# **Data Handling**

# **Self-Evaluation Test**

- David throws a die 10 times and the following are outcomes.
   2, 5, 6, 6, 1, 5, 4, 1, 4, 6, 5
   The mean of the above observations is:

   (a) 3
   (b) 4.5
   (c) 5
   (d) 45
   (e) None of these
- 2. If a, b, c, d and e are five consecutive odd numbers, then their mean is:
  - (a) b (b) c
  - (c) e
  - (d) a
  - (u) a
  - (e) None of these
- 3. The median of five consecutive even numbers p, q, r, s and t is:
  (a) (q+s)÷2 (b) r
  - (c)  $(p+q) \div 2$  (d)  $(p+q+r) \div 3$
  - (e) None of these
- 4. The mean, median and mode of the following data are respectively:
  - **5, 17, 21, 21, 7, 13, 1, 3** (a) 10, 10, 21
  - (a) 10, 10, 21 (b) 11, 21, 2
  - (c) 11, 21, 2 (c) 11, 10, 21
  - (d) 11, 10, 21 (d) 11, 10, 5
  - (e) None of these
- 5. The traffic police recorded the speed (in km/h) of 10 motors as 47, 53, 49, 60, 39, 42, 57, 55, 48 and 52. Later on an error in the recording instrument was found. Find the correct mean speed of the motors if the instrument recorded the speed 6 km/h less in each case.
  - (a) 55.2 km/h
  - (b) 56.2 km/h
  - (c) 57.2 km/h
  - (d) 58.2 km/h
  - (e) None of these

6. A student scored 75 marks in Hindi, 60 marks in Mathematics, 59 marks in English and 63 marks in Drawing. The mean marks of the student in the four subjects is:

(a) 61.85	(b) 60.25
(c) 64.25	(d) 63.75
(e) None of these	

7. Find the median of 11, 15, 13, 27, 19, 24 and 20. If 13 is replaced by 31 then find the new median.

(a) 10	(b) 20
(c) 30	(d) 40
(e) None of these	

- 8. The median of the following observations arranged in ascending order is 24. Find x 11, 12, 14, 18, x + 2, x + 4, 30, 32, 35 and 41.
  - (a) 11
  - (b) 20
  - (c) 21
  - (d) 22
  - (e) None of these
- 9. If the following data are represented in a pie diagram then what will be the angle of the sector corresponding to boys?

Males	Females	Girls	Boys	Total
2500	2000	1500	4000	10,000

- (a) 120°
- (b) 90°
- (c) 144°
- (d) 25°
- (e) None of these

# 10. Find the mean of following distribution.

х	10	15	20	25	30	35	40
f	7	7	13	15	7	4	5

- (a) 23.4412
  (b) 23.34
  (c) 23.45
  (d) 23.55
  (e) None of these
- 10

11. A card is drawn from a pack of 52 cards. The probability of getting a queen of club or a king of heart is:

(a) 
$$\frac{1}{13}$$
 (b)  $\frac{2}{13}$   
(c)  $\frac{1}{26}$  (d)  $\frac{1}{52}$ 

(e) None of these

12. A bag contains 6 black and 8 white balls. One ball is drawn at random. What is the probability that the ball drawn is white?

(a) 
$$\frac{3}{4}$$
 (b)  $\frac{4}{7}$   
(c)  $\frac{1}{8}$  (d)  $\frac{3}{7}$   
(e) None of these

#### PASSAGE for question 13 to 15;

Study, the bar chart and answer the questions based on it.

Production of fertilizers by a company (in 10,000 tonnes) over the Years is shown in the following bar chart:



13. In how many of the given years was the production of fertilizers more than the average production of the given years?

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

- (e) None of these
- 14. What was the percentage increase in production of fertilizers in 2002 compared to that in 1995?

