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P.E.S. College of Engineering, Mandya - 571 401

(An Autonomous Institution affiliated to VTU, Belagavi)

Seventh Semester, B.E. - Civil Engineering

Semester End Examination; Jan. / Feb. - 2021

Construction Engineering Management and Entrepreneurship

Time: 3 hrs

Max. Marks: 100

- Note:** i) Answer **FIVE** full questions, selecting **ONE** full question from each unit.
ii) Use of Interest table and Probability chart is permitted.

UNIT - I

- 1 a. Explain break even analysis. 5
- b. Explain time value of money. 5
- c. Alpha industry is planning to expand its pre-fabricated production operation. It has identified three different technologies to meet the business requirement. The initial outlay and annual revenues with respect to each of the technologies are summarized in the following table. Suggest the best technology which is to be implemented based on the present worth method of comparison. Assuming 20% interest rate, compounded annually. 10

	Initial outlay	Annual revenue	Life years
Technology -1	12,00,000	4,00,000	10
Technology -2	20,00,000	6,00,000	10
Technology -3	18,00,000	5,00,000	10

- 2 a. Explain the following: 6
- i) Revenue - dominated cash flow diagram
- ii) Cost - dominated cash flow diagram
- b. Discuss the declining balance method of depreciation. 4
- c. Two possible routes for laying a power line are under study. Data on the routes are as follows:

	Around the lake	Under the lake
Length	15 km	5 km
First cost	1,50,000 /km	7,50,000 /km
Useful life yrs	15	15
Maintenance cost	6000 /km/yr	12,000 /km/yr
Salvage value	90,000 /km	1,50,000 /km
Yearly power loss	15,000 /km	15,000 /km

UNIT - II

- 3 a. Explain the various stages of construction project. 8
- b. List the types of organization and explain any one. 6
- c. Explain the advantages of value engineering. 6

- 4 a. What are the functions and uses of material management? 6
- b. List and explain the causes of accidents and safety measures to prevent them. 8
- c. Explain the quality assurance techniques. 6

UNIT - III

- 5 a. Explain the factors affecting selection of construction equipment. 5
- b. Illustrate the operations of a power shovel with neat sketch. 5
- c. Estimate the probable cost of owning and operating 30 m³ power shovel with the following data:

Rated horse power	200 HP
Crank case capacity	30 litres
No. of hours between oil changes	120
Useful life	08 years
No. of working hrs/year	6000
Cost of equipment	65 lakhs
Shipping weight	1200 kN
Freight charges	100 kN
Unloading and assembling charges	30,000
Salary paid to operator	25,000 /month
Bank interest rate	10%
Salvage value	6.5 lakhs
Maintenance and repair cost	80% of depreciation
Cost of diesel	80 /litre
Cost of oil	300 /litre

- 6 a. Briefly explain the factors which favor the mechanization in construction projects. 10
- b. With the help of a diagram, explain the operation and application of dragline. 10

UNIT - IV

- 7 a. Explain work breakdown structure. 6
- b. Discuss the steps involved in planning process. 6
- c. For the data given below of a construction project, draw an activity on arrow diagram, mark the critical path and compute the minimum completion time of the project

Activity	Duration (days)	Predecessors
A	06	-
B	08	-
C	04	A
D	10	A, B
E	05	B
F	06	C
G	08	B, D
H	12	E
I	04	F, G, H

- 8 a. Differentiate between PERT and CPM. 4
- b. Explain; 6
 - i) Bar chart
 - ii) Milestone chart
- c. The table below gives the time estimates of a construction project;

Job $i - j$		Time (days)		
Successor event j	Predecessor event i	Optimistic	Most likely	Pessimistic
20	10	4	6	8
30	10	2	2.5	6
40	10	1	2	3
40	20	4	7.50	8
50	20	8	10	12
60	30	4	6	8
70	40	6	8	16
70	50	4	6	14
80	30	10	11	12
80	50	10	15	20
80	60	2	2.5	6
90	70	16	19	22
90	80	10	12	20

10

Estimate the critical path and expected project completion time

UNIT - V

- 9 a. Discuss the characteristic of an entrepreneur. 8
- b. Explain the types of entrepreneur. 6
- c. Distinguish between entrepreneurs and manager. 6
- 10 a. Explain the different process involved in project identification. 6
- b. Discuss the guidelines laid down by planning commission while preparing a project report. 6
- c. Write short note on KIADB. 8

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