

**B.Com. DEGREE (C.B.C.S.S.) EXAMINATION, MAY 2018****Second Semester****Core Course IV—QUANTITATIVE TECHNIQUES FOR BUSINESS RESEARCH**

(Common for Model I, Model II and U.G.C. Sponsored B.Com. Degree Programmes)

[2013—2016 Admissions]

Time : Three Hours

Maximum Marks : 80

*Answers may be written either in English or in Malayalam.*

**Part A (Short Answer Questions)**

*Answer all questions.*

*Each question carries 1 mark.*

1. What is a questionnaire ?
2. What do you mean by random sampling ?
3. What are mutually exclusive events ?
4. Define research.
5. What is applied research ?
6. State two sources of secondary data.
7. Define probability.
8. How probable error of the coefficient of correlation is calculated ?
9. When does a binomial distribution tend to become Poisson distribution ?
10. What is Type II error ?

(10 × 1 = 10)

**Part B (Brief Answer Questions)**

*Answer any eight questions.*

*Each question carries 2 marks.*

11. Distinguish between Correlation and Regression.
12. State the addition theorem of probability.
13. State the limitations of Pearsonian coefficient of correlation.
14. Explain regression equations.
15. What are the properties of normal distribution ?
16. State the conditions under which Binomial distribution is used.

**Turn over**

17. What are the principles of sampling ?
18. Explain level of significance.
19. What is bibliography ?
20. In an examination paper on advanced accounts, 10 questions are set. In how many different ways can an examinee choose 7 questions.
21. Distinguish between Census and sampling techniques of data collection.
22. Find the probability of obtaining a total of 10 or more points when two ordinary dice are thrown.  
(8 × 2 = 16)

**Part C (Short Essay Type Questions)**

*Answer any six questions.*

*Each question carries 4 marks.*

23. From the following data, calculate the coefficient of correlation by Karl Pearson's method :

X :	6	2	10	4	8
Y :	9	11	12	8	7

24. You are given the following data about advertising and sales :—

	Advertising (Rs. in lakhs)	Sales (Rs. in lakhs)
Mean ...	10	90
SD ...	3	12

The correlation coefficient is 0.8.

Calculate the two regression lines and find the likely sales when advertising expenditure is Rs. 15 lakhs.

25. An urn contains 5 white and 7 black balls. A second urn contains 7 white and 8 black balls. One ball is drawn at random and put into the second urn without noticing its colour. A ball is then drawn at random from the second urn. What is the probability that it is white ?
26. If  $r = 0.89$ , P.E. = 0.23, find the value of  $n$ .
27. Explain probability sampling methods.
28. What are the characteristics of a good research report ?
29. What are the various methods used for collecting primary data ?
30. Mention different situations where Poisson distributions have applications.
31. Write notes on :
  - (a) Null hypothesis.
  - (b) Alternative hypothesis.
  - (c) Hypothesis testing.

(6 × 4 = 24)

**Part D (Long Essays)***Answer any two questions.**Each question carries 15 marks.*

32. What are the contents of a research report ?
33. Ten competitors in a beauty contest are ranked by three judges in the following order :—

First judge	:	1	6	5	10	3	2	4	9	7	8
Second judge	:	3	5	8	4	7	10	2	1	6	9
Third judge	:	6	4	9	8	1	2	3	10	5	7

Use the rank correlation coefficient to determine which pair of judges has the nearest approach to common tastes in beauty.

34. The table given below shows the data obtained during the outbreak of small pox :

		Attacked	Not attacked	Total
Vaccinated	...	31	469	500
Not vaccinated	...	<u>185</u>	<u>1315</u>	<u>1500</u>
Total	...	216	1784	2000

Test the effectiveness of vaccination in preventing the attack from small pox. Test your result with the help of Chi-square at 5 % level of significance.

35. Urn 'A' contains 4 white and 3 red marbles and Urn 'B' contains 2 white and 5 red marbles. One of the urns is to be chosen at random and a marble is to be selected from the chosen urn. What is the probability of drawing a white marble ?

(2 × 15 = 30)