PRACTICE PAPER

ICSE CLASS 10 – MATHEMATICS

Chapter 24 : Measures of Central Tendency

(Statistics : Mean, Median, Quartiles and Mode)

Maximum Marks: 40 Time allowed: One and a half hours

1. *Answers to this Paper must be written on the paper provided separately.*
2. *You will not be allowed to write during the first 10 minutes. This time is to be spent in reading the question paper.*
3. ***The time given at the head of this Paper is the time allowed for writing the answers.***
4. *Attempt **all** questions from **Section A** and **any two** questions from **Section B**.*
5. ***All working, including rough work, must be clearly shown, and must be done on the same sheet as the rest of the answer.***
6. ***Omission of essential working will result in loss of marks.***
7. *The intended marks for questions or parts of questions are given in brackets [ ].*
8. *Graphs given in the questions are drawn on grid lines; read values from the grid. Where a value lies between two plotted points of an ogive, assume the curve is straight between them.*

Question 1

Choose the correct answers to the questions from the given options. [8]

(Do not copy the question, write the correct answers only.)

(i) The mean of 8 numbers is 15. If each number is multiplied by 2 and then decreased by 3, the mean of the new numbers is:

(a) 30
(b) 27
(c) 33
(d) 24

(ii) The median of the numbers 3, 9, 4, 12, 7, 10 is:

(a) 7
(b) 9
(c) 8
(d) 6.5

(iii) The mode of the data 12, 14, 15, 14, 12, 14, 16 is:

(a) 14
(b) 12
(c) 15
(d) 16

(iv) In the short-cut method, the assumed mean is $A = 50$, $\Sigma fd = -40$ and $\Sigma f = 80$. The mean is:

(a) 50.5
(b) 48.5
(c) 49
(d) 49.5

(v) For 11 observations arranged in ascending order, the lower quartile is the:

(a) 2nd term
(b) 3rd term
(c) 4th term
(d) 6th term

(vi) The lower and upper quartiles of a data are 14 and 26 respectively. The inter-quartile range is:

(a) 20
(b) 40
(c) 12
(d) 6

(vii) **Assertion (A):** The median of 9 observations arranged in ascending order is the 5th observation.

Reason (R): For an odd number n of observations, the median is the ((n + 1)/2)th observation.

(a) (A) is true and (R) is false.
(b) (A) is false and (R) is true.
(c) Both (A) and (R) are true, and (R) is the correct explanation for (A).
(d) Both (A) and (R) are true, but (R) is not the correct explanation for (A).

(viii) **Assertion (A):** The mode of a grouped data is always the mid-value of the modal class.

Reason (R): The mode is found from a histogram by drawing diagonals inside the tallest rectangle.

(a) (A) is true and (R) is false.
(b) (A) is false and (R) is true.
(c) Both (A) and (R) are true, and (R) is the correct explanation for (A).
(d) Both (A) and (R) are true, but (R) is not the correct explanation for (A).

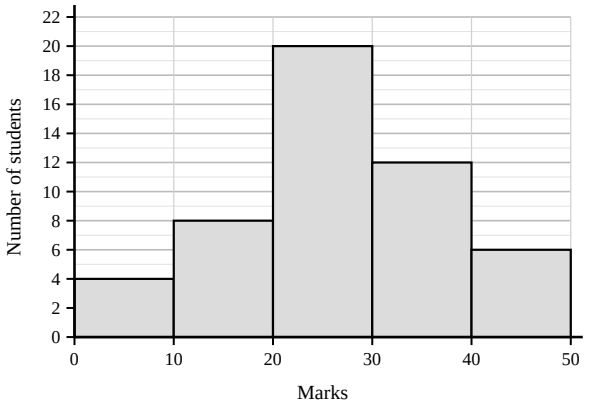
Question 2

(i) The mean of the numbers 3, x, 9, x + 4 and 2x + 1 is 13. (a) Find the value of x. (b) Find the mean of the numbers if each of them is increased by 5 and then doubled. [4]

(ii) Using the short-cut method, find the mean of the following distribution: [4]

Class interval	20–30	30–40	40–50	50–60	60–70
Frequency	6	10	14	12	8

(iii) The histogram shows the marks (out of 50) scored by 50 students (see figure). (a) Write the modal class. (b) By drawing diagonals inside the modal rectangle, find the mode. [4]

