U.S.N ☐☐☐☐☐☐☐☐☐☐

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

(An Autonomous Institution affiliated to VTU, Belgaum)
Seventh Semester, B.E. - Civil Engineering
Semester End Examination; Dec - 2016/Jan - 2017
Construction Engineering Management and Entrepreneurship

Time: 3 hrs   *Max. Marks: 100*

Note: Answer **FIVE** full questions, selecting **ONE** full question from each unit.

UNIT - I

1 a. Through a chart, explain what do you mean by Break-even analysis?   10

 b. Find the present value of each of the following cash flows using on interest rate of 13%:

   i) Rs. 6000 cash inflow one years from now

   ii) Rs. 6000 cash inflow two years from now

   iii) Rs. 7000 cash inflow three year from now   10

   iv) Rs. 4000 cash inflow at the end of each year of the next five years.

   v) Rs. 4000 cash outflow three years from now.

2 a. What do you mean by cash flow diagram? What are its components?   8

 b. A construction chemicals firm produces a single product whose selling price is Rs. 16/unit and the variable cost per unit are Rs. 12. If the annual fixed cost of the firm are estimated as Rs. 1,20,000. Find the Break-even point in units, in rupees and as a percentage of capacity, if the firm has an estimated capacity of 50,000 units of the product. What is the margin of safety?   12

UNIT - II

3 a. An equipment 'A' has a cost of Rs. 75,000 and net cash flow of Rs. 20,000 per year for six years. A substitute equipment 'B' has cost of Rs. 50,000 and generates a net cash flow of Rs. 14,000 per year for six years. The required rate of return of both equipments is 11 percent. Calculate net present value for each and which equipment should be accepted and why?   10

 b. Calculate the payback periods of the following projects each required a cash outlay of Rs. 12,000. Suggest which one is acceptable, if the standard payback period is 6 years.

year	Cash inflows		
	Project X	Project Y	Project Z
1	2,400	5,000	500
2	2,400	3,000	1,500
3	2,400	2,000	2,000
4	2,400	1,500	3,000
5	2,400	500	5,000
6	2,400	0	0

10

4 a.	What do you mean by depreciation? Explain straight line method of depreciation.	10
b.	Find the book value at the end of each year of equipment by straight line method and declining balance method. It costs Rs. 25,000, expected useful life 6 years and salvage value Rs. 4,000.	10

UNIT - III

5 a.	Classify the hauling and earth moving equipments used in construction industry.	6
b.	What are the aspects to be considered at the time of selection of construction equipments?	8
c.	Calculate the time required to grade and finish 30 km of road formation of 9 m width for two lane road with motor grader having width of 3 m, using 6 passes with speed for each of the successive two passes as 5 kmph, 7 kmph and 9 kmph respectively. Assume machine efficiency based on operator skill, machine characteristics and working conditions as 80%.	6
6 a.	Calculate the number of transit mixers required for transferring concrete from central batching plant to site. The cycle time data of 6 m^3 typical transit mixer is given below: Loading time of transit mixer = 6 min Travel time of loaded transit mixer to site = 30 min. Average waiting time at site = 5 min. Discharge time of concrete at site through concrete pump = 15 min. Travel time for return trip = 24 min. If the central batching plant having average output of 60 m^3/hr is to run continuously, workout the requirement of number of transit mixers.	8
b.	With a neat sketch, explain the working of power shovel.	8
c.	What are the factors that affect the use and selection of crane for a specific job?	4

UNIT - IV

7 a.	List the difference between CPM and PERT.	10
b.	Determine; i) The expected completion time ii) Variance for the following project iii) Critical path.	10

| Activity	A	B	C	D	E	F	G	H
Predecessors	-	-	A	B	A	C, D	C, D, E	F
Optimistic time (Days	1	1	3	1	1	2	2	6
Most likely time (days)	4	5	6	2	2	4	9	6
Pessimistic time (days)	7	9	9	3	9	6	10	6

8 a. A building project consists of 10 activities listed in the following table. Normal duration of each activity along with the preceding and succeeding activities are also given:

Activity	Preceding Activity	Succeeding Activity	Estimated duration
A	-	B, C	5
B	A	D, E	2
C	A	F, G	6
D	B	H	4
E	B	I	4
F	C	I	2
G	C	J	3
H	D	-	8
I	E, F	-	7
J	G	-	2

10

Draw the network and determine the critical path and the total duration.

b. The network shown in the Fig. (1) has the estimated duration for each activity marked. Determine the total float for each activity and establish the critical path.

Fig (1).

10
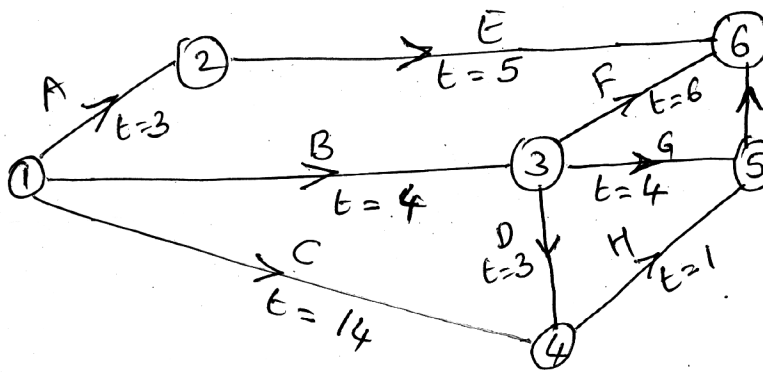
UNIT - V

9 a. Explain two methods of valuation of a property. 10

b. Explain the objectives of KSFC and KIADB. 10

10 a. What do you mean by value engineering? What is the Arithmetic representation of value? 6

b. Explain the guidelines laid by planning commission for the preparation of a project report. 14

✳ ✳ ✳