Seat No. : _____

# FH-101

**February-2025**

## Int. MBA, Sem.-I (NEP)

## Basic Statistics for Data Analytics

**Time : 2:00 Hours]** **[Max. Marks : 50**

**Notes :** (1) Attempt each question on new page.

(2) Non-programable scientific calculator are allowed.

(3) Graph Papers and Logarithmic Tables shall be provided on request.

1. Attempt any **TWO** of the following : **10**

(a) State the essential points to be remembered in drafting a questionnaire.

(b) In 1990 out of a total of 2,000 students in a college, 1,400 were for graduation and the rest for post-graduation. Out of 1,400 graduate students 100 were girls. However, in all there were 600 girls in the college. In 1995, the number of graduate students increased to 1,700 out of which 250 were girls but the number of P.G. students fell to 500 of which only 50 were boys. In 2000, out of 800 girls, 650 were for graduation whereas the total number of graduates was 2,200. The number of boys and girls in P.G. classes was equal. Represent the above information in tabular form.

(c) The following table gives the distribution of the wages of 65 employees in a factory :

| **Wages in thousand ₹** | **No. of Employees** |
|---|---|
| Equal to or more than 50 | 65 |
| Equal to or more than 60 | 57 |
| Equal to or more than 70 | 47 |
| Equal to or more than 80 | 31 |
| Equal to or more than 90 | 17 |
| Equal to or more than 100 | 7 |
| Equal to or more than 110 | 2 |
| Equal to or more than 120 | 0 |

Draw a 'less than' ogive curve from the above data, and estimate the number of employees earning at least ₹ 65,000.

2. Attempt any **TWO** of the following : **10**

(a) The given table shows the scores obtained by different players in a match. Find the missing number of scores for a player D, if the average of the run scored by players is 43. Calculate median and 2nd decile.

| **Player** | A | B | C | D | E | F | G |
|---|---|---|---|---|---|---|---|
| **Run scored** | 80 | 52 | 40 | ? | 70 | 1 | 6 |

(b) For the following distribution, calculate first four moments about mean :

| **Variable** | 5 | 10 | 15 | 20 | 25 | 30 | 35 |
|---|---|---|---|---|---|---|---|
| **Frequency** | 4 | 10 | 20 | 36 | 16 | 12 | 2 |

(c) Find the geometric mean of the following grouped data :

| **Weights of Cell phone (gm)** | 60-80 | 80-100 | 120-140 | 140-160 | 160-180 |
|---|---|---|---|---|---|
| **Number of Cell phones** | 22 | 38 | 45 | 35 | 20 |

3. Attempt any **TWO** of the following : **10**

(a) Use the Unweighted Aggregate method to find (i) Price Index number and (ii) Quantity Index number for the following data :

| **Item** | **Year 2010** | | **Year 2020** | |
|---|---|---|---|---|
| | **Price (₹)** | **Quantity** | **Price (₹)** | **Quantity** |
| A | 700 | 4 | 950 | 3.5 |
| B | 200 | 30 | 300 | 35 |
| C | 150 | 4 | 250 | 6 |
| D | 0.80 | 800 | 1.10 | 1000 |
| E | 400 | 1 | 800 | 1 |

(b) Two price index series of Cement are given below. Splice the old series with the new series. By what percent did the price of cement rise between 2005 and 2010.

| **Year** | **Old Series Base (2000)** | **New Series Base (2008)** |
|---|---|---|
| 2005 | 156.6 | - |
| 2006 | 174.8 | - |
| 2007 | 162.3 | - |
| 2008 | 160.0 | 100 |
| 2009 | - | 106.4 |
| 2010 | - | 114.1 |
| 2011 | - | 112.2 |

(c) The following table contains the data of the year 2015 and 2020, Compute

(i) Laspeyre's index number

(ii) Fisher's ideal index number

| Commodities | Year 2015 | | Year 2020 | |
|---|---|---|---|---|
| | Price | Quantity | Price | Quantity |
| A | 800 | 6 | 950 | 8 |
| B | 600 | 3 | 800 | 4 |
| C | 400 | 5 | 425 | 4 |
| D | 250 | 2 | 300 | 2 |

4. (A) Attempt any **TWO** of the following : **6**

(i) Prove that the points (3, 2), (5, 4), (3, 6) and (1,4) taken in order form a square.

(ii) Find the equation of the line passing through the point (3, –6) and perpendicular to the line joining the points A(4, 1) and B(2, 5).

(iii) Check whether the following sets of three lines are concurrent :
$15x - 18y + 1 = 0, 12x + 10y - 3 = 0$ and $6x + 66y - 11 = 0$

(B) Find the circum-centre of a triangle whose vertices are (3, –5), (–7,4) and (10, –2). **4**

5. For the Multiple Choice Questions, choose **one** correct option out of four given options : **10**

(1) In exclusive type class-intervals,

(a) the upper limit of a class is included in the class.

(b) both the upper limit and lower limit of a class are included in the class.

(c) both the upper limit and lower limit of a class are excluded from the class.

(d) the lower limit of a class is included in the class.

(2) The process of arranging data into groups according to their common characteristics is

(a) tabulation

(b) collection

(c) classification

(d) summation

(3) The angle between two lines $2x + y - 3 = 0$ and $x + 3y + 2 = 0$

(a) 1 (b) –1

(c) 45° (d) 90°

(4) The equation of the line parallel to the y-axis and below it, being at a distance of 5 units is

(a) $x = 5$ (b) $x = -5$

(c) $y = 5$ (d) $y = -5$

(5) The point which divides the join of (1, 2) and (3, 4) internally in the ratio 2:1 is

(a) $\left(\frac{7}{3}, \frac{10}{3}\right)$ (b) $\left(\frac{5}{3}, \frac{8}{3}\right)$

(c) $\left(\frac{-5}{3}, -2\right)$ (d) $\left(\frac{-1}{3}, 0\right)$

(6) Which of the following is the true relation between purchasing power of money and price index ?

(a) Equal to (b) Unequal to

(c) Reciprocal to (d) None of the above

(7) Which of the following is the limitations of using an index number?

(a) It is only useful for short term comparison

(b) It ignores the quantity of the commodity

(c) The use of each of the index is restricted for a specific purpose

(d) All of the above

(8) Calculate Dorbish-Bowley's index, given Laspeyre's index is 110 and Paasche's index is 108.

(a) 100 (b) 108

(c) 110 (d) 109

(9) Which of the following can never be the Measure of dispersion in Statistics ?

(a) Positive (b) Negative

(c) Zero (d) Equal to

(10) Which of the following is true for kurtosis less than 3 ?

(a) Platykurtic (b) Mesokurtic

(c) Leptokurtic (d) Hyperkurtic