B.Civil Engg.(Evening) 5th Year 1st Sem 2018 Examination

Subject: Construction management

Time: Three hours

Full Marks: 100

Answer any five questions

1. a) Define Management. Draw the diagram showing interactive nature of Management Processes.   2+4

b) State the importance of organizing in the process of Construction Management.   4

c) A record of maintenance cost is kept on 6 identical machines of different ages. Management wants to determine whether there is functional relationship between machine age (X) and maintenance cost (Y). The following data are obtained:

Machine	1	2	3	4	5	6
X (Years)	2	1	3	2	2	3
Y (Rupees)	7000	4000	1000	8000	3000	10000

Find the regression equation of Y on X. What would be the maintenance cost for a four year old machine?   10

2. a) Offers have been invited by a government concern for which a company has to participate in the tender consisting of several activities. Because of the uncertainties and risks, the manager of the company estimated the most optimistic, most likely and most pessimistic time for each activity as shown below:

Activity	Activity time (weeks)		
	Most Optimistic	Most likely	Most Pessimistic
(1,2)	9	12	15
(2,3)	1	4	7
(2,4)	12	15	48
(3,5)	14	20	26
(3,6)	4	7	16
(3,7)	4	7	16
(6,7)	5	8	11
(4,7)	2	8	14
(7,8)	9	12	15
(8,9)	1	4	7
(5,6) dummy	-	-	-

The manager now advised you to do the following: 12

i) Draw the PERT network of the project

ii) Determine the critical path

iii) Find the expected time and variance for each activity

b) A Machine costs Rs 8,00,000. Annual operating costs are Rs 2,00,000 for the first year, and they are increased by Rs 1,50,000 every year .Determine the least age at which to replace the machine. Assume that the resale value of the machine is zero. 8

3. a) Differentiate between Fixed Assets and Current Assets 6

b) What do you mean by the term 'Liability'? 3

c) State whether Capital of an Enterprise is asset or liability. 2

d) Prepare a balance sheet for X Co. with the following balances as on 31.3.2017: 9

	(in Rs)
Capital	80,00,000
Land property	45,50,000
Closing Stock	7,00,000
Furniture	1,00,000
Buildings	15,00,000
Debtors	2,50,000
Creditors	2,50,000
Plant & Machinery	9,00,000
Investment	8,00,000
Goodwill	6,00,000
Cash in hand	4,00,000
Bank Overdraft	4,00,000
Loans	3,50,000
Bills payables	3,00,000
Sales	20,00,000
Net profit for the year	5,00,000

4. a) The interdependencies of various activities and their normal time are depicted in the following table.

Activity	Predecessor activity	Normal Time (weeks)
A	-----------	9
B	A	14
C	A	4
D	C	6
E	---------	14
F	E	6
G	B,D	5
H	F,G	2

(i) Find out the completion period.
(ii) Find out the total float, free float and independent float for each activity   10

b) Explain Centralization of Organizational Authority. Differentiate it between Decentralization of Authority.   6

c) Explain the role of Planning as process of Construction Management.   4

5 (a) A Co. has been awarded for construction of a new power plant in the district of Purulia. Since, it is a drought prone area, the project manager is seriously thinking for having the construction water required for the project. The following options are available:

- Purchasing water from neighbour at Rs 1,50,000 over the next 10 years.
          or
- Drilling a new tube well.

However, the project manager got the information that in the past only 70% of wells drilled were successful at 200 ft depth. Moreover, on finding no water at 200 ft. some persons drilled it further up to 250 ft. The prevailing cost of drilling is Rs 500 per ft.

The following decisions can be optimal.

i)   Do not drill any well,
ii)   Drill up to 200 ft and
iii)   If no water is found at 200ft. depth, drill further upto 250 ft.

With the help of decision tree technique, you, as a site engineer advise your project manager.   12

b) Mention the advantages and limitation of Bar Chart in Construction Industry.   8

6. a) At the end of the accounting year, the accountant of your Co. extracts the following balances from his accounts books as on 31.12.2016.

Stock at Jan 01, 2016: Rs 12,00,000; Wages: Rs 3,20,000; Purchases: Rs 12,00,000; Freight: Rs 50,000; Sales: Rs 35,00,000; Sales Return: Rs 10,000; Rent on premises paid: Rs 20,000; Repairs: Rs 16,000; Discount allowed: Rs 50,000; Discount Received: Rs 40,000; General expenses: Rs 50,000; Bad debt: Rs 50,000; Plant & Machinery: Rs 2,00,000; Sundry Debtors: Rs 3,50,000.

You are required to prepare Trading Account and Profit & Loss Account for the year ended Dec 31, 2016 taking the following information into account.

Stock at December 31,2016 was Rs 3,50,000

12

b) Mention the importance of Expert Opinion Method in connection with Forecasting Techniques.

4

c) Explain the terms "Payoff Value" and "Expected Monetary Value" in connection with Decision Theory.

4

7. Answer any four:

4 X 5=20

a) Define Strike and differentiate it from Layoff.

b) Briefly explain Wasting Fixed Asset.

c) Differentiate between Tangible Fixed Assets and Intangible Fixed Asset.

d) Enumerate special features of PERT and CPM in Construction Management.

e) Explain Free Float of an Activity.