

M.Com F.Y. (New CBCS Pattern) Semester I  
**PCC1E10 - Operation Research**

P. Pages : 2

Time : Three Hours



**GUG/W/22/14311**

Max. Marks : 80

- 
1. a) Explain the Meaning, Features and Objectives of Operations Research. Also Discuss the limitation of Operation Research. **16**

**OR**

- b) M/s Kambu Ltd. Are the manufactures of Lamps. The following are the details of their operation during 2021. **16**

Average monthly market demand 2,000 lamps

Ordering cost 200 per order

Inventory carrying cost 20% per annum

Cost of lamps 1000 per lamp

Normal usage 100 lamps per week Minimum usage 50 lamps per week

Maximum usage 200 lamps per week Lead time to supply 4-6 weeks.

Compute from the above:

- i) Economic order quantity
- ii) If the supplier is willing to supply quarterly 1,500 units at a discount of 10%, is it worth accepting?
- iii) Maximum level of stock
- iv) Minimum level of stock
- v) Re-order level of stock.

2. a) Describe North-West Corner Method (NWCR) and Row-Minima Method. **16**

**OR**

- b) Obtain initial feasible solution for the following Transportation table using **16**

- i) North West Corner rule
- ii) Least Cost Method
- iii) VAM Method

Source	Destination			Supply
	A	B	C	
1	2	7	4	5
2	3	3	1	8
3	5	4	7	7
4	1	6	2	14
Demand	7	9	18	

3. a) Write down Meaning and Definition of Assignment Model and Hungarian Method. **16**

**OR**

- b) A computer centre has four expert programmers and needs to develop four application programmes. The head of the computer centre, estimates the computer time (in minutes) required by the respective experts to develop the application programmes as follows: **16**

Programmers	Programmers			
	A	B	C	D
1	120	100	80	90
2	80	90	110	70
3	110	140	120	100
4	90	90	80	90

Find the assignment pattern that minimizes the time required to develop the application programmes.

4. a) Explain Introduction of Sequencing and write the Assumptions in sequencing problem. **16**

**OR**

- b) A Machine owner finds from his past records that cost per year of Maintaining a machine different and which are given below. **16**

Year	1	2	3	4	5	6	7	8
Maintenance Cost	1000	1200	1400	1800	2300	2800	3400	4000
Resale Price	3000	1500	750	375	200	200	200	200

If the purchase price of that machine is Rs. 600, then at what age the replace is due.

5. Write short notes. **16**
- Inventory Model
  - Features of Transportation.
  - Hungarian Method
  - Factors to be considered for Replacement.

\*\*\*\*\*