

**BACHELOR OF VOCATION**  
**BPM and Analytics**

**Subject: Introduction to Operations Research**

**Subject Code: GBGE-202**

**Semester: Third**

**September 2022**

**Theory (External): 70 Marks**

**Time: 03 Hours**

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**Instructions to the Students**

1. This Question paper consists of two Sections. All sections are compulsory.
2. Section A comprises 10 questions of objective type in nature. All questions are compulsory. Each question carries 2 marks.
3. Section B comprises 8 essay type questions out of which students need to do any 5. Each question carries 10 marks.
4. Read the questions carefully and write the answers in the answer sheets provided.
5. Do not write anything on the question paper.
6. Wherever necessary, the diagram drawn should be neat and properly labelled

**Roll Number**

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**SECTION –A (SHORT/OBJECTIVE TYPE QUESTIONS)**  
**(10x2=20 Marks)**

- A. Operations Research approach is \_\_\_\_\_.
- multi-disciplinary
  - scientific
  - intuitive
  - collect essential data
- B. The difference between total float and head event slack is \_\_\_\_\_.
- free float
  - independent float
  - interference float
  - linear float
- C. If the order quantity (size of order) is increased, \_\_\_\_\_.
- holding costs decrease and ordering costs increase
  - holding costs increase and ordering costs decrease
  - the total costs increase and then decrease
  - storage cost as well as stock-out cost increase
- D. \_\_\_\_\_ is a mathematical technique used to solve the problem of allocating limited resource among the competing activities
- Linear Programming problem
  - Assignment Problem
  - Replacement Problem
  - Non linear Programming Problem
- E. The activity cost corresponding to the crash time is called the \_\_\_\_\_.
- critical time
  - normal time
  - cost slope
  - crash cost
- F. A set of feasible solution to a Linear Programming Problem is \_\_\_\_\_.
- convex
  - polygon
  - triangle
  - bold

- G. The solution to a transportation problem with  $m$ -sources and  $n$ -destinations is feasible if the numbers of allocations are \_\_\_\_\_.
- $m+n$
  - $mn$
  - $m-n$
  - $m+n-1$
- H. In the network, one activity may connect any \_\_\_\_\_ nodes
- 1
  - 2
  - 3
  - 4
- I. The cost of a slack variable is \_\_\_\_\_.
- 0
  - 1
  - 2
  - 1
- J. In a network diagram an event is denoted by the symbol \_\_\_\_\_.
- arrow
  - straight line
  - curve
  - circle

### SECTION -B (ESSAY TYPE QUESTIONS)

(5x10=50 Marks)

1. What is operational research? Please describe evaluation, methodology and role in managerial decision making of OR.
2. What are the objectives of using Network Analysis? Explain Difference between PERT and CPM?
3. Give three variations in transport problem. How are these resolved?
4. What is Linear Programming? Discuss the applications of Linear Programming.
- 5.

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- Draw a network corresponding to the following information.
- Find the earliest and latest scheduling times of various activities.
- Also, obtain the total, interfering, free and independent floats for each of the activities.

Activity	Time (days)
1-2	8
1-3	2
1-4	6
1-5	12
2-4	5
2-7	9
3-5	3
3-6	7
4-10	4
5-11	10
6-7	2
6-8	10
7-10	12
8-9	3
8-10	6
9-12	8
10-12	18
10-14	9
11-12	7
11-14	4
12-13	11
13-14	4

6. Define shortly :-

- EST
- EFT
- LST
- LFT

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- Float
- Please define decision theory under uncertainty and risk and simulation meaning, process, advantage and limitation.
- Please define graphical and simplex method with appropriate examples?

===END OF PAPER===