PRACTICE PAPER

ICSE CLASS 10 – MATHEMATICS

Chapter 23 : Graphical Representation

(Statistics : Histograms, Frequency Polygon and Ogives)

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 class intervals 15–24, 25–34, 35–44 are in inclusive form. The first class in exclusive form is:

(a) 15 – 25
(b) 14.5 – 24.5
(c) 14 – 25
(d) 15 – 24.5

(ii) The class marks of a distribution are 12, 20, 28, 36, 44. The class interval whose class mark is 28 is:

(a) 22 – 34
(b) 26 – 30
(c) 24 – 32
(d) 20 – 36

(iii) A ‘less than’ ogive is drawn by plotting the cumulative frequencies against the:

(a) upper limits of the classes
(b) lower limits of the classes
(c) class marks
(d) frequencies of the classes

(iv) The cumulative frequencies of four consecutive classes are 4, 11, 25, 31. The frequency of the third class is:

(a) 25
(b) 14
(c) 11
(d) 7

(v) For a distribution with total frequency N, the median is read from the ogive as the x-coordinate of the point whose cumulative frequency is:

(a) N
(b) N/4
(c) 3N/4
(d) N/2

(vi) The ‘more than’ cumulative frequencies at 0, 10, 20, 30 are 50, 42, 30, 0 respectively. The frequency of the class 10 – 20 is:

(a) 12
(b) 30
(c) 42
(d) 8

(vii) **Assertion (A):** A ‘less than’ ogive starts from the upper limit of the first class.

Reason (R): An ogive starts from the lower limit of the first class, where the cumulative frequency is zero.

(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):** Before drawing a histogram, the classes 21–30, 31–40 are written as 20.5–30.5, 30.5–40.5.

Reason (R): The adjustment factor is ½ (31 − 30) = 0.5.

(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

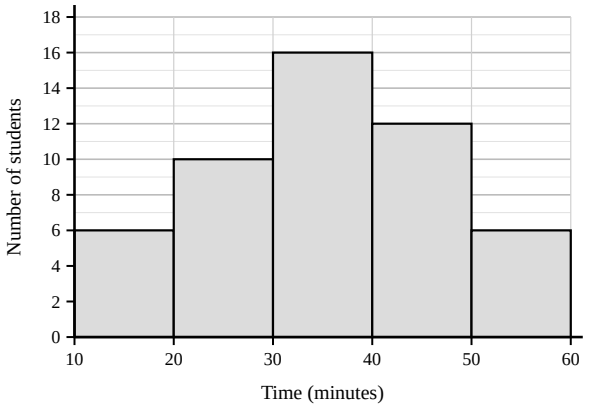
(i) The marks of 50 students are given below: [4]

Marks	**21–30**	**31–40**	**41–50**	**51–60**	**61–70**
No. of students	5	9	16	12	8

(a) Write the class intervals in exclusive form. (b) Prepare the ‘less than’ cumulative frequency table.

(ii) The class marks of a distribution are 12, 20, 28, 36, 44 with frequencies 6, 11, 15, 10, 8 respectively. (a) Find the class intervals. (b) Write the coordinates of the points that are plotted to draw the ogive of the distribution, including the starting point. [4]

(iii) The histogram shows the time (in minutes) spent on homework by 50 students (see figure). (a) Write the frequency distribution table. (b) Find the number of students who spent 30 minutes or more. [4]

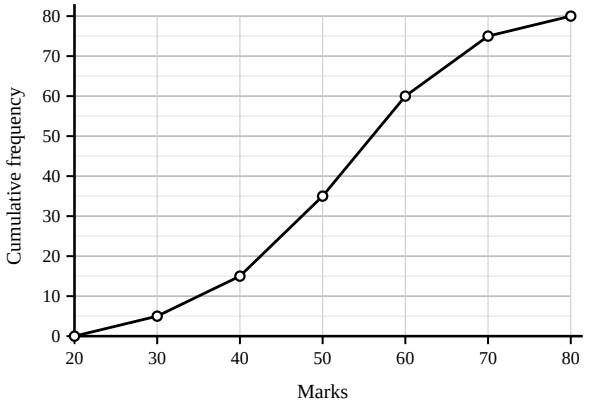


SECTION B (20 Marks)

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

Question 3

The ogive shows the marks obtained by 80 students in a test (see figure).



