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# B. M. S. College of Engineering, Bengaluru - 560019

**Autonomous Institute Affiliated to VTU**

## September / October 2023 Supplementary Examinations

**Programme: B.E.** **Semester: VII**
**Branch: Mechanical Engineering** **Duration: 3 hrs.**
**Course Code: 20ME7DCPRM** **Max Marks: 100**
**Course: Project Management** **Date: 14.09.2023**

**Instructions**: 1. Answer any FIVE full questions, choosing one full question from each unit.
2. Missing data, if any, may be suitably assumed.





### UNIT - I

1. a) How Can Project Work Be Described? Elaborate. **10**
   b) Elaborate the project roles. **10**

### UNIT - II

2. a) List and describe the types of organizational structures. **10**
   b) Briefly describe the plan scope management with neat flow chart. **10**

**OR**

3. a) Discuss the responsibilities of the chief projects officer? **10**
   b) Describe setting up of WBS using MS project. **10**

### UNIT - III

4. a) A project has the following schedule. **10**
   i) Construct a network and determine Te & $T_L$ for each event.
   ii) Float for each activity.
   iii) Identify the Critical Path.
   iv) Determine the duration of entire project.

| Activity | 1-2 | 1-3 | 2-4 | 3-4 | 3-5 | 4-9 | 5-6 | 5-7 | 6-8 |
|---|---|---|---|---|---|---|---|---|---|
| Time in weeks | 4 | 1 | 1 | 1 | 6 | 5 | 4 | 8 | 1 |

| Activity | 7-8 | 8-10 | 8-9 | 9-10 |
|---|---|---|---|---|
| Time in weeks | 2 | 8 | 1 | 7 |

   b) The three times estimates of a certain project are given below. **10**

| Activity | Time optimist | Time normal | Time pessimistic |
|---|---|---|---|
| 0-1 | 2 | 3 | 4 |
| 1-3 | 15 | 16 | 17 |
| 1-2 | 3 | 6 | 9 |
| 1-4 | 6 | 10 | 14 |
| 2-3 | 4 | 8 | 12 |
| 3-4 | 3 | 5 | 7 |
| 4-5 | 2 | 3 | 4 |

(i) Draw network and find Critical Path.

(ii) If the scheduled time for the end event is equal to the earliest excepted time of the last event, find the probability of completion of the project work.

(iii) If the scheduled time is 28 days, find the probability of completion of the project work.

**OR**

5. a) The following table gives the activities and other relevant data. **10**

| Activity | Time (days) | | Cost (Rs.) | |
|---|---|---|---|---|
| | Normal | Crash | Normal | Crash |
| 1-2 | 4 | 3 | 120 | 180 |
| 1-4 | 6 | 4 | 300 | 500 |
| 1-3 | 2 | 1 | 60 | 120 |
| 2-4 | 5 | 3 | 300 | 500 |
| 3-4 | 2 | 2 | 200 | 200 |
| 2-5 | 7 | 5 | 230 | 350 |
| 4-5 | 4 | 2 | 200 | 480 |

If indirect cost per day for project is Rs. 100/-

i) Draw the network diagram.

ii) Find normal duration & cost of the project.

iii) Find the optimum duration & cost.

iv) Crash the number of days to the maximum possible extent.

b) An R&D activity has 7 activities for which three time estimates are given below, along with its precedence activities. **10**

| Activity | Precedence | To | Tm | Tp |
|---|---|---|---|---|
| A | ------ | 4 | 6 | 8 |
| B | A | 6 | 10 | 12 |
| C | A | 8 | 18 | 24 |
| D | B | 9 | 9 | 9 |
| E | C | 10 | 14 | 18 |
| F | A | 5 | 5 | 5 |
| G | D,E,F | 8 | 10 | 12 |

i) Draw PERT network

ii) Find EST, LST & slack for each node.

iii) Find the Critical Path and expected duration.

iv) What is the probability that the project will be completed not more than three weeks later than expected?

**UNIT - IV**

6. a) Describe the various types of costs. **10**

b) Discuss the process of determination of budget. **10**

**UNIT - V**

7. a) Describe the project procurement management process. **10**

b) How do you improve supply chains? Elaborate. **10**

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