



DEPARTMENT OF CIVIL ENGINEERING
NATIONAL INSTITUTE OF TECHNOLOGY SRINAGAR

B. Tech Major Examination : 05-03- 2020

Subject: Construction Technology & Management (CIV 703)
Semester: 7th(Spring-2019)

Max. Marks: 90

Duration: 3 hours.

Note: Attempt any 5 questions. Marks & C.O are indicated against each question.

Course Outcomes:

CO1- To understand the various techniques of civil engineering constructions.

CO2- To understand the various aspects of construction equipment's.

CO3- To develop the skill for the management of construction projects.

CO4- To develop the concept of works accounting and leadership organization

Q1 (a) What is the role of management in project execution? Describe various phases of Project Management.

[CO-1] (3,5)

(b) What is a network diagram? What are the important steps followed in network construction?

[CO-1] (2,3)

(c) Explain in brief the difference between CPM & PERT. What are the limitations of these networks for a typical construction project?

[CO-1] (3,2)

Q2 (a) What are hosting equipments? With the help of neat sketch explain the difference between Top-slewing tower crane and Bottom-slewing tower crane.

[CO-2] (3,5)

(b) The project with the three time estimates are given below. Draw network diagram and Compute the values of:

- Critical Path
- Critical Duration
- Variance of Critical Path
- Standard Deviation

[CO-2] (2*5)

Activity	IPA	to	tm	tp
A	-	1	4	7
B	-	1	5	9
C	A	3	6	9
D	B	1	2	3
E	A	1	2	9
F	C,D	2	4	6
G	C,D,E	2	9	10
H	F	3	3	3

Q3. (a) A government is planning for a hydroelectric project that will also provide flood control, irrigation and recreation benefits. The established benefits and cost of three alternatives are given in table. The interest rate to be used for the analysis is five percent, and the life of each of the alternatives L, M, & N is to be assumed as 50 years. Choose the best alternative.

Table:

Data for B/C ratio computation (all values in Rs. Million)			
Alternatives	L	M	N
Initial Cost	250.00	350.00	500.00
Annual Irrigation benefits	3.50	4.50	6.00
Annual power sales	10.00	12.00	18.00
Annual recreation benefits	1.00	2.00	3.50
Annual flood control	2.50	3.50	5.00
Annual operation and maintenance	2.00	2.50	3.50

Draw the cash flow diagram for each alternatives.

[CO-2] (9)

(b) The project with the three time estimates (t_o , t_m , t_p) is given below. Draw the network diagram and compute the values of:

- Critical path and critical duration
- Mean Critical Path
- Variance of Critical Path
- Standard Deviation

[CO-2] (1,8)

Activity	IPA	t_o	t_m	t_p
1	-	8	10	13
2	-	5	6	8
3	2	13	15	21
4	1,3	10	12	24
5	4	11	20	30
6	5	4	5	8
7	5	2	3	4
8	7	4	6	10
9	8,6	2	3	4

Q4 (a) Compute the following formulations for interest:

[CO-2] (1*8)

- SPCAF, SPPWF
- EPSCAF, EPSPWF, EPSSFDF, EPSCRF
- AGF, GGF.

(b) For an asset having an initial cost of Rs 2 lakh, and a salvage value of Rs. 50,000 at the end of an economic life of 5 years. Using following methods determine the depreciation, annual depreciation, rate of depreciation, total depreciation & the book-value at the end of each year during the economic life of the asset.

- Straight-line method
- Sum of years method
- Double declining balance method

[CO-2] (10)

Q5 (a) Type 'E' design of a bridge costs Rs. 50 crore to construct and a expense of Rs. 7.5 crore every year to operate and maintain it. Type 'F' design of a bridge, on the other hand, would require Rs. 75 crore to construct and an annual expense of Rs. 5 crore to operate and maintain. Both the designs have considered 100 years as the design life of the bridge. The minimum required rate of return is 5%. With the help of cash flow diagrams show which design should be given a go-ahead and Why?

[CO-3] (8)

(b) What are the problems of present economy in construction sector? Explain with the help of examples how these problems are evaluated by the evaluation methods of construction economics.

[CO-3] (3,6)

(c) How is effective rate of interest calculated?

[CO-3] (1)

Q6 (a) What is Accounting? Discuss the principles of Accounting.

[CO-4] (2,6)

(b) Write the short notes on following:

- Imprest
- Indent
- M.A.S Accounts
- Form of agreement.
- Organization

[CO-4] (2*5)