

NOVEMBER 2017.

First Semester

Commerce

ANCED BUSINESS STATISTICS

e who joined in July 2017 onwards)

ours

Maximum : 75 marks

RT A — (10 × 1 = 10 marks)

Answer ALL questions.

e correct answer :

drawn from a well-shuffled deck of 52
at is the probability of drawing a card
either a heart nor a king

(b) 13/52

(d) 36/52

which is neither a heart nor a king

(a) 1/52

(b) 13/52

(c) 26/52

(d) 36/52

(d) Beta Distribution

3. The probability of Type II error is

(a) α

(b) β

(c) $1 - \alpha$

(d) $1 - \beta$

same for each

4. Student-t-distribution was discovered by

(a) Karl Pearson

(b) Fisher

(c) Spearman

(d) Gosset

1

5. Yate's correction will be done in Chi-square test
for a contingency table

(a) 2×2

(b) 3×3

(c) 4×4

(d) all the above

6. Which of the following is a non-parametric test?

(a) t-test

(b) Z-test

(c) Chi-square

(d) ANOVA

d by

or

et

7. Decision theory is concerned with

(a) methods of arriving at an optimal decision

(b) selecting an optimal decision in sequential
manner

(c) analysis of information that is available

(d) all of the above

hi-square test

e above

netric test?

t

Page 2

Code No. : 5879

VA

(a) methods of arriving at an optimal decision

(b) selecting an optimal decision in sequential
manner

(c) analysis of information that is available

(d) all of the above

Page 2

Code No. : 5879



8. Which of the following criteria is not used for decision making under risk?
- Maximin
 - Maximax
 - Minimax
 - Minimize expected loss
9. C-charts are based on the
- Poisson distribution
 - Normal distribution
 - Erlang distribution
 - Binomial distribution
10. Process control is achieved through
- Control charts
 - Acceptance sampling plans
 - Both (a) and (b)
 - None of these

PART B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b).

11. (a) In a town, 10 accidents took place in a span of 50 days. Assuming that the number of accidents per day follows the Poisson distribution. Find the probability that there will be three or more accidents in a day. (Table value = 1.22)
- Or
- (b) Find the probability that in a family of 5 children there will be atleast one boy.

12. (a) A manufacturing claims that atleast 95% of the equipments which he supplied to a factory conformed to the specification. An examination of the sample of 200 pieces of equipment revealed that 18 were faulty. Test the claim of the manufacturer. (Table value 1.96)

Or

- (b) In a hospital 480 female and 520 male babies were born in a week. Do these figures confirm the hypothesis that males and females are born in equal number? (Table value 1.96)

13. (a) The number of Scooter accidents per week in a certain town were as follows

12 8 20 2 14 10 15 6 9 4

Are these frequencies in agreement with the belief that accident conditions were the same during this 10 week period? (Critical value 16.819).

Or

- (b) List out the advantages of non-parametric tests.



14. (a) Explain the steps in the decision theory approach.

Or

- (b) What are the various types of decision making environments?
- 15 (a) What do the terms 'Producer's risk' and 'consumer's risk' mean?

Or

- (b) What are the benefits of statistical process control?

PART C — ($5 \times 8 = 40$ marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 600 words.

16. (a) A aptitude test for selecting officers in a bank was conducted on 1000 candidates. The average score is 42 and S.D. of score is 24. Assuming normal distribution for the scores. Find the number of candidates whose scores exceeds 50. (Table value = 0.1304)

Or

- (b) The following table gives the number of days in a 500 day period during which automobile accidents occurred in a city.

Page 5

Code No. : 5879

No. of accidents :	0	1	2	3	4
No of days :	368	72	52	7	1

Fit a Poisson distribution to the data. (Table value 0.6689)

- (a) Perform a two-way ANOVA on the data given below.

Plots of land	A	B	C	D
1	38	40	41	39
2	45	42	49	36
3	40	38	42	42

Use the coding method for subtracting 40 from the given numbers.

(Table value $F_1 = 4.76$, $F_2 = 5.14$)

Or

- (b) You are given the following data about the life of two brands of bulbs:

	Mean	S.D.	Sample Size
Brand A	2000 Hrs	250 Hrs	12
Brand B	2230 Hrs	300 Hrs	15

Do you think, there is a significant difference in quality of two brands? (Table value = 1.708)

Page 6

Code No. : 5879



18. (a) A milk producers union wishes to test whether the preference pattern of consumers for its products is dependent on income levels. A random sample of 500 individuals gives the following data.

Income	Product Preferred		
	A	B	C
Low	170	30	80
Medium	50	25	60
High	20	10	55

Can you conclude that the preference patterns are independent of income levels? (Critical value = 14.860)

Or

- (b) Following table indicating the ratings assigned to two brands of cold drink X and Y by 12 consumers. Apply two-sample sign test.

Brand X: 26 30 44 23 18 50 34 16 25 49 37 20

Brand Y: 22 27 39 7 11 56 30 14 18 51 33 16

19. (a) $n = 20$, $\bar{X} = 75$ and $\bar{R} = 15$. You are asked to find the CL, UCL and LCL for a $\bar{x}$ control chart (d_2 value = 3.735)

Or

- (b) Write about TQM and techniques useful in TQM - Fishbone and Pareto diagrams.

Page 7

Code No. : 5879

20. (a) A marketing manager has to decide between advertising his product on a national level and not advertising it. If he advertises the product and it is successful, his company will gain Rs. 4 lakh, but if he advertises and the product fails, the company will lose Rs. 4 lakh. No loss or gain is attached to his not taking action. He thinks that there is 0.6 probability that the advertising campaign will be successful.

- Construct a decision tree to help analyse this problem.
- What action the marketing manager should take?

Or

- (b) Write about criteria for decision making under uncertainty.

Page 8

Code No. : 5879