(a) 320 %	(b) 300 %
(c) 220 %	(d) 200 %
(e) None of these	

- 15. The average production of 1996 and 1997 was exactly equal to the average production of which of the following pairs of years?
  - (a) 2000 and 2001 (c) 1998 and 2000
- (b) 1999 and 2000
- and 2000 (d) 1
- (d) 1995 and 2001
- (e) None of these

# Answer – Key

<b>1.</b> (B)	<b>2.</b> (B)	<b>3.</b> (B)	<b>4.</b> (C)	<b>5.</b> (B)
<b>6.</b> (C)	<b>7.</b> (B)	<b>8.</b> (C)	<b>9.</b> (C)	<b>10.</b> (C)
<b>11.</b> (C)	<b>12.</b> (B)	<b>13.</b> (D)	<b>14.</b> (C)	15. (D)

# **Explanation for Selected Questions**

#### 1. Explanation

$$= Mean = \frac{Sum of observations}{Total number of observations}$$
$$= \frac{2+5+6+6+1+5+4+1+4+6+5}{10} = 45$$

## 2. Explanation

Let the consecutive odd numbers a, b, c, d and e are as follows a=2x+1 b=2x+3 c=2x+5 d=2x+7

$$a = 2x + 1, b = 2x + 3, c = 2x + 3, d = 2x + 7$$
  
and  $e = 2x + 9$   
$$Mean = \frac{a + b + c + d + e}{5}$$
$$= \frac{(2x + 1) + (2x + 3) + (2x + 5) + (2x + 7) + (2x + 9)}{5}$$
$$= \frac{10x + 25}{5} = 2x + 5 = c$$

## 5. Explanation

Mean speed using error instrument  $= \frac{47 + 53 + 49 + 60 + 39 + 42 + 57 + 55 + 48 + 52}{10}$   $= \frac{502}{10} = 50.2 \text{ km / h}$ Corrected mean speed  $= \frac{53 + 59 + 55 + 66 + 45 + 48 + 63 + 61 + 54 + 58}{10}$ 

$$=\frac{562}{10}=56.2$$
 km / h

#### 6. Explanation

Mean marks =  $\frac{75 + 60 + 59 + 63}{4} = \frac{257}{4} = 65.25$ 

## 7. Explanation

Arranging the given data in ascending order, 11, 15, 13, 27, 19, 24, 20, here no. of observation = 7 (odd) $\therefore$  median = 19, when 13 is replaced by 31, the data becomes as follows on arranging in ascending order. 11, 15, 19, 20, 24, 27, 31

 $\therefore$  median = value of 4<sup>th</sup> observation

Since  $4^{th}$  observation in new series is 20, new median is 20.

## 8. Explanation

No. of observations, n = 10

 $\therefore \text{ Median} = \frac{\left(\frac{10}{2}\right)^{\text{th}} \text{ observation} + \left(\frac{10}{2} + 1\right)^{\text{th}} \text{ observation}}{\left(\frac{10}{2} + 1\right)^{\text{th}} \text{ observation}}$ 

$$\Rightarrow 24 = \frac{x+2+x+4}{2} \Rightarrow x = 21$$

#### 9. Explanation

Required angle =  $\frac{4000}{10,000} \times 360^{\circ} = 144^{\circ}$ .

#### 10. Explanation

 $\begin{aligned} \text{Mean} &= \frac{\sum x_i f_i}{\sum f_i} \\ &= \frac{70 + 105 + 260 + 375 + 210 + 140 + 200}{58} = 23.45. \end{aligned}$ 

# 11. Explanation

Here, n(S) = 52.

Let E = event of getting a queen of club or a king of heart. Then, n(E) = 2.  $\therefore P(E) = \frac{n(E)}{n(S)} = \frac{2}{52} = \frac{1}{26}$ 

# 12. Explanation

Let the total number of balls =(6+8)=14. Number of white balls = 8.

P(drawing a white ball) 
$$=\frac{8}{14}=\frac{4}{7}$$
.

#### 13. Explanation

Average production (in 10,000 tonnes) over the given years

 $= \frac{1}{8} (25 + 40 + 60 + 45 + 65 + 50 + 75 + 80) = 55$ ∴ The productions during the years 1997, 1999,

2001 and 2002 are more than the average production.

### 14. Explanation

Required percentage =  $\left[\frac{(80-25)}{25} \times 100\right]\% = 220\%$ 

#### 15. Explanation

Average production (in 10000 tonnes) of 1996 and 1997 =  $\frac{40+60}{2} = 50$ 

We shall find the average production (in 10000 tonnes) for each of the given alternative pairs:

 $2000 \text{ and } 2001 = \frac{50+75}{2} = 62.5$   $1999 \text{ and } 2000 = \frac{65+50}{2} = 57.5$   $1998 \text{ and } 2000 = \frac{45+50}{2} = 47.5$   $1995 \text{ and } 2001 = \frac{25+75}{2} = 50$ 

 $\therefore$  The average production of 1996 and 1997 is equal to the average production of 1995 and 2001.