



‘সমানো মন্ত্র: সমিতি: সমানী’

UNIVERSITY OF NORTH BENGAL
B.Com. Honours 3rd Semester Examination, 2022

GE3-COMMERCE
BUSINESS STATISTICS

Time Allotted: 2 Hours

Full Marks: 60

*The figures in the margin indicate full marks.***GROUP-A****Answer any two questions**

12×2 = 24

1. (a) A motor car covered a distance of 50 miles four times. The first time at 50 mph, the second at 20 mph, the third at 40 mph and the fourth at 25 mph. Calculate the average speed and explain the choice of average. 6

- (b) The monthly profits in Rupees of 100 shops are distributed as follows: 6

| | | | | | | |
|------------------|-------|---------|---------|---------|---------|---------|
| Profit per shop: | 0-100 | 100-200 | 200-300 | 300-400 | 400-500 | 500-600 |
| No. of shops | 12 | 18 | 27 | 20 | 17 | 6 |

Calculate the modal value from the above information.

2. (a) Calculate A.M. and Standard Deviation for the following distribution: 2+6

| | | | | | | | |
|----------------------------|-------|-------|-------|-------|-------|-------|-------|
| Profit (in thousands Rs.): | 10-19 | 20-29 | 30-39 | 40-49 | 50-59 | 60-69 | 70-79 |
| No. of Companies: | 7 | 15 | 23 | 29 | 58 | 16 | 12 |

- (b) The incidence of occupational disease in an industry is such that the workmen have a 20% chance of suffering from it. What is the probability that out of six workmen, 4 or more will contract the disease? 4

3. (a) With the help of the following data, calculate Price Index Number using Fisher's formula and show that it satisfies the Time Reversal Test. 6

| | | | | |
|-----------|----------|-------|----------|-------|
| Commodity | 1978 | | 1980 | |
| | Quantity | Price | Quantity | Price |
| Rice | 50 | 32 | 50 | 30 |
| Barley | 35 | 30 | 40 | 25 |
| Maize | 55 | 16 | 50 | 18 |

- (b) Calculate the trend values by the method of moving average, assuming a four yearly cycle, from the following data relating to output as stated: 6

| | | | | | | | | | | |
|-----------------------|----|----|----|----|----|----|----|----|----|----|
| Year: | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Output (lakh tonnes): | 20 | 21 | 23 | 22 | 25 | 24 | 27 | 26 | 28 | 30 |

4. (a) Fit a straight line trend by the method of least squares to the following data. Assuming that the same rate of change continues, what would be the predicted earning for the year 2015? 6

| | | | | | | | | |
|-----------------------|------|------|------|------|------|------|------|------|
| Year: | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
| Earnings (Rs. lakhs): | 38 | 40 | 65 | 72 | 69 | 60 | 87 | 95 |

- (b) Ten competitors in a beauty contest are ranked by two judges in the following order. Calculate Spearman's rank correlation co-efficient.

| | | | | | | | | | | |
|--------------|---|---|---|----|---|---|---|----|---|---|
| Competitors: | A | B | C | D | E | F | G | H | I | J |
| 1st Judge: | 1 | 6 | 5 | 10 | 3 | 2 | 4 | 9 | 7 | 8 |
| 2nd Judge: | 6 | 4 | 9 | 8 | 1 | 2 | 3 | 10 | 5 | 7 |

GROUP-B

5. Answer any **four** questions: 6×4 = 24

- (a) Write the properties of product moment correlation coefficient (r) and also mention its two uses.
- (b) Explain any three methods of sampling. 2+2+2
- (c) In an office between 4 and 5 p.m. the average number of incoming phone calls per minute in the switch board is 1.8. Find the probability that during one particular minute there will be (i) no phone call at all, (ii) exactly 2 calls. [Given $e^{-1} = 0.3679$, $e^{-0.8} = 0.4493$]
- (d) A bag contains 5 white and 8 red balls. Two drawings of 3 balls are made such that (i) the balls are replaced before the second trail, and (ii) the balls are not replaced before the second trail. Find the probability that the first drawing will give 3 white and the second 3 red balls in each case.
- (e) Write down the important properties of normal distribution.
- (f) The following data represent the age of husband (y) and wife (x) for 10 couples:

| | | | | | | | | | | |
|-----|----|----|----|----|----|----|----|----|----|----|
| x | 18 | 20 | 20 | 24 | 22 | 24 | 27 | 24 | 21 | 25 |
| y | 22 | 24 | 26 | 26 | 27 | 27 | 28 | 28 | 29 | 30 |

- (i) What is the predicted age of husband when age of wife is 16?
- (ii) What is the predicted age of wife when age of husband is 35?

GROUP-C

6. Answer any **four** questions: 3×4 = 12

- (a) Define Consumer Price Index (CPI) by stating its two uses.
- (b) Mention the relationship between Range, Mean Deviation and Standard Deviation.
- (c) What do you mean by the terms Parameters and Statistics?
- (d) State the relationship between correlation coefficient and regression coefficients.
- (e) Write any two properties of Binomial Distribution.
- (f) Define the terms Skewness and Kurtosis.

—x—