Roll No .....

MVCP/MVCT-203

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

Examination, December 2016

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) Describe in details about merits and demerits of using machines in construction Industries. 7
   b) Explain about the general considerations needs to be warranted in the process of equipment selection. 7

2. a) A project has the following structures to be constructed for which equipment is needed. 7
   - Concrete dam (gravity structure, 80m high)
   - Two coffer dams of stone masonry (25m and 10m high)

   Provide a detailed list of type of equipments required and operation to be done by equipments.
   b) Describe the project data and related information that are necessary in order to plan the equipment for construction, satisfactorily. 7

3. a) Enlist various steps which are involved in designing construction plant and equipment. 7

b) What do you mean by Job and management factors. How these factors are classified. Also provide the matrix of these factors as suggested by Frank A. Nikirk. 7

4. a) What do you mean by sizing and matching? Suggest procedure to ascertain the number of hauling units required for a particular shovel size. 7

b) Construction of solid concrete dam involves placement of 560,000m^3 of concrete during 4 years. Maximum quantity of concrete required in 2nd year of construction is 210,000mm^3. It is proposed 200 working day with two shifts in a year Suitable granite rock is available in a hill at a distance of 3kM from dam site. There is no overburden. Query products shall be processes aggregate in size range of (150-75)mm, (75-40)mm, (40-20)mm and (20-06)mm. Good quality sand is not available around the site hence blending of natural sand with the processed fines of the crasher will be necessary, For this project prepare schematic arrangements of the aggregate and concrete producing plant. Give the sizes of various stock piles of aggregates (assuming suitable Mix proportion). 7

5. a) What do you mean by time value of money? What is the importance of this in economics of construction equipments? 7

b) What do you mean by depreciation of fixed assets? Explain declining balance method and sinking find method to calculate depreciation. 7

6. a) A construction machine costs Rs. 12,00,000 and has expected life of 05 years and salvage value is Rs. 1,50,000. It is anticipated to work 2000 hours in a year. Compute the yearly depreciation for the machine using double declining balance method or using sum of the years digits method. 7

b) How can critical path method to be used in planning and management of construction equipments on large projects. 7

7. a) When transport model is suitable? Explain how the transport model can be expressed mathematically. What are the applications of transport model? 7

b) An earth work excavator with a capacity of 3.25m^3/minute loads a fleet of 05 hauling units with capacity of 3.25m^3 each. If the arrival rate is 20 per hour determine the production of the system per hour. Use waiting line theory. 7

8. Write explanatory notes on (150 words) any three: 5+5+4

a) ABC Analysis

b) Purchasing parameters and their relationship

c) Obsolescence

d) Role and functions of different level of management.

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