Roll No. | | | | | | | | | | | | | **Total No. of Pages: 04**

Total No. of Questions: 10

MBA (IB) (Sem. – 1)

QUANTITATIVE TECHNIQUES

Subject Code: MBA-103-18
M Code: 75404
Date of Examination : 18-01-23

Time: 3 Hrs. **Max. Marks: 60**

INSTRUCTIONS TO CANDIDATES:

1. **SECTION-A is COMPULSORY consisting of EIGHT questions carrying TWO marks each.**
2. **SECTIONS-B consists of FOUR Sub-sections : Units-I, II, III & IV. Student has to attempt any ONE question from each Sub-section carrying EIGHT marks each.**
3. **SECTION-C is COMPULSORY, consists of a Case Study. Analyse the case and answer the questions carrying TWELVE marks.**
4.

SECTION-A

1. Write briefly:

a) What is Linear Programming?

b) Define Normal Distribution.

c) Define Game Theory?

d) What is probability?

e) What is Poisson Distribution?

f) Define Pearson's Correlation Coefficient

g) Define PERT?

h) Define statistics.

SECTION-B

UNIT-I

2. From the following data find the value of median:

Income (Rs.)	6,000	5,500	6,800	8,000	8,500	7,900
No. of Persons	24	26	16	20	6	30

3. From the prices of shares of X and Y below, find out which is more stable in value:

X	36	55	52	53	56	58	52	50	51	48
Y	106	107	105	105	106	107	104	103	104	100

UNIT-II

4. Calculate Karl Pearson's coefficient of correlation from the following data and interpret its value:

Roll No.	1	2	3	4	5
Marks Science	48	36	18	23	47
Marks in Mathematics	43	20	40	25	45

5. Explain Regression Analysis with the help of a suitable example.

UNIT-III

6. Compare Binomial, Poisson and Normal distributions.

7. Use Simplex Method to solve the following L.P.P.:

   Max. $Z = 5X_1 + 8X_2$ Subject to the constraints:

   $2X_1 + X_2 \leq 48$.

   $2X_1 + 5X_2 \leq 100$.

   $2X_1 + 3X_2 \leq 90$;

   $X_1 \geq 0$ and $X_2 \geq 0$

UNIT-IV

8. Find the basic feasible solution by at least three different methods for the following transportation problem:

From/To	**A**	**B**	**C**	**Availability**
F_1	4	8	8	56
F_2	16	24	16	82
F_3	8	16	24	77
Demand	72	102	41	

9. Four jobs 1,2,3, and 4 are to be processed on each of the five machines A, B, C, D, and E in the ABCDE order. Find the total elapsed time if no passing jobs is permitted.

		Machines				
		A	B	C	D	E
Jobs	**1**	7	5	2	3	9
	2	6	6	4	5	10
	3	5	4	5	6	8
	4	8	3	3	2	6

SECTION-C

10. **Solve the case study attached:**

The equivalent of a new kindergarten class is born every-day at Orlando's Arnold Palmer Hospital. With more than 13,000 births in the mid-2000s in a hospital that was designed 15 years earlier for a capacity of 6,500 births a year, the newborn intensive care unit was stretched to the limit. Moreover, with continuing strong population growth in central Florida, the hospital was often full. It was clear that new facilities were needed. After much analysis, forecasting, and discussion, the management team decided to build a new 273 bed building across the street from the existing hospital. But the facility had to be built in accordance with the hospital's Guiding Principles and its uniqueness as a health center dedicated to the specialized needs of women and infants. Those Guiding Principles are: Family-centered focus, a healing environment. Where privacy and dignity are respected, sanctuary of caring that includes warm, serene surroundings with natural lighting, sincere and dedicated staff providing the highest quality care, and patient-centered flow and function.

The vice president of business development, Karl Hodges, wanted a hospital that was designed from the inside out by the people who understood the Guiding Principles, who knew most about the current system, and who were going to use the new system, namely, the doctors and nurses. Hodges and his staff spent 13 months discussing expansion needs with this group, as well as with patients and the community, before developing a proposal for the new facility. An administrative team created 35 user groups, which held over 1,000 planning meetings (lasting from 45 minutes to a whole day): They even created a "Supreme Court" to deal with conflicting views on the multifaceted issues facing the new hospital. Funding and regulatory issues added substantial complexity to this major expansion, and Hodges was very concerned that the project stay on time and within budget Tom Hyatt, director of facility development, was given the task of onsite manager of the $100 million project, in addition to overseeing ongoing renovations, expansions, and other projects. The activities in the multiyear project for the new building at Arnold Palmer are shown in Table 3.7

Discussion Questions:

a) Develop the network for planning and construction of the new hospital at Amold, Palmer.

b) What is the critical path and how long is the project expected to take?

c) Why is the construction of this 11 story building any more complex than construction of an equivalent office building?

d) What percent of the whole project duration was spent in planning that occurred prior to the proposal and reviews? Prior to the actual building construction? Why?

ACTIVITY	SCHEDULED TIME	PRECEDENCE ACTIVITY (IES)
1. Proposal and review	1 month	**-**
2. Establish master schedule	2 weeks	**1**
3. Architect selection process	5 weeks	**1**
4. Survey whole campus and its needs	1 month	**1**
5. Conceptual architect's plans	6 weeks	**3**
6. Cost estimating	2 months	**2, 4, 5**
7. Deliver plans to board for consideration/decision	1 month	**6**
8. Surveys/regulatory review	6 weeks	**6**
9. Construction manager selection	9 weeks	**6**
10. State review of need for more hospital beds ("Certificate of Need")	3.5 months	**7, 8**

11. Design drawings	4 months	**10**
12. Construction documents	5 months	**9, 11**
13. Site preparation/demolish existing building	9 weeks	**11**
14. Construction start/building pad	2 months	**12, 13**
15. Relocate utilities	6 weeks	**12**
16. Deep foundations	2 months	**14**
17. Building structure in place	9 months	**16**
18. Exterior skin/roofing	4 months	**17**
19. Interior buildout	12 months	**17**
20. Building inspections	5 weeks	**15, 19**
21. Occupanicy	1 month	**20**

NOTE : Disclosure of Identity by writing Mobile No. or Marking of passing request on any paper of Answer Sheet will lead to UMC against the Student.