University of Mumbai

Examinations: First Half 2022

Program: B.E. (Civil) (Rev-2016) (Choice Based)

Curriculum Scheme: Rev-2016

Class: BE Semester: VIII

Course Code: CE-C802 and Course Name: Construction Management

Question Bank

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Q1.	**Choose the correct option for following questions. All the Questions are compulsory and carry equal marks (2 Marks each)**
1.	Which of the following statement is not True
Option A:	Unity of command suggests that one employee should have only one boss and should receive instructions from him only.
Option B:	Unity of Direction suggests that there should be only one leader and one plan for series of activities seeking accomplishment of same objective.
Option C:	Unity of Direction suggests that one employee should have only one boss and should receive instructions from him only.
Option D:	Scalar chain of command specifies route through which the information is to be communicated to desired location/ person.
2.	Which of the following is not Principle of Management given by Henry Fayol
Option A:	Stability of Tenure
Option B:	Espirit de corps
Option C:	Subordination of personal interest to general interest
Option D:	Replacing rule of thumb with Science
3.	Project is expected to start on 1st July. It has 3 activities. Namely, Excavation-PCC-RCC. It requires 7-2-3 days for their completion respectively. Every activity is scheduled to start at earliest starting time. if activity of excavation finishes as late as possible on 9th day, what will be the independent float of "PCC" activity.
Option A:	Zero (0)
Option B:	Two (2)
Option C:	Minus Two (-2)
Option D:	Four (4)
4.	If the float of the activity is positive, it is called as
Option A:	Critical activity
Option B:	Sub-Critical Activity
Option C:	Super-critical activity
Option D:	Dummy activity
5.	If an activity has its optimistic, most likely and pessimistic times as 2, 3 and 4 respectively, then its expected time and variance are respectively
Option A:	3 and 0.111
Option B:	3 and 0.333
Option C:	4 and 0.11
Option D:	3 and 0.999

6.	What is the limitation of Milestone chart
Option A:	Milestones are easily identified
Option B:	Interdependencies between the milestones are not shown.
Option C:	Identification of key event
Option D:	Tracing of events
7.	Which of the following is true?
Option A:	Histogram gives us idea regarding budget of the project
Option B:	Histogram prepared from EST schedule is always preferable
Option C:	Histogram gives us idea regarding resource requirement of the project
Option D:	While plotting histogram, Activities are plotted on x axis and no of labours are plotted on y axis
8.	On which of the following criteria, effectiveness of the schedule is identified?
Option A:	Effective force ratio
Option B:	Labour requirement of the project
Option C:	Overall time of the project
Option D:	Budget of the project
9.	While crashing a network, activity having following characteristic is crashed first
Option A:	Minimum Cost slope
Option B:	Maximum cost slope
Option C:	Non-Critical Activity
Option D:	Non-Critical activity with Maximum cost slope
10.	Cost slope is defined as _____
Option A:	Cost required to crash the activity by unit time
Option B:	Time required to crash the activity
Option C:	Cost required to complete the activity in minimum time
Option D:	Cost required for the activity
11.	Crash cost of the activity is 3000, Normal cost of the activity is 2000, Crash time is 3 days and normal time is 5 days, crashing potential of the activity is _____
Option A:	1000
Option B:	2
Option C:	500
Option D:	3
12.	Process of determining the quality of large group by examining part of the group is called as
Option A:	Sampling
Option B:	Testing
Option C:	Quality Assurance
Option D:	Quality of conformance
13.	Tangible costs related to accident does not involve
Option A:	Medical care expenses
Option B:	Replacement cost of equipment and material
Option C:	Insurance Premium
Option D:	Slowdown in operation

14.	The properties that define the nature of product for quality control purposes. These includes dimension, strength, colour, temperature is called as
Option A:	Quality Characteristics
Option B:	Quality Assurance
Option C:	Quality of design
Option D:	Quality of conformance
15.	Research and development Project requires 29 months for its completion. Variance of the project is 36, what is the probability of completing project in 29 Months?

