

## **SECTION-02 - BE-02**

### **APTITUDE TEST (MATHEMATICS & SOFT SKILL)**

#### **MATHEMATICS**

1. **Determinant and Matrices**
2. **Trigonometry**
3. **Vectors**
4. **Co-ordinate Geometry**
5. **Function & Limit**
6. **Differentiation and its Applications**
7. **Integration**
8. **Logarithm**
9. **Statistics**

#### **ENGLISH**

10. **Comprehension of Unseen Passage**
11. **Theory of Communication**
12. **Grammar**
13. **Correction of Incorrect Words and Sentences**

## 9. Statistics

• Reamner :

• Mean :

(1) Direct Method :  $\bar{x} = \frac{\sum f_i x_i}{\sum f_i}$

(2) Assumed Mean :  $\bar{x} = a + \frac{\sum f_i d_i}{\sum f_i}$

(3) Step Deviation Method :  $\bar{x} = a + \frac{\sum f_i u_i}{\sum f_i} \times h$

• Median :

$$M = l + \left( \frac{\frac{n}{2} - cf}{f} \right) \times h$$

• Mode :  $Z = l + \left( \frac{f_1 - f_0}{2f_1 - f_0 - f_2} \right) \times h$

Example-1 : Find the mean for the following ungrouped data :

(1) 3, 5, 2, 6, 5

(2) First five natural numbers.

Solution :

(1) Here,  $x_1 = 3, x_2 = 5, x_3 = 2, x_4 = 6, x_5 = 5$   
and the number of total observations is  $n = 5$ .  
 $\therefore$  Mean

$$\begin{aligned} \bar{x} &= \frac{\sum_{i=1}^n x_i}{n} = \frac{\sum_{i=1}^5 x_i}{5} = \frac{x_1 + x_2 + x_3 + x_4 + x_5}{5} \\ &= \frac{3 + 5 + 2 + 6 + 5}{5} \\ &= \frac{21}{5} \\ &= 4.2 \end{aligned}$$

(2) First five natural numbers are 1, 2, 3, 4 and 5.

$$\therefore \text{Mean } \bar{x} = \frac{\sum x_i}{n} = \frac{1 + 2 + 3 + 4 + 5}{5} = \frac{15}{5} = 3$$

### Multiple Choice Questions (MCQ's) with (Final Answers)

- (1) If observations of grouped data are  $x_1, x_2, x_3, \dots, x_n$ , then the mean of these observations is  $\bar{x} = \dots$
- (A)  $\frac{\sum x_i}{n}$  (B)  $n \sum x_i$
- (C)  $\sum x_i$  (D)  $\frac{1}{2} \sum x_i$
- (2) Mean of first five natural numbers is .....
- (A) 15 (B) 7.5
- (C) 3 (D) none of these
- (3) Mean of first eight natural numbers is .....
- (A)  $\frac{9}{2}$  (B) 36
- (C) 72 (D) 16
- (4) Mean of first ten natural numbers is .....
- (A) 55 (B) 50
- (C) 5.5 (D) 5.0
- (5) Mean of the observations 3, 5, 2, 6, 5 is .....
- (A) 2 (B)  $\frac{21}{5}$
- (C)  $\frac{5}{21}$  (D) 3
- (6) Mean of the numbers 39, 23, 58, 47, 50, 16 and 61 is .....
- (A) 27 (B) 42
- (C) 47 (D) 50

- (7) Mean of the observations 19, 15, 28, 34, 27, 21, 14, 24, 6, 2 is .....  
 (A) 1.9 (B) 91  
 (C) 19 (D) 9.1
- (8) Mean of the data 32, 26, 41, 35, 28, 42, 36, 40, 33, 42 is .....  
 (A) 35 (B) 36  
 (C) 35.5 (D) none of these
- (9) If the mean of 4, 7, 6,  $k$ , 5, 9 is 6, then  $k =$  .....  
 (A) 4 (B) 5  
 (C) 6 (D) 9
- (10) If the mean of observations 15, 7, 6,  $a$ , 3 is 7, then  $a =$  .....  
 (A) 3 (B) 4  
 (C) 6 (D) 7
- (11) Mean deviation of  $n$  observations  $x_1, x_2, x_3, \dots, x_n$  from the mean  $\bar{x}$  is .....  
 (A)  $n \sum_{i=1}^n |x_i - \bar{x}|$  (B)  $\sum_{i=1}^n |x_i - \bar{x}|$   
 (C)  $\frac{1}{n} \sum_{i=1}^n |x_i - \bar{x}|$  (D)  $\sum_{i=1}^n \frac{(x_i - \bar{x})}{n}$
- (12) If the mean of the observations 11,  $x$ , 19, 21,  $y$ , 29 is 20, then  $x + y =$  .....  
 (A) 40 (B) 20  
 (C) 30 (D) 50
- (13) If the mean of 5 observations is 10 and the standard deviation is 2, then the sum of the squares of these observations is .....  
 (A) 510 (B) 20  
 (C) 104 (D) 520
- (14) If sum of squares of 5 observations is 410 and the standard deviation is 1, then the mean of these observations is .....  
 (A)  $\sqrt{80}$  (B) 81  
 (C) 9 (D)  $\sqrt{83}$
- (15) If the mean of  $n$  observations of a data is 3, standard deviation is 1 and the sum of squares of these observations is 50, then  $n =$  .....  
 (A) 41 (B) 5  
 (C) 50 (D) 10

**Answers**

- (1) A (2) C (3) A (4) C (5) B  
 (6) B (7) C (8) C (9) B (10) B  
 (11) C (12) A (13) D (14) C (15) B

★★★