PART B Workbook [कार्य-पुस्तिका]

[Competency-based Learning through **Objective Questions**]

SET-1

Fill in the Blanks

Choose appropriate word/term and fill in the blank:

1. _____ can be calculated even in case of open-ended series. (Mean/Median)
2. Mode is the _____ 3 Median and 2 Mean. (sum of/difference between)
3. Q_3 is called _____ quartile. (lower/upper)
4. _____ is not capable of further algebraic treatment. (Mean/Median)
5. If the distribution is skewed more to the left, *i.e.*, negative, then mode will be _____. (maximum/minimum)
6. _____ method is used only in case of such series where different items show different frequencies. (Inspection/Grouping)
7. Median is always a/an _____ value. (real/imaginary)
8. Percentiles divide the series into _____ equal parts. (10/100)
9. When the number of items in a series is very large, _____ is an appropriate measure of central tendency. (mode/mean)
10. Mode is identified as the value corresponding to which there is _____ frequency. (highest/lowest)

SET-2

Multiple Choice

Choose the correct option:

1. **Median is also called:**
   (*a*) mid-value (*b*) quartile
   (*c*) percentile (*d*) decile
2. **The formula for finding mean for an odd numbered frequency is _____.**
   (*a*) Size of $\left(\frac{N}{2}\right)$th item (*a*) Size of $\left(\frac{N}{2}+1\right)$th item
   (*c*) Size of $\left(\frac{N+1}{2}\right)$th item (*d*) Size of $\left(\frac{N-1}{2}\right)$th item
3. **Which of the following formulae is used to find out Q_1 in frequency distribution?**
   (*a*) $Q_1 = l_1 - \frac{\frac{N}{4} - \text{c.f.}}{f} \times i$ (*b*) $Q_1 = l_1 + \frac{\frac{N}{4} - \text{c.f.}}{f} \times i$
   (*c*) $Q_1 = l_1 - \frac{\frac{N}{2} - \text{c.f.}}{f} \times i$ (*d*) $Q_1 = l_1 + \frac{\frac{N}{2} - \text{c.f.}}{f} \times i$
4. **Mode is that value:**
   (*a*) which occurs most frequently in a distribution
   (*b*) which occurs less frequently in a distribution
   (*c*) which has middle frequency in the distribution
   (*d*) none of these

5. **'Ogive' helps to estimate _____.**

(a) mean (b) mode

(c) median (d) standard deviation

6. **Which of the following formulae is used to find out D_5 in a frequency distribution?**

(a) $D_5 = l_1 + \frac{5N - \text{c.f.}}{f} \times i$ (b) $D_5 = l_1 + \frac{\frac{N}{10} - \text{c.f.}}{f} \times i$

(c) $D_5 = l_1 + \frac{\frac{5N}{10} - \text{c.f.}}{f} \times i$ (b) $D_5 = l_1 + \frac{\frac{5N}{100} - \text{c.f.}}{f} \times i$

7. **Q_1 is known as:**

(a) lower quartile of the series (b) middle quartile of the series

(c) upper quartile of the series (d) none of these

8. **Median class in a frequency series is identified by using which of the following formulae?**

(a) Size of $\left(\frac{N}{2}\right)$th item (a) Size of $\left(\frac{N}{2}+1\right)$th item

(c) Size of $\left(\frac{N+1}{2}\right)$th item (d) Size of $\left(\frac{N-1}{2}\right)$th item

9. **In which of the following series, cumulative frequency is used to calculate median?**

(a) Individual series only (b) Both individual and discrete series

(c) Both discrete and continuous series (d) Discrete series only

10. **Deciles divide the series into _____.**

(a) 2 equal parts (b) 4 equal parts

(c) 10 equal parts (d) 100 equal parts

11. **Which of the following statements is correct?**

(a) Selection of a sample influences mean

(b) Mode is influenced by the highest and the lowest items of the series

(c) Arithmetic examination of median is possible

(d) All of these

12. **The value that can be calculated using inspection method is _____.**

(a) mean (b) median

(c) mode (d) quartile

13. **In case of asymmetrical distribution:**

(a) frequency curve is not bell-shaped (b) frequency curve is skewed to the right

(c) frequency curve is skewed to the left (d) all of these

14. **Formula of P_{55} in individual series is:**

(a) Size of $\left(\frac{N+1}{100}\right)$th item (b) Size of $55\left(\frac{N+1}{10}\right)$th item

(c) Size of $55\left(\frac{N+1}{100}\right)$th item (d) none of these

15. **The value that divides the series into more than two parts is called:**

(a) mean (b) median

(c) mode (d) partition value

16. **Inspection method is used only if:**

(a) series is homogeneous (b) series is regular

(c) series is heterogeneous (d) both (a) and (b)

17. **When arithmetic mean is 146 and median is 130, mode will be:**
(*a*) 93 (*b*) 95
(*c*) 98 (*d*) 146

18. **If mode is 63 and median is 77, arithmetic mean will be:**
(*a*) 82 (*b*) 84
(*c*) 86 (*d*) 89

SET-3

True or False

State whether the following statements are True or False:

