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**PRESIDENCY UNIVERSITY
BENGALURU**

SET B

**SCHOOL OF ENGINEERING
END TERM EXAMINATION – MAY/JUNE 2024**

Semester : Semester VI - 2021
Course Code : CIV2035
Course Name : Construction Project Management
Program : B.Tech.

Date : Jun 6, 2024
Time : 1.00PM – 4.00PM
Max Marks : 100
Weightage : 50%

Instructions:

- (i) Read all questions carefully and answer accordingly.
- (ii) Question paper consists of 3 parts.
- (iii) Scientific and non-programmable calculator are permitted.
- (iv) Do not write any information on the question paper other than Roll Number.

PART A

Answer any 4 questions

4*5M=20M

1. Which are the different ways to reduce the project duration in construction. (CO1) [Knowledge]
2. An organizational chart graphically represents an organization's structure, highlighting the different jobs, departments, and responsibilities that connect the company's employees to each other and to the management team. In this context draw, sketch a matrix type organizational chart and write the characteristics of the same. (CO1) [Knowledge]
3. If an estimate is more than the actual amount, then it is called an overestimate. If the estimate was less than the actual result, then it is called an underestimate. This is different from a prediction. Explain the key points to be considered in detailed estimation. (CO1) [Knowledge]

4. Draw a Gantt chart for the below project:

Activity	A	B	C	D	E	F	G	H
Predecessor	-	A	A,B	B	C	D	D,E	F,G
Duration	2	1	1	2	3	2	1	1

(CO2) [Knowledge]

5. Define Optimistic time, Most likely time and Pessimistic time. Also recall the formulae for average Duration Time and Variance of the estimates. (CO2) [Knowledge]

6. Construct a rough network diagram using nodes and arrows for the below project:

Activity	A	B	C	D	E	F	G	H	I	J
Predecessor	-	-	A	B	A	C,D	E	E	F,G	H,I
Duration	3	8	6	4	9	2	8	5	9	1

(CO2) [Knowledge]

7. Earned Value Analysis (EVA) is a method that allows the project manager to measure the amount of work actually performed on a project beyond the basic review of cost and schedule reports. Express with proper formulae the Derived Metrics of EVA, which are SV, SPI, CV and CPI. (CO3) [Knowledge]
8. Define Crash cost and Crash Duration with example. (CO3) [Knowledge]

PART B

Answer any 4 questions

4*10M=40M

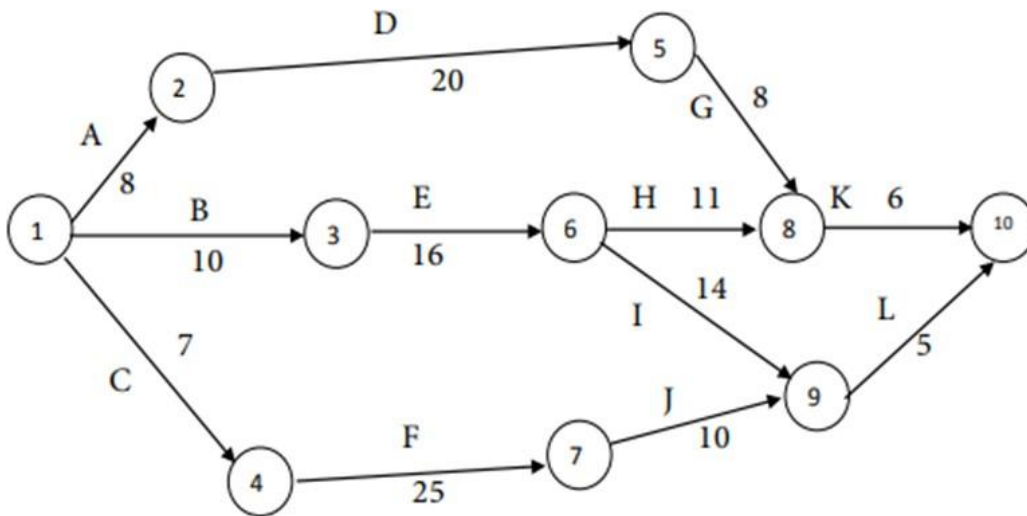
9. Managers should be able to make informed decisions that align with the team's vision and the organization's goals. Elaborate on the competencies of a Project management. (CO1) [Comprehension]

10. Draw the Gantt chart for the following activities to find the duration of project.

Activity	Predecessor activity	Duration (in days)
P	~	3
Q	P	3
R	Q, T	3
S	R	4
T	P	3
U	Q, R	2
V	U, S	3

(CO1) [Comprehension]

11. A continuous sequence, consisting of nodes and activities alternatively, beginning with the start event and stopping at the end event of a network is called a path in the network. Find out the completion time and the critical activities for the following project:



(CO2) [Comprehension]

12. Determine the project duration for the project shown below, also draw the schedule table with total float and free float for all the activities.

Activity	A	B	C	D	E	F	G	H	K	L
Predecessor Activity	-	A	A	B	C	C	D,E	F,G	B	G,K
Duration (days)	6	10	14	8	12	8	16	8	2	5

(CO2) [Comprehension]

13. Earned Value Analysis is a project management method that measures the amount of work completed on a project. It's an industry standard method that can also forecast a project's completion date and final cost. Analyze a project using EVA for the given data. In a project after 1.5 years of starting the work, cost incurred to complete 55% of work was 35 lakhs. But according to budget allocated cost for 55% of work was 34 lakhs. As per the schedule in 1.5 years 53% of work was supposed to be completed which was budgeted at 37 lakhs. Calculate SV, SPI and comment on the result.
(CO3) [Comprehension]
14. Risk management standards have been developed by various institutions, including the [PMI](#), the [NIST](#), actuarial societies, and ISO standards. Explain the steps involved in risk management.
(CO3) [Comprehension]

PART C

Answer any 2 questions

2*20M=40M

15. Time and cost are two key components of project management that are closely linked. Explain time-cost trade off, project crashing in detail.
(CO1) [Application]
16. The following details are available regarding a project:

Activity	Predecessor Activity	Optimistic time estimate (to days)	Most likely time estimate (tm days)	Pessimistic time estimate (tp days)
A	-	2	5	8
B	A	2	3	4
C	A	6	8	10
D	A	2	4	6
E	B	2	6	10
F	C	6	7	8
G	D, E, F	6	8	10

- Determine the Critical Path of the Project
- Calculate the variance and standard deviation of the project.
- What is the probability of completing the project in 30 days?
- Also find the Free Float and Total Float for the activity.

(CO2) [Application]

17. Project crashing is a project management technique that involves adding resources to complete tasks simultaneously to shorten a project's timeline. Perform time-cost trade off and determine the total optimum duration of project with minimum total project cost. The indirect cost of project is Rs.50/day. Draw cost v/s duration curve.

Activity	Predecessor	Normal Duration	Crash Duration	Normal Cost	Crash Cost
A	-	5	3	250	300
B	A	4	3	300	375
C	A	6	3	350	875
D	B, C	3	2	300	350

(CO3) [Application]

18. In a project after 6 months of starting the project, cost incurred to complete 50% of the work was Rs. 2,00,000. But according to budget, the allocated cost was Rs. 1,80,000. As per the schedule, in 6 months, 65% of the project was supposed to be completed which was budgeted at 1,90,000. Calculate SV, SPI, CV, CPI and comment on the values.

(CO3) [Application]