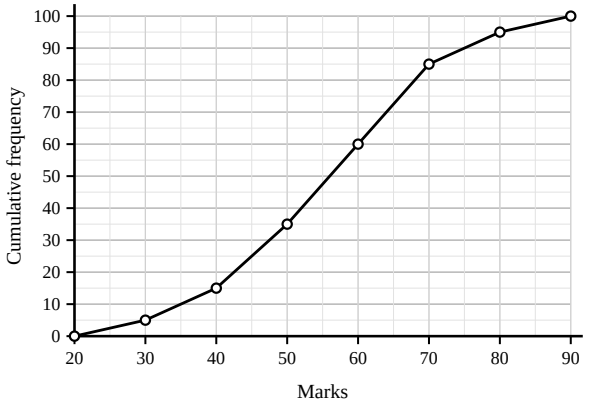


SECTION B (20 Marks)

*(Attempt **any two** questions from this Section.)*

Question 3

The ogive shows the marks obtained by 100 students in an examination (see figure).



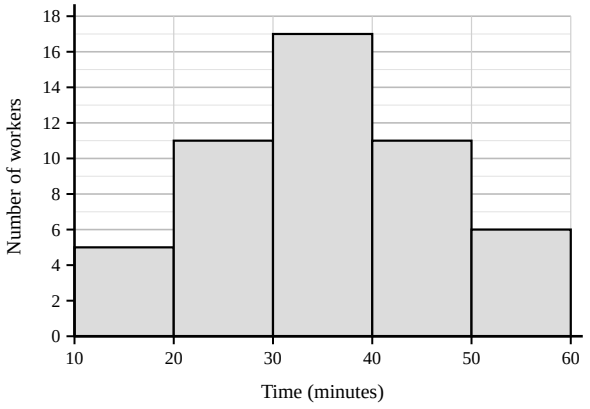
(i) Use the ogive to estimate the median marks. [3]

(ii) Estimate the lower quartile, the upper quartile and the inter-quartile range. [3]

(iii) The pass mark is 45. Find (a) the number of students who failed (b) the percentage of students who scored more than 70 marks. [4]

Question 4

The histogram shows the time (in minutes) taken by 50 workers to complete a job (see figure).



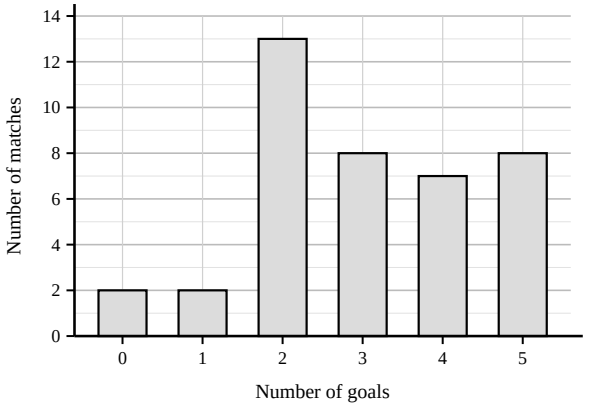
(i) Prepare the frequency table showing class intervals, class marks and frequencies. [3]

(ii) Prepare the cumulative frequency table and write the median class. [3]

(iii) Using the step-deviation method, find the mean time taken. [4]

Question 5

The bar graph shows the number of goals scored by a hockey team in each of 40 matches (see figure).



(i) Prepare the frequency table and verify that the total frequency is 40. [3]

(ii) Find the mean number of goals per match. [3]

(iii) Find (a) the mode (b) the median (c) the inter-quartile range of the data. [4]

Question 6

(i) The mean of the following distribution is 32. Find the value of f: [3]

x	**10**	**20**	**30**	**40**	**50**
Frequency	3	5	f	7	5

(ii) The marks of 15 students are: 22, 35, 18, 41, 27, 30, 25, 38, 45, 20, 33, 29, 40, 24, 36. Find the median, the lower quartile, the upper quartile and the inter-quartile range. [3]

(iii) The numbers 12, 15, 19, x − 2, x + 4, 40, 48, 55 are written in ascending order and their median is 30. (a) Find the value of x. (b) Find the inter-quartile range. [4]

— End of Question Paper —