1. The sum of deviation of items from median is zero. (True/False) [*NCERT*]
2. Median is unduly affected by extreme observations. (True/False) [*NCERT*]
3. An inclusive series is converted into an exclusive series in order to estimate median. (True/False)
4. An average alone is not enough to compare series. (True/False) [*NCERT*]
5. Median and mode can be graphically located, but not mean unless it is a situation of normal distribution. (True/False)
6. In case of frequency distribution series, inspection method helps in identification of mode. (True/False)
7. Selection of sample influences mean but not the median and mode. (True/False)
8. Given median and mean, we can calculate the mode of a series. (True/False)
9. In case of symmetrical distribution, the mean, median and mode are the same value. (True/False)
10. Upper quartile is the lowest value of top 25% of items. (True/False) [*NCERT*]

SET-4

True-False Alternatives

In the following questions (1-5), two statements are given. Read the statements carefully and choose the correct alternative among those given below:

Alternatives:

(*a*) Both the statements are true
(*b*) Both the statements are false
(*c*) Statement 1 is true and Statement 2 is false
(*d*) Statement 2 is true and Statement 1 is false

1. **Statement 1** : In case of a normal distribution, frequency curve will be bell-shaped.
Statement 2 : Cumulative frequency indicates 'less than' or 'more than' value of the series.
2. **Statement 1** : The first quartile or Q_1 is also known as lower quartile.
Statement 2 : The value that divides the series into two parts is called Partition Value.
3. **Statement 1** : Modal value has the highest frequency in the series.
Statement 2 : Modal value may not exist in the series at all.
4. **Statement 1** : While calculating median, the series must be arranged in ascending order only.
Statement 2 : While calculating Q_1 and Q_3, the series may be arranged either in ascending order or in descending order.

5. Statement 1 : The percentile values divide the distribution into 100 parts each containing 1 per cent of the observations.

Statement 2 : If Riya secured 60 percentile in an examination, it means that her position is below 40 per cent of the candidates who appeared in the examination.

SET-5

Choose the Correct Pair of Statements/Identify the Correct Sequence of Alternatives

1. From the set of statements given in Column I and Column II, choose the correct pair of statements:

Column I	Column II
A. Quartile	(*i*) Graphically calculated using histogram
B. Upper quartile in case of continuous series	(*ii*) $l_1 + \frac{\left(\frac{3N}{4}\right) - c.f.}{f} \times i$
C. Lower quartile in case of continuous series	(*iii*) Size of $\left(\frac{N+1}{2}\right)$ th item
D. Median	(*iv*) Affected by extreme values

Alternatives:

(*a*) A—(*i*) (*b*) B—(*ii*)

(*c*) C—(*iii*) (*d*) D—(*iv*)

2. Identify the correct sequence of alternatives given in Column II by matching them with respective items in Column I:

Column I	Column II
A. Median	(*i*) Size of $\left(\frac{N+1}{4}\right)$ th item of the series
B. Lower quartile	(*ii*) Divide series into 100 equal parts
C. Percentile	(*iii*) Highest frequency in the series
D. Mode	(*iv*) A positional average

Alternatives:

(*a*) A—(*ii*), B—(*iii*), C—(*iv*), D—(*i*) (*b*) A—(*iii*), B—(*i*), C—(*iv*), D—(*ii*)

(*c*) A—(*iv*), B—(*i*), C—(*ii*), D—(*iii*) (*d*) A—(*ii*), B—(*iv*), C—(*i*), D—(*iii*)

SET-6

Assertion and Reasoning

In the following questions (1-5), a statement of Assertion (A) is followed by a statement of Reason (R). Choose the correct alternative among those given below:

Alternatives:

(*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 and 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

1. Assertion (A) : Median and mode are called positional averages.

Reason (R) : The value of median and mode is worked out on the basis of their position in the statistical series.

2. Assertion (A) : In case number of items in series is very large, mode is appropriate measure of central tendency.

Reason (R) : When number of items is very large, calculating arithmetic mean is difficult.

3. Assertion (A) : Q_3 is known as upper quartile of the series.

Reason (R) : Mode of 3, 4, 3, 5, 5, 3, 2 numbers is 5.

4. Assertion (A) : If the distribution is skewed more to the right, *i.e.*, positive, then mean and median will be less than mode.

Reason (R) : Arithmetic Mean $= \frac{3\text{Median} - \text{Mode}}{2}$.

5. Assertion (A) : Mean and median can always be estimated with certainty but not the mode.

Reason (R) : Median and mode are located in the middle of the frequency distribution, the mean may not be.

ANSWERS

SET-1

1. Median **2.** difference **3.** upper **4.** Median **5.** maximum
6. Inspection **7.** real **8.** 100 **9.** mode **10.** highest

SET-2

1. (*a*) **2.** (*c*) **3.** (*b*) **4.** (*a*) **5.** (*c*) **6.** (*c*) **7.** (*a*) **8.** (*a*) **9.** (*c*) **10.** (*c*)
11. (*a*) **12.** (*c*) **13.** (*d*) **14.** (*c*) **15.** (*d*) **16.** (*d*) **17.** (*c*) **18.** (*b*)

SET-3

1. False **2.** False **3.** True **4.** True **5.** True **6.** False **7.** True **8.** True **9.** True **10.** True

SET-4

1. (*a*) **2.** (*c*) **3.** (*c*) **4.** (*b*) **5.** (*a*)

SET-5

1. (*b*) **2.** (*c*)

SET-6

1. (*a*) **2.** (*b*) **3.** (*c*) **4.** (*d*) **5.** (*b*)