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CS/B.TECH (CE)/SEPARATE SUPPLE/SEM-8/CE-803/2011

2011

CONSTRUCTION MANAGEMENT, TECHNOLOGY & DEPARTMENTAL PROCEDURE

Time Allotted : 3 Hours *Full Marks* : 70

The figures in the margin indicate full marks.
Candidates are required to give their answers in their own words as far as practicable.

GROUP – A

(Multiple Choice Type Questions)

1. Choose the correct alternatives for any *ten* of the following :

$10 \times 1 = 10$

i) Which of the following does not represent an activity ?

a) site located

b) foundation is being dug

c) office area is being cleaned

d) the invitations are being sent.

ii) Earliest finish of an activity is always

a) Greater than earliest event time of the following node

b) Less than earliest event time of the following node

c) Less than or equal to earliest event time of the following node

d) Greater than or equal to earliest event time of the following node.

iii) Free float for any activity is defined as the difference between

a) Its earliest finish time and earliest start time for its successor activity

b) Its latest start time and earliest start time

c) Its latest finish time and earliest start time for its successor activity

d) Its earliest finish time and latest start time for its successor activity.

iv) Critical path

a) is always longest b) is always shortest

c) may be longest d) may be shortest.

v) The independent float affects only

a) preceding activities

b) succeeding activities

c) the particular activity involved

d) none of these.

vi) Which of the following types of pumps can be used for concreting ?

I) Piston operated.

II) Pneumatically operated.

III) Centrifugally operated, with straight blades

IV) Screw type.

Select the correct answer using the codes given below Codes :

a) I and III b) I and II

c) I, III and IV d) II and IV.

vii) Grader is used mainly for

a) trimming and finishing

b) shaping and trimming

c) finishing and shaping

d) finishing, shaping and trimming.

viii) Which one of the following is not an excavating and moving type of equipment ?

a) Bulldozer b) Clam shell

c) Scraper d) Dump truck.

ix) The most suitable type of equipment for compaction of cohesive soils is

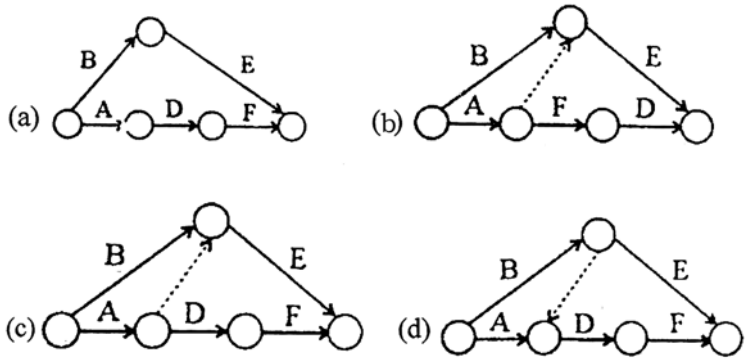
a) Smooth-wheeled rollers

b) Vibratory rollers

c) Sheep foot rollers

d) Tampers.

x) Activities A and B can be started independently. Activity E can be started only when A and B have been completed. Activity D follows A and precedes F. Activities E and F merge at the objective event. The network plan will be as in



xi) Sinking fund is

a) the fund for rebuilding a structure when its economic life is over

b) raised to meet maintenance costs

c) the total sum to be paid to the municipal authorities by the tenants

d) a part of the money kept in reserve for providing additional structures and structural modifications.

xii) During the construction period, price variation clause in contracts caters to

a) increase in rates of only important materials

b) variation in cost in materials element, labour element and petrol-oil-lubricant element

c) variation in total cost of the project on an ad hoc basis

d) rate of inflation.

xiii) At a work site, statistical quality control of concerete means

a) measurement of risks to eliminate failures

b) applying the theory of probability to sample testing or inspection

c) reduction in wastage of inspection costs

d) reduction in costs for the removal of defects

GROUP – B

(Short Answer Type Questions)

Write short notes on any *three* of the following. $3 \times 5 = 15$

2. Lumpsum and Schedule Contract
3. Resources in Construction industry
4. Continuing and Running Contracts
5. A-O-A and A-O-N Networks
6. Batching Plant
7. Fulkerson's Rule.

GROUP – C

(Long Answer Type Questions)

Answer any *three* of the following. $3 \times 15 = 45$

8. a) Define network. What are the advantages of network techniques ?

   b) What are the components of network ?

   c) Explain the rules of network construction. 5 + 4 + 6

9. a) What are the different types of floats involved in CPM ?

   b) Define looping and dummy activity with an example.

c) The following are the activities and the logic for a project. Develop the network for the project.

Activities : A, B, E, Q, K, X, J, Z, G, F, C

Logic

i. A and B can be carried out at the same time. They represent the beginning of the job.

ii. K follows E.

iii. X depends on Q and K.

iv. Neither F nor G can be started before B is completed, but they can be concurrently performed.

v. E and Q follow A

vi. Q must be carried out before J

vii. C depends on the completion of F and G.

viii. E and Q can be executed at the same time.

ix. Z can only be started when C, X and J are finished.

x. Z is the last activity. 15

10. Given that a project involves activities A to I, each requiring completion time, in days as per the table :

Activity	A	B	C	D	E	F	G	H	I
Time	23	8	20	16	24	18	19	4	10

Given that activity A precedes activities D and E, activities B and D precede activity F, activity C preccedes activity G, activities B and G precede H, and activities F and G precede activity I. Draw the network and calculate

i) Total float.

ii) Free float.

iii) Independent float.

iv) Critical path

v) Project completion time. 5 + 2 + 2 + 2 + 2 + 2

11. Explain the responsibilities of the following in a project :

    i) Engineer

    ii) Contractor

    iii) Architect

    iv) Owner. 15

12. a) Explain in details the importance of concrete mixtures in the construction work, mentioning the points which are to be carefully paid attention to when concrete mixtures are used.

    b) Name the different types of excavators and describe briefly about each. 5 + 10

13.

Activity	Predecessor	Most optimistic	Most likely	Most Pessimistic time
A	-	2	4	12
B	-	10	12	26
C	A	8	9	10
D	A	10	15	20
E	A	7	7-5	11
F	B, C	9	9	9
G	D	3	3-5	7
H	E, F, G	5	5	5

    a) Draw the PERT network.

    b) Find out the critical path and the expected project completion time. 5 + 10

14. a) Classify Buildings based on Fire Protection.

    b) Describe Dry Riser and Wet Riser.

    c) Explain Emergency lighting and Escape Lighting

    5 + 5 + 5