Sylhet Cadet College

Progress Test Examination - 2022

Class: HSC

Subject: Statistics First Paper (MCQ)

Time: 20 minutes **Subject Code: 129** **Full Marks: 25**

Answer all the questions. Each question is worth one (1) mark.

1. **Which is a discrete variable?**

   (a) Weight (b) Amount of rainfall (c) Distance (d) Screen resolution

2. **If** $x_1 = 2, x_2 = -3, x_3 = 7$, **and** $x_4 = 12, \sum_{i=1}^{4} x_i^2 = ?$

   (a) 26 (b) 106 (c) 206 (d) 216

3. **Which one falls in the category of interval scale?**

   (a) Temperature (b) Speed (c) Distance (d) Film rating

4. **Which one is product of square?**

   (a) $\prod x_i^2$ (b) $(\prod x_i)^2$ (c) $\sum x_i^2 \times \sum x$ (d) $\sum x_i^2$

5. **The arithmetic mean of first n natural numbers-**

   (a) $\frac{n}{2}$ (b) $\frac{n+1}{2}$ (c) $\frac{n^2}{2}$ (d) $\frac{n^2-1}{2}$

6. **When is the relationship** $AM = HM = GM$ **true?**

   (a) All values are equal (b) The values form a geometric progression

   (c) The values form an arithmetic progression (d) All values are distinct

7. **In the presence of outlier(s), which measure of central tendency is suitable?**

   (a) Arithmetic mean (b) Median (c) Quadratic mean (d) Power mean

8. **If a rate is defined as** $R = \frac{c}{d}$**, where c is constant, then which measure is perfect?**

   (a) Weighted arithmetic mean (b) Harmonic mean

   (c) Quadratic mean (d) Weighted geometric mean

   Answer the questions 9-11 as per the below information.

   42 44 59 64 70 72 74 91 94 are 9 values.

9. **What is the 50th percentile?**

   (a) 64 (b) 70 (c) 72 (d) 71

10. **Below which value do lie 30 percent values?**

    (a) 42 (b) 44 (c) 59 (d) 64

11. **A car climbs up a mountain 1 mile at the uniform velocity of 15 miles per hour (mph) and then comes down the same distance at uniform velocity. To make the average speed 30, at what speed (mph) does the car need to climb down?**

    (a) 45 (b) ∞ (c) 0 (d) 60

12. **Which two quantiles are equal?**

    (a) Median and 3rd Quartile (b) 40th Percentile and 2nd Quartile

    (c) 5th Decile and 4th Octile (d) 3rd Septile and 2nd Quartile

13. **How many types of skewness are there?**

(a) 1 (b) 2 (c) 3 (d) 4

14. **Which relationship is correct?**

(a) $\mu_2 = \mu_2' - \mu_1^2$ (b) $\mu_2' = \mu_2 - \mu_1^2$ (c) $\mu_2 = \mu_2'^2 - \mu_1$ (d) $\mu_2^2 = \mu_2' - \mu_1^2$

15. **Which moment is equivalent to variance?**

(a) First raw moment around 0
(b) 2nd central moment
(c) 2nd raw moment around median
(d) First raw moment around arithmetic mean

16. **In a right-skewed distribution -**

(a) Average values are very frequent
(b) Low values have very low frequency
(c) High values have very low frequency
(d) All values have uniform frequency

17. **What do moments do?**

(a) Uniquely characterize a distribution
(b) Help to make predictions
(c) Generate all values of central tendency
(d) Simplifies the process of working with large values

18. **What is the value of first central moment?**

(a) Variance (b) Arithmetic mean (c) Standard deviation (d) 0

19. **If the raw moment around 2 is 3, what is the value of $\bar{x}$?**

(a) 2 (b) 5 (c) 3 (d) 1

20. **Which measure does not depend on change of origin?**

(a) Arithmetic mean (b) Standard deviation (c) Geometric mean (d) Median

21. **If the first raw moment around 2 is 3, what is it around 0?**

(a) 3 (b) 0 (c) 6 (d) 8

22. **Which one is not a component of time series**

(a) Trend (b) Cyclic variation (c) Harmonic variation (d) Random variation

Answer the questions 23-24 according to the following information.

Year	2001	2002	2003	2204	2005
Value	60	65	70	72	73

23. **What is the first value of 2-yearly moving average?**

(a) 63.0 (b) 60.0 (c) 65.5 (d) 62.5

24. **What is the last value of 3-yearly moving average?**

(a) 72.50 (b) 71.50 (c) 71.67 (d) 72.33

25. **A trend is observed when the values follow -**

(a) An increasing pattern
(b) A decreasing pattern
(c) A constant pattern
(d) Increasing or decreasing pattern