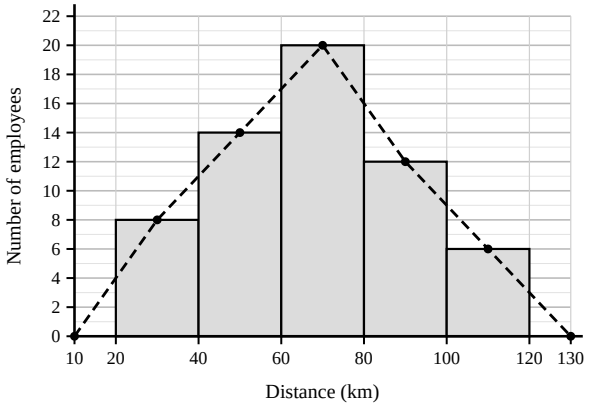
(i) Read the cumulative frequency at each upper limit and write the frequency distribution table. [3]

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

(iii) Find the number of students who scored (a) less than 35 marks (b) 45 marks or more. [4]

Question 4

The histogram and frequency polygon in the figure show the daily distance (in km) travelled by 60 employees to their office.



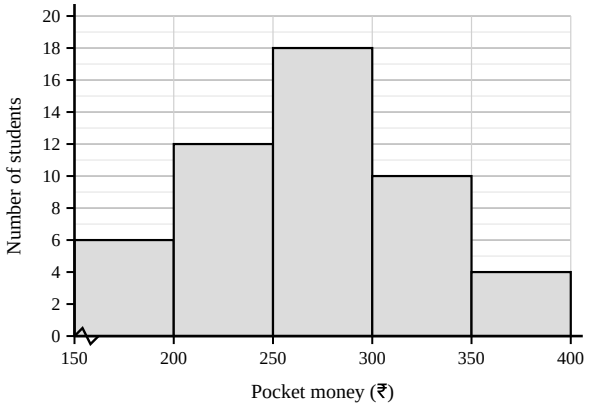
(i) Write the frequency distribution table. [3]

(ii) Write the coordinates of the points joined to form the frequency polygon, including the two points on the x-axis. [3]

(iii) Find (a) the number of employees who travel less than 60 km (b) the percentage of employees who travel 80 km or more. [4]

Question 5

The histogram shows the monthly pocket money (in ₹) of 50 students (see figure).



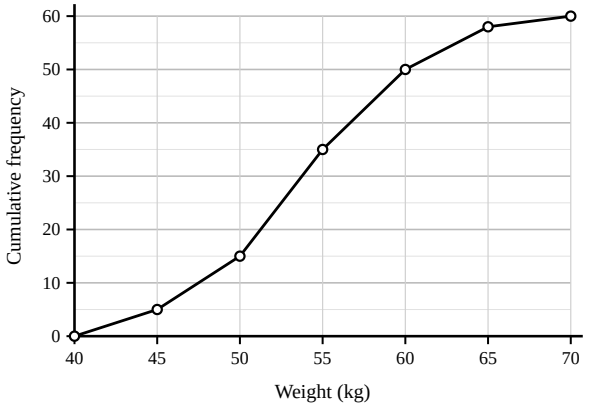
(i) Prepare the frequency table and verify that the total frequency is 50. [3]

(ii) Prepare the cumulative frequency table and write the coordinates of the points to be plotted for the ogive. [3]

(iii) Find (a) the median class (b) the number of students whose pocket money is less than ₹275. [4]

Question 6

The ogive shows the weights (in kg) of 60 students of a class (see figure).



(i) Find the number of students whose weight is between 50 kg and 60 kg. [3]

(ii) Estimate the median weight. [3]

(iii) Find (a) the lower quartile (the weight corresponding to cumulative frequency 15) (b) the number of students heavier than 62.5 kg. [4]

— End of Question Paper —