Z	0	1	2	3
P%	50	84.13	97.72	99.87

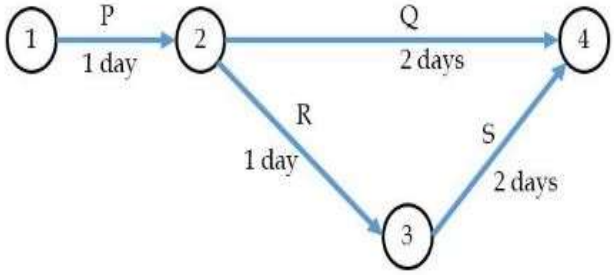
Option A:	100%
Option B:	84%
Option C:	98%
Option D:	50%
16.	Find out Project duration

Activity	Succeeding Activity	Time
A	B,C	12
B	D	13
C	D	14
D	--	15

Option A:	40
Option B:	42
Option C:	41
Option D:	44
17.	Find out critical path

Activity	Succeeding Activity	Time
A	B,C	12
B	D	13
C	D	14
D	--	15

Option A:	A-B-D
Option B:	A-C-D
Option C:	A-B-C-D
Option D:	B-C-D

18.	What is the Effective force Ratio As per EST Schedule for following network?  Activity / Labours per Day: P 1; Q 1; R 1; S 2
Option A:	50%
Option B:	75%
Option C:	67%
Option D:	33%
19.	Cost is incurred on Converting resources into assets is called as
Option A:	Direct cost
Option B:	Indirect Cost
Option C:	Total cost
Option D:	Crash Cost
20.	Which of the statement is not correct with respect to Bar Chart
Option A:	Interdependencies of activities is not known
Option B:	Project progress cannot be monitored
Option C:	Bar chart cannot be used for research and development project
Option D:	Bar chart can be used for large projects
21.	Quality management is performed in _____ phase
Option A:	Initiation
Option B:	Planning
Option C:	Execution
Option D:	Closure
22.	During the construction period, price variation clause in contracts caters to
Option A:	Increase in rates of only important materials
Option B:	Variation in cost in materials element, labour element and petrol-oil-lubricant element
Option C:	Variation in total cost of the project on an ad hoc basis
Option D:	Rate of inflation

23.	The feasibility study is carried out in---------- phase of project life cycle.
Option A:	Planning
Option B:	Organizing
Option C:	Initiation
Option D:	Closure
24.	Which management principle state that orders and instructions should flow down from top to bottom or higher-level manager to lower one?
Option A:	Division of work
Option B:	Scalar Chain
Option C:	Unity of direction
Option D:	Unity of command
25.	Which management function involves setting goals & objectives and creating specific plans for completing them?
Option A:	Planning
Option B:	Organizing
Option C:	Controlling
Option D:	Leading
26.	The shortest possible time in which an activity can be achieved under ideal circumstances is known as _____
Option A:	Pessimistic time estimate
Option B:	Optimistic time estimate
Option C:	Expected time estimate
Option D:	The most likely time estimate
27.	The difference between the maximum time available and the actual time needed to perform an activity is known as _____
Option A:	Free float
Option B:	Independent float
Option C:	Total float
Option D:	Half float
28.	If t_o, t_p and t_m are the optimistic, pessimistic and most likely time estimates of an activity respectively, the expected time t of the activity will be
Option A:	$\frac{t_o + 3t_m + t_p}{2}$

Option B:	$\frac{t_o + 3t_m + t_p}{3}$
Option C:	$\frac{t_o + 4t_m + t_p}{4}$
Option D:	$\frac{t_o + 4t_m + t_p}{6}$
29.	An expected project completion time follows a normal distribution with a mean of 21 days and a standard deviation of 4 days. What is the probability that the project will be completed in a time between 22 to 25 days inclusive?
Option A:	0.0819
Option B:	0.7734
Option C:	0.8413
Option D:	0.2436
30.	The order cost per order of an inventory is Rs. 400 with an annual carrying cost of Rs. 10 per unit. The Economic Order Quantity (EOQ) for an annual demand of 2000 units is ---------
Option A:	400
Option B:	440
Option C:	480
Option D:	500

Q2, Q3, Q4	5 marks each
01	Explain in detail the contribution made by Henry Fayol in the evolution of management thought.
02	Explain the roles of various agencies involved in any construction project.
03	Write a note on feasibility studies for a construction project.
04	Explain in short Work Breakdown Structure.
05	Explain the stages of planning of a construction project by contractor and owner.
06	Explain the need and purpose of human resource management in construction sector.
07	What do you understand by A-B-C analysis?
08	What do you understand by updating? What are the stages of updating? How will you determine frequency of updating?
09	What is time overrun and cost overrun? What are the methods to avoid them?
10	What do you understand by OSHA?
11	Write a short note on occupational health hazards in the construction industry.
12	What is Quality control? Explain the role of inspection in quality control.
13	Explain Fulkerson's Rules for numbering events with an example.
14	Describe Work Break down Structure with example
15	Explain the Functions of Human Resource Management

Q2, Q3, Q4 — **10 marks each**

01 Determine the critical path and Project Duration, Activity times and all the types of floats.

Activity	Predecessor Activity	Duration
M	-	7
N	-	5
P	M	10
Q	N	5
R	P	8
S	N	6
T	S	5
V	P	4
W	Q,T	10
X	R,W	5

02 Following is the data of associated with research and development project

Activity	P	Q	R	S	T	U	V
Preceding Activity	--	--	P	Q	P	Q	R,S
to	6	5	4	4	4	2	4
tm	9	8	7	7	7	5	10
tp	12	17	22	16	10	8	22

i) Determine the Duration of project.
ii) What is the probability of completing the project in 29 days?
iii) What is the schedule duration with 90% probability?
iv) What is the schedule duration with 98% probability?

