

Class -10 Maharashtra Board
BOARD QUESTION PAPER: MARCH 2019
MATHS (PART - I)

Time: 2 Hours

Max. Marks: 40

Note:

- i. All questions are compulsory.
 - ii. Use of calculator is not allowed.
 - iii. Figures to the right of questions indicate full marks.
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1. (A) Solve the following questions (Any four): **[4]**

- i. Find the median of:
66, 98, 54, 92, 87, 63, 72.
- ii. Multiply and write the answer in the simplest form:
 $5\sqrt{7} \times 2\sqrt{7}$
- iii. If $3x + 5y = 9$ and $5x + 3y = 7$, then find the value of $x + y$.
- iv. Write the ratio of second quantity to first quantity in the reduced form:
5 dozen pens, 120 pens.
- v. Write the following polynomial in coefficient form:
 $2x^3 + x^2 - 3x + 4$.
- vi. For computation of income tax which is the assessment year of financial year 01-04-2016 to 31-03-2017?

(B) Solve the following questions (Any two): **[4]**

- i. Find the value of the polynomial $2x^3 + 2x$, when $x = -1$.
- ii. If $A = \{11, 21, 31, 41\}$, $B = \{12, 22, 31, 32\}$, then find:
 - a. $A \cup B$
 - b. $A \cap B$
- iii. Sangeeta's monthly income is ₹ 25,000. She spent 90% of her income and donated 3% for socially useful causes. How much money did she save?

2. (A) Choose the correct alternative: **[4]**

- i. In the A.P. 2, -2, -6, -10, common difference (d) is:
(A) -4 (B) 2 (C) -2 (D) 4
- ii. For the quadratic equation $x^2 + 10x - 7 = 0$, the values of a, b, c are:
(A) a = -1, b = 10, c = 7 (B) a = 1, b = -10, c = -7
(C) a = 1, b = 10, c = -7 (D) a = 1, b = 10, c = 7
- iii. The tax levied by Central Government for trading within a state is:
(A) IGST (B) CGST (C) SGST (D) UTGST
- iv. If a die is rolled, what is the probability that number appearing on upper face is less than 2?
(A) $\frac{1}{3}$ (B) $\frac{1}{2}$ (C) 1 (D) $\frac{1}{6}$

(B) Solve the following questions (Any two): **[4]**

- i. First term and common difference of an A.P. are 12 and 4 respectively. If $t_n = 96$, find n.
 - ii. If $\begin{vmatrix} 4 & 5 \\ m & 3 \end{vmatrix} = 22$, then find the value of m.
 - iii. Solve the following quadratic equation:
 $x^2 + 8x + 15 = 0$.
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3. (A) Complete the following activities (Any two):

[4]

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

Activity: FV = ₹ 10, Premium = ₹ 2

$$\therefore MV = FV + \boxed{} = \boxed{} + 2 = 12$$

$$\begin{aligned} \therefore \text{Number of shares} &= \frac{\text{Total investment}}{MV} \\ &= \frac{\boxed{}}{12} = \boxed{} \text{ shares} \end{aligned}$$

- ii. The following table shows the daily supply of electricity to different places in a town. To show the information by a pie diagram, measures of central angles of sectors are to be decided. Complete the following activity to find the measures:

| Places | Supply of electricity (Thousand units) | Measure of central angle |
|-----------|--|---|
| Roads | 4 | $\frac{4}{30} \times 360 = 48^\circ$ |
| Factories | 12 | $\frac{\boxed{}}{\boxed{}} \times 360 = 144^\circ$ |
| Shops | 6 | $\frac{6}{30} \times 360 = \boxed{}$ |
| Houses | 8 | $\frac{\boxed{}}{\boxed{}} \times 360 = \boxed{}$ |
| Total | 30 | |

- iii. Two coins are tossed simultaneously. Complete the following activity of writing the sample space (S) and expected outcomes of the events:

a. Event A : to get at least one head.

b. Event B : to get no head.

Activity: If two coins are tossed simultaneously

$$\therefore S = \{ \boxed{}, HT, TH, \boxed{} \}$$

a. Event A : at least getting one head.

$$\therefore A = \{ HH, \boxed{}, TH \}.$$

b. Event B : to get no head.

$$B = \{ \boxed{} \}.$$

(B) Solve the following questions (Any two):

[4]

- Find the 19th term of the A.P. 7, 13, 19, 25,
- Obtain a quadratic equation whose roots are -3 and -7.
- Two numbers differ by 3. The sum of the greater number and twice the smaller number is 15. Find the smaller number.

4. Solve the following questions (Any three):

[9]

- Amit saves certain amount every month in a specific way. In the first month he saves ₹ 200, in the second month ₹ 250, in the third month ₹ 300 and so on. How much will be his total savings in 17 months?
- A two digit number is to be formed using the digits 0, 1, 2, 3. Repetition of the digits is allowed. Find the probability that a number so formed is a prime number.
- 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?
- Solve the following simultaneous equations graphically:
 $x + y = 0$; $2x - y = 9$.

5. Solve the following questions (Any one):

[4]

- i. The following frequency distribution table shows marks obtained by 180 students in Mathematics examination:

| Marks | Number of Students |
|---------|--------------------|
| 0 – 10 | 25 |
| 10 – 20 | x |
| 20 – 30 | 30 |
| 30 – 40 | $2x$ |
| 40 – 50 | 65 |

Find the value of x .

Also draw a histogram representing the above information.

- ii. Two taps together can fill a tank completely in $3\frac{1}{13}$ minutes. The smaller tap takes 3 minutes more than the bigger tap to fill the tank. How much time does each tap take to fill the tank completely?

6. Solve the following questions (Any one):

[3]

- i. The co-ordinates of the point of intersection of lines $ax + by = 9$ and $bx + ay = 5$ is $(3, -1)$. Find the values of a and b .
- ii. The following frequency distribution table shows the distances travelled by some rickshaws in a day. Observe the table and answer the following questions:

| Class (Daily distance travelled in km) | Continous Classes | Frequency (Number of rickshaws) | Cumulative Frequency less than type |
|--|----------------------|---------------------------------------|---|
| 60 – 64 | 59.5 – 64.5 | 10 | 10 |
| 65 – 69 | 64.5 – 69.5 | 34 | $10 + 34 = 44$ |
| 70 – 74 | 69.5 – 74.5 | 58 | $44 + 58 = 102$ |
| 75 – 79 | 74.5 – 79.5 | 82 | $102 + 82 = 184$ |
| 80 – 84 | 79.5 – 84.5 | 10 | $184 + 10 = 194$ |
| 85 – 89 | 84.5 – 89.5 | 6 | $194 + 6 = 200$ |

- a. Which is the modal class? Why?
- b. Which is the median class and why?
- c. Write the cumulative frequency (C.F.) of the class preceding the median class.
- d. What is the class interval (h) to calculate median?
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