

Enrollment No.....



Programme: B.Tech.

Branch/Specialisation: CE

Faculty of Engineering

End Sem (Even) Examination May-2022

CE3EC05 Construction Project Management

Duration: 3 Hrs.

Maximum Marks: 60

Note: All questions are compulsory. Internal choices, if any, are indicated. Answers of Q.1 (MCQs) should be written in full instead of only a, b, c or d.

- Q.1 i. A proposal of something intended to be constructed is known as- 1
(a) Schedule (b) Project
(c) Both (a) and (b) (d) None of these
- ii. Pre-tender stage requires- 1
(a) Acquisition of land (b) Selection of site
(c) Finalisation of alignment of work (d) All of these
- iii. Bar Chart is developed by- 1
(a) Mike Gantt (b) Henry Gantt
(c) Harry Gantt (d) None of these
- iv. Milestone chart is an improvement over- 1
(a) Network Diagram (b) Gantt chart
(c) CPM (d) All of these
- v. The critical activity has- 1
(a) Zero float (b) Maximum float
(c) Minimum float (d) None of these
- vi. The difference between LFT-EFT is equal to- 1
(a) Free float (b) Total Float
(c) Interfering float (d) Independent float
- vii. Which of the following constraint is fixed in resource allocation? 1
(a) Resources (b) Duration (c) Money (d) All of these
- viii. In Resource Levelling- 1
(a) Duration is reduced (b) Duration is increased
(c) Resource is fixed (d) Resource is infinite
- ix. Which software is used for scheduling work? 1
(a) MS project (b) AutoCAD (c) Staad pro (d) All of these

P.T.O.

[2]

- x. Project management software is used for- 1

(a) Scheduling (b) Monitoring

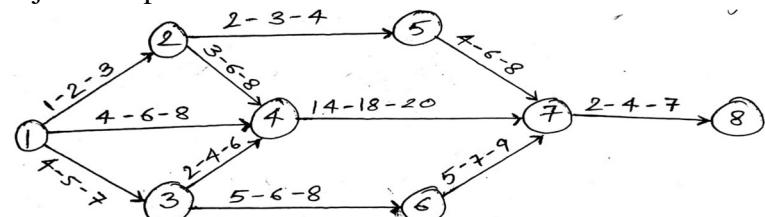
(c) Reporting (d) All of these

Q.2 i. Define project planning. Enlist name of various types of project plan. 2

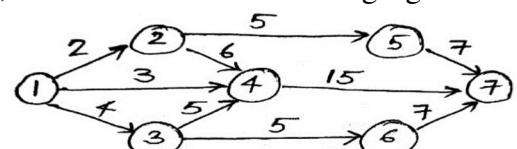
ii. What is project scheduling? Write down importance of project schedule. 3

iii. What is Job Layout? Explain factors affecting job layout with neat diagram. 5

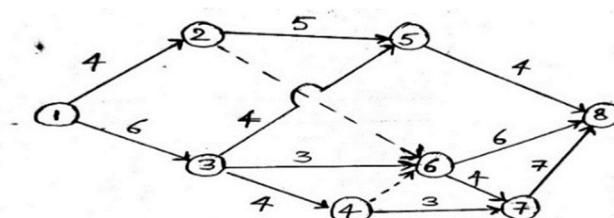
OR iv. Explain Stages of project planning with flow chart diagram. 5



- iii. Calculate LOT, EOT and Slack of following figure on each node: 5



Q.4 i. Write down difference between CPM and PERT **4**
ii. Calculate EST, LST, EFT, LFT and floats of following figure: **6**



[3]

- | | | | |
|-----|------|--|---|
| OR | iii. | Write a short on: | 6 |
| | (a) | Normal cost and Crash cost | |
| | (b) | Normal time and Crash time | |
| | (c) | Cost slope | |
| Q.5 | i. | Explain Construction Project Claim and Dispute in brief | 4 |
| | ii. | Explain Resource Levelling and Resource allocation in detail. | 6 |
| OR | iii. | Define Contracts. Explain its type in detail. | 6 |
| Q.6 | | Attempt any two: | |
| | i. | Define Project control? Explain Project control process in detail | 5 |
| | ii. | Define Project updating. Explain various methods of Updating | 5 |
| | iii. | Explain different functions and applications of Project management software. | 5 |

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Q1. Multiple Choice Question (Answers):- 1 mark each

Ans (i) Project (b)