03 Prepare EST and LST schedule. Prepare resource histogram Which schedule you will prefer and why?

Activity	H(10-20)	I (10-30)	J (20-50)	K (30-40)	L (30-50)	M(40-50)
Duration	8	11	6	5	8	5
Labour	3	4	2	5	3	3

04 *Explain the principles of management given by Henry fayol and principles of scientific management given by F W Taylor*

05 *Following table gives details of the activities involved in construction project, Draw the histogram based on EST schedule.*
If only 10 Labours are available, how will you schedule the activity without delaying the project

Activity	*P*	*Q*	*R*	*W*	*T*	*U*	*V*
Preceding activity	-	-	-	*P*	*Q*	*R*	*T*
Duration	*4*	*5*	*3*	*4*	*5*	*3*	*7*
Labour	*2*	*3*	*5*	*4*	*3*	*5*	*6*

06 Determine the optimum cost and optimum duration of project. Data for each activity is given.

Indirect cost = 16000 Rs/ Day.

Activity	Normal Time	Crash Time	Normal Cost	Crash Cost
P(10-20)	2	2	100000	100000
Q(10-30)	7	3	50000	90000
R(20-30)	6	3	30000	42000
S(20-40)	5	4	20000	25000
T(30-40)	0	0	0	0
U(30-50)	9	4	60000	90000
V(40-60)	11	6	60000	100000
W(50-60)	6	3	70000	91000

B **Solve any One each** **10 Marks**

07 From the Given project data, Carryout resource allocation & prepare EST & LST based resource histogram.

Activity	1-2	1-3	2-3	2-4	3-5	4-5	5-6
Duration	2	4	8	5	7	2	2
Labor/ day	2	3	5	4	1	2	3

A small project is composed of seven activities as given below:

Activity		**Estimated duration (weeks)**		
i	**j**	**t_0**	**t_m**	**t_p**
1	2	2	3	5
1	3	4	9	14
1	4	2	8	12
2	5	1	1	1
3	5	2	5	14
4	6	2	8	10
5	6	3	9	15

i) Draw project network
ii) Find expected duration, standard deviation and variance of all activities.
iii) Calculate the variance of the project duration.
iv) What is the probability that the project will be completed 3 weeks earlier than the expected date?

Z	-3.0	-2.0	-1.0	0	+1.0	+2.0	+3.0
P (%)	0.13	2.28	15.87	50	84.13	97.72	99.87

09 Explain 14 principles of management

10 Explain function of human resource management in details?

11 What is Quality control? Explain the role of inspection in quality control.

12 The table below show time estimate of construction project :

Activity	1-2	1-6	2-3	2-4	3-5	4-5	6-7	5
t_0	1	2	2	2	7	5	5	
t_m	7	5	14	5	10	5	8	
t_p	13	14	26	8	19	17	29	

a) Draw Project network
b) Find the expected duration and variance of each activity
c) Calculate earliest and latest occurrence for each event

d) Calculate expected project length.
e) Calculate the variance and standard deviations of project length.
f) Find the probability of the project completing in 40 days?

Z value	0.5	0.6	0.7	0.8	0.9
Probability	0.69146	0.72575	0.75804	0.78814	0.81594

13

Activity data for a small project is given in the following table:

ivity	A	B	C	D	E	F	G	H	
eding vity	-	-	-	A	B	C	D,E	B	
ation ys)	3	5	4	2	3	9	8	7	

I) Draw AOA Network
II) Work out activity times and floats
III) Determine project duration and critical path

14

The following table shows the details of activities of a small work. Construct the network of
The project. Determine optimum project cost & optimum duration.
Indirect cost/day = Rs.750 /-

Activity	Predecessors	Normal		Cras	
		Time (days)	Cost (Rs)	Time (days)	
A	-	9	8000	6	
B	-	5	5000	3	
C	B	5	5000	3	
D	A	7	4000	4	
E	A	5	5500	3	
F	D	6	8000	4	

15

Write Short note on:

i) Safety campaign

ii) Causes of accidents

iii) Quality Assurance

iv) Economic Order Quantity