B.E. Civil/Sem- VIII / CBCGS/ R-19 / 'C-Scheme/ CM / Date:- 02/12/2024

Time: 3 Hours

Marks :80

QP :- 10069947

Note:
  i)   Q. 1 is compulsory.
  ii) Attempt any three out of remaining five questions.
  iii) Figures to right indicates full marks.
  iv) Assume Suitable data if required and specify it clearly, correctly and in upper case letters.

Q1. a) Describe in detail Henry Fayol's management principles (any ten). -10M
    b) What are the unique features of Construction Industry in India? -05M
    c) Write Short note on 'Life Cycle of Construction Project' -05M

Q2)a) Draw Activity on Arrow diagram to show following relationship: - -10M

Sr No	Activity	Preceding Activity	Duration in days
1	P	-	4
2	Q	-	6
3	R	P	8
4	S	Q	4
5	T	Q	7
6	U	R,S	6
7	V	R,S	4
8	W	T,U	6

Show Critical Path on network and specify critical activities and find Project duration.
Find the Activity Times and calculate all types of Floats.

b) What is the difference between CPM and PERT network? -05M
c) Write a short note on Post-work order and preconstruction planning by contractor. -05M

Q3) A PERT network comprises of 10 activities. They together with their 3 time estimate are shown in the following table:-

Activity	i-j	to (days)	tm(days)	tp(days)
A	10-20	4	6	8
B	20-40	3	6	9
C	20-30	1	2	3
dummy1	30-40	-	-	-
D	40-50	2	4	6
E	30-50	3	6	9
F	50-60	1	2	3
G	50-70	2	4	6
dummy2	60-70	-	-	-
H	70-80	4	6	8

i) Draw PERT network and find variance of each activity -3M
ii) Compute the expected completion time of the project corresponding to 50% probability -3M
iii) What is the probability of the work being completed in 29 weeks? -2M
iv) What will be the project duration corresponding to 90% probability? -2M

Z - factor	Probability	Z - factor	Probability
+3.00	99.87	-1.00	15.87
+2.00	97.72	-2.00	2.28
+1.00	84.13	-3.00	0.13
0.00	50.00		

b) Explain WBS with an example.   -5M

c) Write note on Bar chart and milestone chart and highlight their difference.   -5M

Q.4 a) What is the distinction between resource smoothening and resource levelling?   -8M
   Explain with example resource conflict on a construction project.

b) Prepare Resource histogram with respect to EST and LST   -12M
   Comment which solution is better and why.

Activity	Preceding Activity	Duration	Resources(men)
A	-	2	4
B	A	2	3
C	A	3	4
D	B	3	4
E	C	1	2
F	D,E	2	3
G	D,E	3	2
H	F	2	3

Q5) a) What do you understand by compression and decompression of a network?   -10M
   When in a Construction project a project manager has to compress and decompress a network?

b) The Cost duration data for a construction job is as given below:-

Activity	Preceding Activity	i-j	Normal duration (weeks)	Crash duration (weeks)	Normal Cost (Thousand)	Crash Cost (Thousand)
L	-	10-20	4	2	8	12
M	-	10-30	5	4	10	15
N	L	20-40	3	2	6	8
P	M	30-50	4	2	4	6
Q	N	40-50	6	4	3	4
R	P,Q	50-60	4	2	3	5

The Indirect Cost of the project is Rs.2000/- week

Find i) Critical Path, Normal Project duration and Critical Activities.   -3 M
   ii) Minimum duration and corresponding cost.   -2 M
   iii) Optimum Time Cost Combination and   -4 M
   iv) plot time cost curve.   -1 M

Q.6) Write notes on followings (Any five)   -20M
   a) Workmen's Compensation Act 1923.
   b) Statistical Quality Control
   c) Quality Manual and Checklists
   d) Updating of Project network
   e) OSHA
   f) ABC Analysis
   g) Costs of accident

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