Ans (ii) All of the above (d)

Ans (iii) Henry Gantt (b)

Ans (iv) Gantt Chart (b)

Ans (v) Zero float (a)

Ans (vi) Total float (b)

Ans (vii) Duration (b)

Ans (viii) Resource is fixed (c)

Ans (ix) MS project (a)

Ans (x) All of these (d)

- Q2. (i) for proper definition of project planning
give one mark
- for enlisting each name give $\frac{1}{4}$ marks i.e.
for 4 names give One mark.
- ii) For proper definition of project scheduling
give one mark
- for explaining 4 pts. of importance of
project scheduling give two marks.
- iii) for proper definition of job layout give
one mark
- On explaining 4 pts. of factors affecting give
two marks.
- for proper sketch give two marks.
- iv) for explaining each stage of planning give
1/2 marks i.e. On describing 8 pts. (stages)
give four marks.
- For flow chart diag. give one mark.

Q3. (i) (a) for proper definition of activity give

1/2 mark.

for explaining each type give 1/2 mark

i.e. On explaining 4 types give 2 marks.

(b) for proper definition of event give

1/2 mark.

for explaining each type give 1/2 mark

i.e. On explaining 4 types give 2 marks.

Q3(ii) Sol) The network has 5 paths

i) 1-2-4-7-8

ii) 1-2-5-7-8

iii) 1-4-7-8

iv) 1-3-4-7-8

v) 1-3-6-7-8

give (a) To find the expected time of each activity

3 marks

$$t_e = \frac{t_o + 4t_m + t_p}{6}$$

Activity	t_o	t_m	t_p	t_e
1-2	1	2	3	2
1-3	4	5	7	5.16
1-4	4	6	8	6
2-4	3	6	8	5.83
2-5	2	3	4	3
3-4	2	4	6	4
3-6	5	6	8	6.16
4-7	14	18	20	17.66
5-7	4	6	8	6
6-7	5	7	9	7
7-8	2	4	7	4.16

(b). Ete of path

$$\Sigma t_e \text{ of path} = 29.65$$

$$i) 1-2-4-7-8 = 2 + 5.83 + 17.66 + 4.16 = 29.65$$

$$ii) 1-2-5-7-8 = 2 + 3 + 6 + 4.16 = 15.16$$

$$iii) 1-4-7-8 = 6 + 17.66 + 4.16 = 27.82$$

$$iv) 1-3-4-7-8 = 5.16 + 4 + 17.66 + 4.16 = 30.98 \approx 31$$

$$v) 1-3-6-7-8 = 5.16 + 6.16 + 7 + 4.16 = 22.48 \approx 22.50$$

give 2 marks
from the above calculation, path 1-3-4-7-8 has maximum expected time i.e. $t_e = 31$ units

\therefore The critical path is 1-3-4-7-8 Ans
& the duration of the project = 31 units Ans

Q.3. (iii) Solⁿ Calculation of EOT

give
2
marks
=

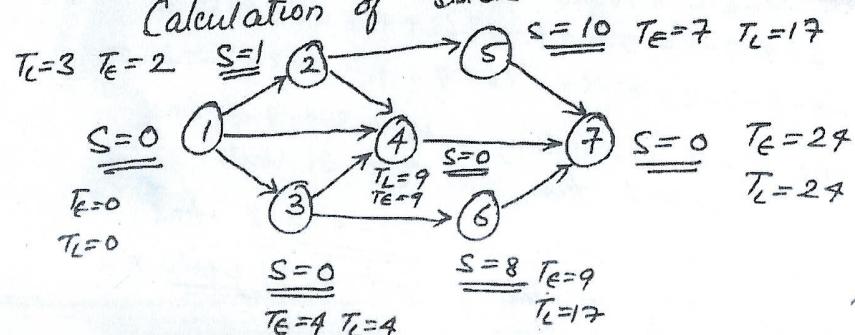
Event	Predecessor Event	$T_E i$	Activity Duration(t)	$T_E j = T_E i + t$
1	-	-	-	0
2	1	0	2	2
3	1	0	4	4
	1	0	3	3
4	2	2	6	8
	3	4	5	9
5	2	2	5	7
6	3	4	5	9
7	4	9	15	24
	5	7	7	14
6	9	7	7	16

