

[N.B. – Answer all the questions. Each question carries ONE mark. Block fully, with a black ball- point pen, the circle of the letter that stands for the correct/best answer in the “Answer sheet” for the Multiple Choice Questions Examination.]

Candidates are asked not to leave any mark or spot on the question paper.

1. **Classifying students based on their grades (A, B, C, etc.) represents which measurement scale?**

(a) Nominal(b) Ordinal(c) Interval(d) Ratio
2. **If $y_1 = 5$, $y_2 = 2$, $y_3 = -1$, and $y_4 = 4$, $\sum_{i=1}^4 (y_i^2 + 2) = ?$**

(a) 50(b) 40(c) 54(d) 60
3. **Which one falls in the category of nominal scale?**

(a) Height(b) Temperature(c) Gender(d) Age
4. **If all the rats in Sherpur is a population, all the rats in Sherpur city is –**

(a) Data(b) Sample(c) Statistics(d) Frequency
5. **To show runs per over in a cricket match, which diagram can be used?**

(a) Histogram(b) Bar Diagram(c) Ogive(d) Frequency polygon
6. **Which statement is correct**

(a) Quartiles are well defined(b) Outliers affect Median(c) Median is always present in data(d) Quadratic mean is widely used
7. **An equation is: $y = 5x + 9$. If $\bar{x} = 20, \bar{y} = ?$**

(a) 100(b) 209(c) 109(d) 29
8. **Median can be determined from the–**

(a) Histogram(b) Frequency curve(c) Ogive(d) Pie Chart
- Answer the next two (2) questions based on the following information**

Class	≤ 20	20-25	25-50	50-60	69-70	≥ 70
Frequency	5	10	10	7	5	3
Cumulative Frequency	5	15	25	32	37	40
9. **How many values are between 20 and 70?**

(a) 20(b) 32(c) 35(d) 37
10. **Which one is the median class?**

(a) 20-25(b) 25-50(c) 50-60(d) 60-70
11. **Two sets of data are $X = 2, 4, 6$ and $Y = 4, 6, 8$; which has higher variance?**

(a) X(b) Y(c) $V(X) = V(Y)$ (d) Cannot be determined from the given information

12. For two values, the range is found to be 12. What are the values of mean deviation and standard deviation
- (a) (2,4) (b) (4,4) (c) (6, 6) (d) (8,8)
13. Which measure is unit-free?
- (a) Range (b) Mean deviation
(c) Standard deviation (d) Coefficient of variation
14. First moment around zero is –
- (a) 0 (b) 1 (c) -1 (d) Arithmetic Mean
15. The arithmetic mean of a variable is 4. What is the first raw moment around 2?
- (a) 2 (b) -2 (c) 0 (d) 8
16. Moments can be–
- i. positive
ii. not negative
iii. positive or negative
- Which one is correct?
- (a) i and ii (b) i and iii (c) ii and iii (d) i, ii and iii
17. The second central moment of the natural numbers 1 through 12 is –
- (a) 12.93 (b) 11.92 (c) 10.94 (d) 12.60
18. If $\gamma_1 > 0$, the data is -
- (a) Negatively skewed (b) Positively skewed (c) Symmetric (d) Uncertain
19. Which of the following has the strongest correlation?
- (a) -0.92 (b) 0.67 (c) 0.50 (d) 0.91
20. If $b_1 = 0.25$ and $b_2 = -0.43$, which implies higher impact of the independent variable?
- (a) b_1 (b) b_2 (c) Cannot be deter- (d) Equal impact
mined
21. In additive model, in the long run, $\sum R_t =$ –
- (a) 0 (b) 1 (c) Undefine (d) Infinity

Answer the next THREE questions based on the following information

Year	2015	2016	2017	2018	2019	2020	2021	2022
Average Temperature (°C)	22.5	23.0	24.2	24.5	25.0	25.5	26.0	27.0

22. What is the second value of the semi-average method?
- (a) 25.75 (b) 26.00 (c) 25.88 (d) 24.29
23. What kind of trend do the data show?
- (a) Upward (b) Downward
(c) Both upward & downward (d) No trend
24. Which component of the time series is most prominent in the data?
- (a) Seasonal Variation (b) General Trend (c) Irregular Variation (d) Cyclic Variation