CHAPTER 13 STATISTICS

SUBJECT: MATHEMATICS **MAX. MARKS : 40**

CLASS : X **DURATION : 1½ hrs**

General Instructions:

(i). **All** questions are compulsory.

(ii). This question paper contains 2**0** questions divided into five Sections A, B, C, D and E.

(iii). **Section A** comprises of **10 MCQs** of **1 mark** each. **Section B** comprises of 4 questions of **2 marks** each. **Section C** comprises of 3 questions of **3 marks** each. **Section D** comprises of 1 question of **5 marks** each and **Section E** comprises of 2 Case Study Based Questions of **4 marks** each.

(iv). There is no overall choice.

(v). Use of Calculators is not permitted

SECTION – A

Questions 1 to 10 carry 1 mark each.

1. For the following distribution:

Class	0-5	5-10	10-15	15-20	20-25
Frequency	10	15	12	20	9

the sum of lower limits of the median class and modal class is

(a) 15 (b) 25 (c) 30 (d) 35

2. If the difference of Mode and Median of a data is 24, then the difference of median and mean is

(a) 8 (b) 12 (c) 24 (d) 36

3. The mean and mode of a frequency distribution are 28 and 16 respectively. The median is

(a) 22 (b) 23.5 (c) 24 (d) 24.5

4. The runs scored by a batsman in 35 different matches are given below:

Runs Scored	0-15	15-30	30-45	45-60	60-75	75-90
Frequency	5	7	4	8	8	3

The lower limit of the median class is

(a) 15 (b) 30 (c) 45 (d) 60

5. The median class of the following data is:

Marks	0 – 10	10 – 20	20 – 30	30 – 40	40 – 50	50 – 60
No. of students	8	10	12	22	30	18

(a) 20 – 30 (b) 30 – 40 (c) 40 – 50 (d) 50 – 60

6. For the following distribution:

Marks	Below 10	Below 20	Below 30	Below 40	Below 50	Below 60
No. of Students	3	12	27	57	75	80

the modal class is

(a) 10 – 20 (b) 20 – 30 (c) 30 – 40 (d) 50 – 60

7. For the following distribution:

Class	0-5	6-11	12-17	18-23	24-29
Frequency	13	10	15	8	11

the upper limit of the median class is

(a) 18.5 (b) 20.5 (c) 25.5 (d) 17.5

8. If the mean of the following distribution is 2.6, then the value of y is

Variable (x)	1	2	3	4	5
Frequency	4	5	y	1	2

(a) 3 (b) 8 (c) 13 (d) 24

In the following questions 9 and 10, a statement of assertion (A) is followed by a statement of reason (R). Mark the correct choice as:

(a) Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A).
(b) Both assertion (A) and reason (R) are true but reason (R) is not the correct explanation of assertion (A).
(c) Assertion (A) is true but reason (R) is false.
(d) Assertion (A) is false but reason (R) is true.

9. **Assertion (A):** The arithmetic mean of the following given frequency distribution table is 13.81.

Marks	2.5 – 5.5	5.5 – 8.5	8.5 – 11.5	11.5 – 14.5	14.5 – 17.5	17.5 – 20.5
No. of Students	7	10	15	20	25	30

Reason (R): Mean = $\sum fx / \sum f$

10. **Assertion (A):** If the value of mode and mean is 60 and 66 respectively, then the value of median is 64.

Reason (R): Median = (mode + 2 mean)/2

SECTION – B

Questions 11 to 14 carry 2 marks each.

11. Calculate mode of the following data:

Marks	0 – 20	20 – 40	40 – 60	60 – 80	80 – 100
No. of Students	5	10	12	6	3

12. Calculate median marks of the following data:

Marks	0 – 10	10 – 20	20 – 30	30 – 40	40 – 50
No. of Students	2	12	22	8	6

13. Calculate mode of the following data:

Marks	0 – 6	6 – 12	12 – 18	18 – 24	24 – 30
No. of Students	7	5	10	12	6

14. Find the mean of the following distribution:

Class	3 – 5	5 – 7	7 – 9	9 – 11	11 – 13
Frequency	5	10	10	7	8

SECTION – C

Questions 15 to 17 carry 3 marks each.

15. Daily wages of 110 workers, obtained in a survey, are tabulated below:

***Daily Wages* (*in Rs.*)**	100-120	120-140	140-160	160-180	180-200	200-220	220-240
Number of Workers	10	15	20	22	18	12	13

Compute the mean daily wages and modal daily wages of these workers.

16. The table below shows the salaries of 280 persons:

Salary (in thousand Rs.)	5-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45	45-50
No. of persons	49	133	63	15	6	7	4	2	1

Calculate the median salary of the data.

17. The arithmetic mean of the following frequency distribution is 50. Find the value of p.

Class	0 – 20	20 – 40	40 – 60	60 – 80	80 – 100
frequency	17	*p*	32	24	19

SECTION – D

Questions 18 carry 5 marks.

18. The median of the following data is 868. Find the values of x and y, if the total frequency is 100

Class	**Frequency**
800 – 820	7
820 – 840	14
840 – 860	x
860 – 880	25
880 – 900	y
900 – 920	10
920 – 940	5

OR

The distribution below gives the makes of 100 students of a class, if the median makes are 24, find the frequencies f_1 and f_2

Marks	0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40
No. of students	4	6	10	f_1	25	f_2	18	5

SECTION – E (Case Study Based Questions)

Questions 19 to 20 carry 4 marks each.

19. The COVID-19 pandemic, also known as the coronavirus pandemic, is an ongoing pandemic of coronavirus disease 2019 (COVID-19) caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). It was first identified in December 2019 in Wuhan, China.

During survey, the ages of 80 patients infected by COVID and admitted in the one of the City hospital were recorded and the collected data is represented in the less than cumulative frequency distribution table.

Age(in year)	Below 15	Below 25	Below 35	Below 45	Below 55	Below 65
No. of patients	6	17	38	61	75	80

Based on the above information, answer the following questions.

(a) Find the modal class interval. [1]

(b) Find the median class interval [1]

(c) Find the modal age of the patients admitted in the hospital. [2]

OR

(c) Find the median age of the patients admitted in the hospital. [2]

20. Overweight and obesity may increase the risk of many health problems, including diabetes, heart disease, and certain cancers. The basic reason behind is the laziness, eating more junk foods and less

physical exercise. The school management give instruction to the school to collect the weight data of each student.

During medical check of 35 students from Class X- A, there weight was recorded as follows:

Weight (in kg)	**No. of Students**
Less than 38	0
Less than 40	3
Less than 42	5
Less than 44	9
Less than 46	14
Less than 48	28
Less than 50	32
Less than 52	35

(a) Find the median class of the given data. (1)
(b) Find the modal class of the given data. (1)
(c) Calculate the median weight of the given data. (2)

OR

(c) Find the mean of the given data. (2)