

2022

(February)

COMMERCE

(Honours)

(Business Statistics)

(BC-301)

Marks : 75

Time : 3 hours

The figures in the margin indicate full marks for the questions

1. (a) Briefly explain the importance of tabulation. 3
- (b) Tabulate the following data : 12
 Out of a total number of 1807 women who were interviewed for employment in a textile factory of Mumbai, 512 were from textile areas and the rest from the non-textile areas. Amongst the married women who belonged to textile areas, 247 were experienced and 73 inexperienced, while for non-textile areas, the corresponding figures were 49 and 520. The total number of

inexperienced women was 1341 of whom 111 resided in textile areas. Of the total number of women 918 were unmarried and of these the numbers of experienced women in the textile and non-textile areas were 154 and 16 respectively.

Or

- (a) "Questionnaire is an essential tool for collection of statistical data." In the light of this statement, discuss the essentials of a good questionnaire. 5
 - (b) Draft a questionnaire not exceeding 10 questions to study the views on the impact of social media and television on education. 5
 - (c) Suggest how you will proceed to carry out statistical analysis of the information collected. 5
2. (a) Differentiate between mean deviation and standard deviation. 5
 - (b) Calculate mean and standard deviation from the following data : 10
- | | | | | | | | |
|----------------|---|-------|-------|-------|-------|-------|-------|
| Value | : | 20-25 | 25-30 | 30-35 | 35-40 | 40-45 | 45-50 |
| No. of persons | : | 170 | 110 | 80 | 45 | 40 | 35 |

(3)

Or

- (a) "Average, dispersion and skewness are complementary to one another in understanding a frequency distribution." Elucidate. 7
- (b) Find the geometric mean for the following distribution : 8

Marks	:	0-10	10-20	20-30	30-40	40-50
No. of students	:	5	7	15	25	8

3. (a) What is meant by index number? Briefly explain the limitations of the fixed base index numbers. 2+5=7
- (b) Calculate the price index for 2015 and 2016 using 2010 as base year from the following data : 8

Commodity	Price (₹ per unit)		
	2010	2015	2016
A	5	6	4
B	7	10	7
C	8	12	6
D	20	17	16
E	500	550	540

Or

- (a) Identify two situations where Spearman's rank correlation preferably be applied. 3

(4)

- (b) Find Karl Pearson's coefficient of correlation between sales and expenses of the following ten firms : 12

Firm	:	1	2	3	4	5	6	7	8	9	10
Sales (in '000 ₹)	:	23	27	28	29	30	31	33	35	36	39
Expenses (in '000 ₹)	:	18	22	23	24	25	26	28	29	30	32

4. (a) A uniform die is thrown at random. Find the probability that the number on it is—
- (i) 5;
- (ii) greater than 4;
- (iii) even. 2+2+2=6
- (b) One ticket is drawn at random from a bag containing 30 tickets numbered from 1 to 30. Find the probability that—
- (i) it is a multiple of 5 or 7;
- (ii) it is a multiple of 3 or 5. 3+3=6
- (c) State the bases on which a 'parameter' can be distinguished from 'statistic'. 3

(5)

Or

- (a) A carefully designed 'sample' is said to be better than a poorly planned and executed Census. Bring out the merits of sample method of enquiry and at least three of the methods to obtain representative data in a sample. 10
- (b) If $P(A) = 0.3$, $P(B) = 0.2$ and $P(C) = 0.1$ and A , B and C are independent events, find the probability of occurrence of at least one of three events A , B and C . 5

5. (a) State the assumptions and uses of Newton's divided difference method of interpolation and extrapolation. 5
- (b) The numbers of members of International Statistical Society are given below :

Year	:	2010	2011	2012	2013	2014
No. of members	:	845	867	—	846	821
Year	:	2015	2016	2017	2018	2019
No. of members	:	772	—	757	761	796

Estimate the numbers of members in 2012 and 2016 using an appropriate method of interpolation. 10

Or

- (a) Distinguish between a seasonal component and a trend component of a time series. 4

(6)

- (b) Below are given the figures of production of a sugar factory :

Year	:	2012	2013	2014	2015	2016	2017	2018
Production (in '000 quintals)	:	80	90	92	83	94	99	92

- (i) Fit a straight line trend to those figures by the method of least squares. 7
- (ii) Show in a graph the given data and also the trend. 4

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