the return.

2. In a handloom factory different workers take different periods of time to weave a saree. The number of workers and their required periods are given below. Present the information by a frequency polygon.

No. of days	8-10	10-12	12-14	14-16	16-18	18-20
No. of workers	5	16	30	40	35	14

Q.6 Solve the following : (Any 1) **3**

1. The following table shows the classification of number of vehicles and their speeds on Mumbai-Pune express way. Find the median of the data.

Average Speed of Vehicles (Km/hr)	60-64	65-69	70-74	75-79	80-84	85-89
No. of Vehicles	10	34	55	85	10	6

2. Prepare Business to Consumer (B2C) tax invoice using given information. Write the name of the supplier, address, state, Date, invoice number, GSTIN etc. as per your choice. Supplier : M/s ..... Address ..... State ..... Date .....
Invoice No. ..... GSTIN .....
Particulars - Rate of Mobile Battery - ₹ 200 Rate of GST 12% HSN 8507, 1 pc.
Rate of Headphone - ₹ 750 Rate of GST 18% HSN 8518, 1 pc.

Best of Luck