Calculation of LOT

give
2 marks
=

Event	Successor Event	$T_L j$	Activity Duration(t)	$T_L i = T_L j - t$
1	2	3	2	1
	3	9	3	6
	4	4	4	0
2	4	9	6	3
	5	17	5	12
3	4	9	5	4
	6	17	5	12
4	7	24	15	9
5	7	24	7	17
6	7	24	7	17
7	-	24	-	24

Calculation of slack



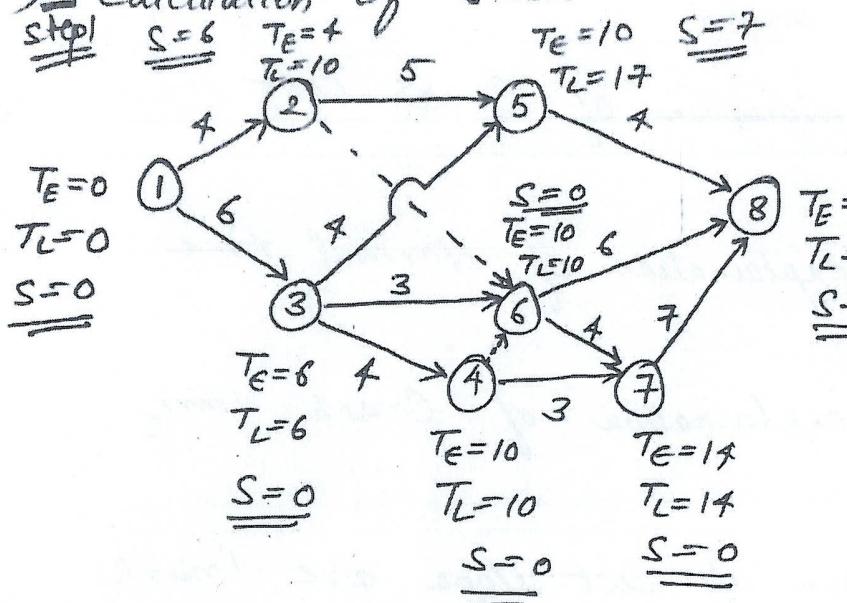
give 1 marks

Q.3. pg no. 3

- Q4 iii) a) For proper explanation of Normal cost give 1 marks
for proper explanation of Crash cost give 1 mark.
- b) For proper explanation of Normal time give 1 marks
for proper explanation of Crash time give 1 marks
- c) for explanation of cost slope give 1 marks & for formula of cost slope give 1 marks.
- Q5 (i) On proper explanation of Project Claim give $\frac{1}{2}$ marks i.e. 2 marks for 4 pts.
On proper explanation of each point of Dispute give half ($\frac{1}{2}$) marks i.e. 2 marks for 4 pts.
- ii) for each pt. on Resource levelling & Resource allocation give $\frac{1}{2}$ marks i.e. 6 marks for 12 pts.
- iii) for definition give 1 marks
for explaining each type give 1 mark i.e. 5 types for 5 marks.

Q4. (i) For each difference give $\frac{1}{2}$ marks i.e.
for 8 pts./difference give 4 marks.

ii) solⁿ Calculation of slack



} give 2 marks

step 2 Calculation of ES, LS, EF, LF & floats

Nodes	Duration	ES	EF	LS	LF	TF	FF	IF
(t)								

1-2	4	0	4	6	10	6	0	0
1-3	6	0	6	0	6	0	0	0
2-5	5	4	9	12	17	8	1	-5 \approx 0
2-6	0	4	4	10	10	6	6	0
3-4	4	6	10	6	10	0	0	0
3-5	4	6	10	13	17	7	0	0
3-6	3	6	9	7	10	1	1	1
4-6	0	10	10	10	10	0	0	1
4-7	3	10	13	11	14	1	1	1
5-8	4	10	14	17	21	7	7	0
6-7	4	10	14	10	14	0	0	0
6-8	6	10	16	15	21	5	5	5
7-8	7	14	21	14	21	0	0	0

} give
4 marks

Critical Path is 1-3-4-6-7-8

Q6 (i) For definition of Project control give 1 marks.

for each project control process give 2 mark i.e. 4 marks for 2 process.

ii) for proper definition of project updating give 1 marks

for explaining each method of updating give 2 mark i.e. 4 marks for 2 method

iii) for explaining each function give 1 marks i.e. 3 marks for 3 functions.

for explaining each application give $\frac{1}{2}$ mark i.e. 2 marks for 4 pts.