B.Com DEGREE EXAMINATION,APRIL 2020
I Year II Semester
Business Statistics and Operations Research - II

Time : 3 Hours **Max.marks :75**

Section A $(10 \times 2 = 20)$ Marks

Answer any **TEN** questions

1. Define sample space.
2. Find the probability of getting number 4 in rolling a single die.
3. Define conditional probability.
4. Define the term population.
5. State the limitations of statistics.
6. What do you know about hypothesis?
7. State the uses of t test.
8. Define normal distribution.
9. Define feasible solution with respect to transportation problem.
10. Explain unbalanced transportation problem.
11. State the difference between PERT and CPM
12. Define dummy activity.

Section B $(5 \times 5 = 25)$ Marks

Answer any **FIVE** questions

13. Two cards are drawn from a pack of cards at random. What is the probability that it will be i) a diamond and a heart ii) two kings
14. State and prove addition theorem on probability.
15. Explain in detail about sampling procedures.
16. The following results are obtained from a sample of 10 boxes of biscuits.

    Mean weight of contents = 490 gms.

    Standard deviation of the weight= 9 gms.

    Could the sample come from a population having a mean of 500 gms.

    (Table value of t for 9 d.f.at 1% level of significance = 3.25)

17. Out of 8000 graduates in a town 800 are female, out of 1600 graduate employees 120 are female. Use chi-square to determine if any distinction is made on the basis of gender. (Value of Chi-square at 5% level for 1 d.f. is 3.84)

18. Find the initial basic feasible solution for the following transportation problem by Least Cost method.

					Supply
	1	2	1	4	30
	3	3	2	1	50
	4	2	5	9	20
Demand	20	40	30	10	

19. Solve the following assignment problem.

Jobs

		I	II	III	IV	V
	A	8	4	2	6	1
	B	0	9	5	5	4
Persons	C	3	8	9	2	6
	D	4	3	1	0	3
	E	9	5	8	9	5

Section C $(2 \times 15 = 30)$ Marks

Answer any **TWO** questions

20. Box I contains three defective and seven non-defective balls, and box II contains one defective and nine non-defective balls. We select a box at random and then draw one ball at random from the box.

a) What is the probability of drawing a non-defective ball?

b) What is the probability of drawing a defective ball?

c) What is the probability that box I was chosen, given a defective ball is drawn?

21. Explain in detail about a) simple b) Stratified c) Systematic sampling procedures.

22. Two random samples gave the following results

Sample	size	sample mean	sum of squares of deviations from sample mean
1	10	15	90
2	12	14	108

Test the equality of population variances using F-test.

23. A project schedule has the following characteristics. Calculate the expected duration of each activity and draw the network. Also find the critical path and the total duration of the projection.

Activity	Most likely Time	Optimistic Time	Pessimistic Time
1-2	2	1	3
2-3	2	1	3
2-4	3	1	5
3-5	4	3	5
4-5	3	2	4
4-6	5	3	7
5-7	5	4	6
6-7	7	6	8
7-8	4	2	6
7-9	6	4	8
8-10	2	1	3
9-10	5	3	7