3/H–76 (vii) (Syllabus–2015)

2018

(October)

COMMERCE

(Honours)

(Business Statistics)

(BC–301)

Marks : 75

Time : 3 hours

The figures in the margin indicate full marks for the questions

1. Comment briefly on the following statements : 5×3=15

(a) Statistics is the science of averages.

(b) Statistics is a method of decision making in the face of uncertainty.

(c) There is hardly any field which does not fall within the scope of statistics.

Or

(a) What are the characteristics of a good table? 5

(b) With imaginary figures (self-generated), construct a table to show distribution of students of a college. The table has to reveal the following three variables along with their classification : 10

(i) The stream : Science
: Commerce

(ii) The purpose of study : Preparation for only CA
: Preparation for only ICMA
: Preparation for both CA & ICMA
: Preparation for MBA

(iii) Gender : Boy
: Girl

2. *(a)* What purpose does a measure of central tendency serve? 3

(b) In the following frequency distribution the frequency of the class interval (30–40) is not known. Find it out, if the arithmetic mean of the distribution is 28 : 8

Class interval	*Frequency*
0–10	12
10–20	18
20–30	27
30–40	?
40–50	17
50–60	6

(c) The information is given below :

	Factory	
	A	*B*
No. of wage earners	250	200
Average daily wages (in ₹)	2	2·50

(i) Which factory pays a larger amount as daily wages?

(ii) What is the average of daily wages for the workers of the two factories combined? 2+2=4

Or

(a) Explain the term 'skewness'. What purpose does a measure of skewness serve? 2+3=5

(b) Calculate Karl Pearson's coefficient of skewness from the following data : 10

Class	*Frequency*
70–80	5
60–70	6
50–60	11
40–50	21
30–40	35
20–30	30
10–20	22
0–10	11

3. *(a)* What is correlation? Distinguish between positive and negative correlations. 2+3=5

(b) The following data relate to the age of 10 employees and the number of days on which they reported sick in a month :

Age	*Sick days*
20	1
30	2
32	0
35	3
40	4
46	6
52	5
55	7
58	8
62	9

Calculate Karl Pearson's coefficient of correlation between age and sickness and interpret its value. 10

Or

(a) Discuss briefly the importance and use of index number in business. 7

(b) The following index numbers of prices (2007 = 100) are given :

Year	*Index*
2007	100
2008	110
2009	120
2010	200
2011	400
2012	410
2013	400
2014	380
2015	370

Shift the base from 2007 to 2013 and recast the index number. 8

4. *(a)* Distinguish between permutation and combination. 4

(b) In an examination, a candidate is required to answer 6 out of 10 questions which are divided into two groups, each containing 5 questions and not permitted to attempt more than 4 questions from each group. In how many ways, can he make up his choice? 5

(c) Six papers are set in an examination of which two are statistical. In how many different orders can the papers be arranged so that *(i)* the two statistical papers are together and *(ii)* the two statistical papers are not consecutive? 6

Or

(a) A problem in statistics is given to five students *A*, *B*, *C*, *D* and *E*. Their chances of solving it are $\frac{1}{2}$, $\frac{1}{3}$, $\frac{1}{4}$, $\frac{1}{5}$ and $\frac{1}{6}$. What is the probability that the problem will be solved? 5

(b) *A* can solve 90 percent of the problems given in a book and *B* can solve 70 percent. What is the probability that at least one of them will solve a problem selected at random? 5

(c) A bag contains 8 white and 4 red balls. 5 balls are drawn at random. What is the probability that 2 of them are red and 3 white? 5

5. *(a)* What is meant by interpolation? What are the assumptions on which methods of interpolation are based? 2+3=5

(b) Estimate the value of y when $x = 23$ from the following data : 10

x	:	5	10	15	20	25	30
y	:	25	32	40	47	55	64

Or

(a) How does analysis of time series help business forecasting? 5

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

Year	*Production* (in '000 tons)
2010	80
2011	90
2012	92
2013	83
2014	94
2015	99
2016	92
2017	110

Fit a straight line trends to the above data by the method of least squares. 10

***