Name : ....

Roll No. : ....

Invigilator's Signature : ....

CS/B. TECH (CE-NEW)/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 × 1 = 10

    i)   An Activity is a task
         a) started   b) completed
         c) being performed   d) none of these.

    ii) "Foundation is being dug" is
         a) an event   b) an activity
         c) both   d) none.

    iii) A "CPM" Network is
         a) activity oriented   b) event oriented
         c) both "a" & "b"   d) any one of "a" or "b".

    iv) Grader is used mainly for
         a) trimming and finishing
         b) shaping and trimming
         c) finishing and shaping
         d) finishing, shaping and trimming.

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v) Which one of the following is not an excavating and moving type of equipment ?
   a) bulldozer   b) clam shell
   c) scraper   d) dump truck.

vi) The most suitable type of equipment for compaction of cohesive soil is
   a) smoothed wheeled rollers
   b) vibratory rollers
   c) sheep foot rollers
   d) tampers.

vii) If optimistic & pessimistic time is denoted by t_o and t_p then; variance can be obtained by :
   a) $((t_o - t_p)/6)^2$ b) $((t_p - t_o)/6)^2$
   c) $((t_p - t_o)/4)^2$ d) none of these.

viii) "PERT" Network is
   a) event based
   b) activity based
   c) both event and activity based
   d) duration based.

ix) Pre-tender stage requires
   a) acquisition of land
   b) selection of site
   c) finalisation of alignment of work
   d) all of the above.

x) While filling the tender for any work the contractor considers
   a) site survey
   b) availability of construction materials
   c) availability of labour
   d) all of the above.

xi) Stack is defined by (T_E is the earliest expected time and T_L is the latest allowable time)
   a) $T_E - T_L$ b) $T_L - T_E$
   c) $T_E + T_L$ d) T_L/T_E.

GROUP – B

(Short Answer Type Questions)

Answer any *three* of the following.

$3 \times 5 = 15$

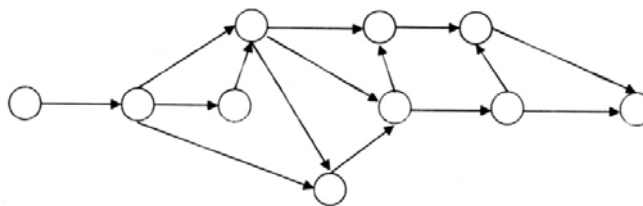2. Using Fulkerson's Rule, number the events of the network shown in the Fig 1 below :

Fig 1

3. Write down the organizational set up in the PWD of the WB Govt.

4. What do you understand by a project ? What is the objective of project management ? Distinguish between CPM and PERT networks.

5. Discuss the various types of tenders.

6. Write short notes on any three.

   Dozer, Scraper, Sheep foot roller, Shovel, Backhoe.

GROUP – C

(Long Answer Type Questions)

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

7. The network for a construction project is shown in Fig 2 below. The three time estimates for each activity are given along each activity arrow. Compute the following :   5 + 5 + 5

   a) Expected time of completion of each activity

   b) Earliest expected time of each event
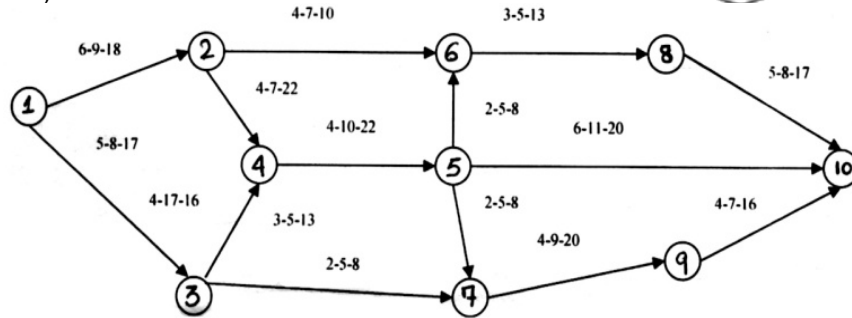
c) Latest allowable occurrence time for each event.

Fig 2

8. a) Calculate the ideal output of a shovel with $1·5$ m³ bucket capacity having a cycle time of 30 seconds. The soil has a swell factor of 20%. If the shovel is filling a dumper of 12 m³ capacity and 2 minutes are lost for positioning of the dumper after each loaded dumper moves, what will be the effect on the output ?

b) A dozer with a blade capacity of 3m³ has to strip soil that has a swelling factor of 25% in thin horizontal layers for a distance of 50m. The dozer's forward speed is 2 km/hr and return speed is 5 km/hr. In each cycle it consumes a fixed time of $0·4$ mins for shifting gears, adjusting blade, etc. Compute the output of the dozer.

c) Differentiate between static steel drum roller and vibratory roller. $6 + 6 + 3$

9. a) Classify buildings based on fire-protection.
   b) Describe dry riser and wet riser
   c) Explain emergency lighting and escape lighting.

10. Explain the responsibilities of the following in a project :
    a) Engineer
    b) Contractor
    c) Architect
    d) Owner

11. Discuss any *three* of the following : $3 × 5$
    a) Earliest event time and latest event time
    b) Time estimates for PERT activities
    c) Total float and free float
    d) Dummy activity