DPP
DAILY PRACTICE PROBLEMS

Class : XIth **Subject : MATHS**
Date : **DPP No. : 9**

Topic :- STATISTICS

1. The mode of the data 6,4,3,6,4,3,4,6,3,x can be
   a) Only 5 b) Both 4 and 6 c) Both 3 and 6 d) 3, 4 or 6
2. The arithmetic mean of first n odd natural numbers is
   a) n b) $\frac{n+1}{2}$ c) $n-1$ d) None of these
3. If a variable takes discrete values $x+4, x-\frac{7}{2}, x-\frac{5}{2}, x-3, x-2, x+\frac{1}{2}, x-\frac{1}{2}, x+5, (x>0)$ then the median is
   a) $x-\frac{5}{4}$ b) $x-\frac{1}{2}$ c) $x-2$ d) $x+\frac{5}{4}$
4. If $x_1, x_2, x_3, \ldots, x_n$ are n values of a variable X and $y_1, y_2, \ldots, y_n$ are n values of a variable Y such that $y_i = \frac{x_i - a}{h}; i = 1,2,\ldots,n$, then
   a) Var (Y) = Var (X)
   b) Var$(X) = h^2$ Var(Y)
   c) Var$(Y) = h^2$ Var (X)
   d) Var $(X) = h^2$ Var $(Y) + a$
5. If a variate X is expressed as a linear function of two variates $\mathcal{U}$ and V the form $X = a\,\mathcal{U} + b\,V$, then mean $\overline{X}$ of X is
   a) $a\overline{\mathcal{U}} + b\overline{V}$ b) $\overline{\mathcal{U}} + \overline{V}$ c) $b\,\overline{\mathcal{U}} + a\overline{\mathcal{U}}$ d) None of these
6. The means and variance of n observations $x_1, x_2, x_3, \ldots, x_n$ are 5 and 0 respectively. If $\sum_{i=1}^{n} x_i^2 = 400$, then the value of n is equal to
   a) 80 b) 25 c) 20 d) 16
7. Given the following frequency distribution with some missing frequencies

Class	Frequency
10-20	180
20-30	-
30-40	34
40-50	180
50-60	136
60-70	-
70-80	50

If the total frequency is 685 and median is 42.6, then missing frequencies are respectively
   a) 81, 24 b) 80, 25 c) 82, 23 d) 83, 22
8. Let r be the range and $S^2 = \frac{1}{n-1}\sum_{i=1}^{n}(x_i - \overline{x})^2$ be the S.D. of a set observations $x_1, x_2, \ldots, x_n$, then
   a) $S \le r\sqrt{\frac{n}{n-1}}$ b) $S = r\sqrt{\frac{n}{n-1}}$ c) $S \ge r\sqrt{\frac{n}{n-1}}$ d) None of these
9. The variance of first n numbers is

a) $\frac{n^2+1}{12}$ b) $\frac{n^2-1}{12}$ c) $\frac{(n+1)(2n+1)}{6}$ d) $\left[\frac{n(n+1)}{2}\right]^2$

10. Quartile deviation is

a) $\frac{4}{5}\sigma$ b) $\frac{3}{2}\sigma$ c) $\frac{2}{3}\sigma$ d) $\frac{5}{4}\sigma$

11. If the mean of the following distribution is 13, then $p =$

x_i :	5	10	12	17	16	20
f_i :	9	3	p	8	7	5

a) 6 b) 7 c) 10 d) 4

12. If a variable x takes values x_i such that $a \leq x_i \leq b$, for $i = 1, 2, \ldots n$, then

a) $a^2 \leq \text{var}(x) \leq b^2$ b) $a \leq \text{var}(x) \leq b$ c) $\frac{a^2}{4} \leq \text{var}(x)$ d) $(b-a)^2 \geq \text{var}(x)$

13. If $y = f(x)$ be a monotonically increasing or decreasing function of x and M is the median of variable x, then the median of y is

a) $f(M)$ b) $M/2$ c) $f^{-1}(M)$ d) None of these

14. For a certain, frequency table which has been partly reproduced here, the Arithmetic mean was found to be Rs 28.07

Income (in Rs)	No. of workers
15	8
20	12
25	?
30	16
35	?
40	10

If the total number of workers is 75, then missing frequencies are respectively

a) 14, 15 b) 15, 14 c) 13, 16 d) 12, 17

15. In an experiment with 15 observations on x, the following results were available $\sum x^2 = 2830$, $\sum x = 170$. One observation that was 20, was found to be wrong and was replaced by the correct value 30. Then, the corrected variance is

a) 78.0 b) 188.66 c) 177.33 d) 8.33

16. The following age group are included in the proportion indicated

Age Group	Relative Proportion in Population
12-17	0.17
18-23	0.31
24-29	0.27
30-35	0.21
36+	0.04

How many of each age group should be included in a sample of 3000 people to make the sample representative?

a) 850, 155, 135, 905, 955 b) 510, 930, 810, 630, 120
c) 600, 600, 600, 600, 600 d) 510, 630, 950, 100, 810

17. The mean of the value of 1, 2, 3, ...n with respectively frequencies x, $2x$, $3x$, ...nx is

a) $\frac{n}{2}$ b) $\frac{1}{3}(2n+1)$ c) $\frac{1}{6}(2n+1)$ d) $\frac{n}{2}$

18. If $Z = aX + bY$ and r be the correlation coefficient between X and Y, then σ_Z^2 is equal to

a) $a^2\sigma_X^2 + b^2\sigma_Y^2 + 2abr\sigma_X\sigma_Y$ b) $a^2\sigma_X^2 + b^2\sigma_Y^2 - 2abr\sigma_X\sigma_Y$
c) $2abr\sigma_X\sigma_Y$ d) None of the above

19. The mean deviation of the series $a,a+d,a+2d,..,a+2nd$ from its mean, is

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

20. The AM of the series $1,2,4,8,16,\ldots,2^n$, is

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