Seat No.

T.E.(Civil) (Part-II) (Semester-II) (New Course) Examination, 2013
ENGINEERING MANAGEMENT

Sub. Code 45544

Day and Date : Friday 17 - 05- 2013   **Total Marks : 100**

Time :2.30 p.m. to 5.30 p.m.

Instructions : 1) Q.1 and Q.6 are compulsory.
2) Out of remaining attempt any two questions from each section.
3) Figures to the right indicate full marks.

SECTION-I

Q1) a) Explain in brief the various principles of management given by Fayol. **[8]**

b) A network consists of following activities and their durations of a small project. Draw the network and mark critical path and find all types of floats. **[12]**

Activity	1-2	2-3	2-4	3-6	3-7	4-5	4-6	5-7	6-7
Duration in weeks	2	4	5	6	5	4	1	3	2

Q2) a) Determine an initial basic feasible solution to the following transportation problem using North West corner rule. Also, state the cost. **[5]**

	D1	D2	D3	D4	Capacity
S1	25	23	21	24	14
S2	27	28	22	25	16
S3	24	23	26	22	5
Requirement	6	10	15	4	

b) Solve the following assignment problem to determine minimum duration in days. **[5]**

Activity

Supervisor		I	II	III	IV
	A	20	17	18	22
	B	19	23	22	20
	C	18	21	16	23
	D	21	22	24	19

c)   What do you know about Work Breakdown Structure?   [5]

Q3) a)   What is network compression? Explain how total project cost varies with change in direct and indirect cost.   [5]

b)   What is Decision Tree? Explain with a suitable example.   [5]

c)   Explain how the probability of completing the project within certain duration is determined using PERT network?   [5]

Q4) a)   A network consists of following activities and their durations of a small project.

Activity	1-2	1-3	1-4	2-5	3-6	4-6	4-7	5-7	6-7
Duration in days	16	17	14	10	14	20	18	15	16

The network is to be updated after 18 days of its execution. The following conditions exist at the end of 18 days.

i)   Activity 1-2, 1-3 and 1-4 have been completed as originally scheduled.

ii)   Activity 4-6 is in progress and will require 18 more days for its completion.

iii)   Activity 3-6 is in progress and will be completed in 10 days.

iv) Other activities have not been completed and their original predicted durations will hold good, except for activity 5-7 which will require only 13 days instead 15 days originally planned. Update the network and determine what is the total increase in the project duration.

[10]

b) What are the Work Study techniques? **[5]**

Q5) Write short notes on any THREE: **[15]**

a) Importance of Planning function.

b) Sensitivity Analysis

c) Precedence network.

d) Resource leveling.

SECTION-II

Q6) a) What do you mean by engineering economics? Give its importance. **[4]**

b) Draw a typical layout for the site of construction of concrete dam. **[6]**

c) The following table gives information regarding three project alternatives. Assume 10% interest per annum. Using present worth method, determine the best project alternative. **[10]**

Project	Initial Cost	Annual O & M Cost	Annual Benefits	Scrap Value	Life in Years
A	121	5	29	13	10
B	97	6	20	10	10
C	150	8	40	25	10

(All costs are in Lakhs of rupees)

Q7) a) Explain how will you use following methods for economic comparison:
- i) Net Present Value
- ii) Payback Method **[8]**

b) Define the following terms with neat sketch with reference to Break Even Analysis:
- i) Fixed cost
- ii) Variable cost
- iii) Total Sales
- iv) Total Cost
- v) Break Even Point. **[7]**

Q8) a) A project manager wants to collect Rs. 12,00,000/- to purchase a construction equipment after 7 years from now. How much money he has to deposit every year starting one year from now, if interest rate is 14% per year compounded quarterly. **[6]**

b) Describe in brief the main provisions of Child Labour Act. **[6]**

c) What are the functions of material management? **[3]**

Q9) a) Explain the necessity of inventory control. How do you decide the Economic Order Quantity (EOQ)? **[6]**

b) Give the application of Queueing theory in civil engineering. **[4]**

c) What are the objectives of material management? **[5]**

Q10) Write short notes on any three: **[15]**
- a) Capitalized cost
- b) Benefit Cost Ratio.
- c) Workmen's Compensation Act.
- d) ABC analysis.

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