Roll No ....

MVCP/MVCT-203

M.E./M.Tech., II Semester

Examination, June 2017

Construction Equipment and Material Management

Time : Three Hours

Maximum Marks : 70

Note: i)   Attempt any five questions.

ii) Each question carry equal marks.

iii) Supplement your answer with neat sketches.

1. a) What are the merits and demerits of using manual labour in construction industry.   7

   b) Discuss the effect of proper planning and selection of construction equipment upon ultimate cost of construction.   7

2. a) How can you ensure maximum production of construction equipment through planning and operation? State all the important factors that must be kept under consideration by the plant planner to ensure such production.   7

   b) A project has following structures to be constructed for which equipments are needed: 7

      • Two diversion tunnel (each 4.5m diameter, 350m long)

      • Two power tunnels (each 07m diameter, 2.5km long)

      • Saddle dam (Rock fill with earth core, 40m high)

      Provide a detail list of operations and the equipments required for above referred works.

3. a) What do you mean by Cycle time? How it is fixed? How correction to cycle time is applied? Explain in detail. 7

   b) Write an explanatory note on output of power shovels and draglines. When these are used? Also discuss about the factors on which the output of above referred instruments depends.   7

4. a) A Railway embankment 2km long, 20m high, 20m top width with side slope 2:1 (H:V) is to be constructed in 2 years each of 200 days. The material is available along alignment with average lead of 600m with moisture content of 10%. The fill is to be compacted at OMC 18% by weight to 95% of MDD. The water is available at average distance of about 2km.   7

      Select suitable construction equipments for the projects and workout the size and number of each type of equipment to complete the construction within the prescribed period.

   b) A grader is to be used to maintain 1.5km of haul road. It is estimated that the work will require three passes in second gear and four passes in third gear. Use an efficiency factor of 60%. Suitable grader speed may be chosen. What is the time required for this task.   7

5. a) A piece of construction equipment costs Rs. 13.00 lacs with average expected life of 6 years with zero salvage value cost of maintenance, fuels and lubricant, taxes, insurance etc. is estimated as Rs. 2,80,000 in first year and to increase by Rs. 20,000 each year, Find the uniform annual cost of owning and maintaining the equipment if interest rate is 11%.   7

b) Write an explanatory notes on recommendations of statutory bodies regarding economics of construction equipments. 7

6. a) Write short notes on 7

   i) Overhead

   ii) Major repair cost

   b) What do you mean by system approach to planning of construction equipments? What are the various problems comes across in management of equipments. 7

7. a) What are the various principal techniques used in system approach to planning and application? Describe any two techniques in brief. 7

   b) A superintendent of a field workshop has four crews and four jobs to be completed. Determine the cost and optimal assignment of crews if the cost of each job for each crew is as given in the following matrix. Use assignment model. 7

	Crew			
Job	1	2	3	4
A	9	7	8	5
B	5	6	7	8
C	4	9	5	6
D	8	7	6	7

Write short notes on any three: 5+5+4

a) Purchasing parameters and their inter relationships

b) Scrap disposal

c) Limitations of tabular analysis

d) Surplus and obsolete materials

e) Factors influencing inventories

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