

**B.Tech. Civil (Construction Management)**

**Term-End Examination**

00192

**December, 2016**

**ET-523(B) : OPERATION AND MAINTENANCE OF  
CONSTRUCTION EQUIPMENT**

*Time : 3 hours*

*Maximum Marks : 70*

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*Note : Attempt any seven questions. All questions carry equal marks. Use of scientific calculator is allowed. Figures in the margin indicate marks.*

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1. (a) List the different types of construction contracts and state their main attributes.
- (b) Explain the major activities involved in different stages of planning for a civil construction project. 5+5
2. (a) Discuss in brief the main conditions of a construction contract.
- (b) Explain the different types of specifications and their importance in a civil construction project. 5+5

3. (a) Prepare a construction schedule (bar chart) for a compound wall describing the various steps in its preparation.
- (b) Describe the project data and related information that are necessary in order to plan deployment of equipment for satisfactory civil construction. 5+5
4. (a) Describe the safety measures required in excavation to avoid accidents.
- (b) Explain the various precautions required to be adopted for scaffolding, ladders and formwork. 5+5
5. (a) Describe the various resources required for civil construction.
- (b) Explain the important requirements for the inspection of plain cement concrete. 5+5
6. (a) Discuss the role of proper stores planning in making an effective programme for preventive maintenance.
- (b) What maintenance action would you recommend for the following items ?
- (i) Storage Batteries
- (ii) Hydraulic System 5+5

7. (a) Describe in brief the parts of a centrifugal pump with the help of a neat sketch.
- (b) What do you understand by pump characteristics and how do these characteristics help in pump selection ? 5+5
8. (a) Given that  $W_H = 5t$ ,  $W_p = 10t$ , height of drop = 4 m, and number of blows is 20 per minute. Determine the efficiency of the blow if the materials are inelastic.  
 $W_H$  = Weight of the hammer head,  
 $W_p$  = Weight of the pile.
- (b) Describe in brief the types of Governors of a Diesel engine. 5+5
9. (a) Discuss in brief the cooling system of an I.C. engine with a neat sketch.
- (b) Explain the lubrication system of an I.C. engine with a neat sketch. 5+5
10. (a) Compute the discharge through the jetting nozzle for the given data :  
Coefficient of discharge  $C = 0.82$   
Head of water  $h = 3$  m  
Base diameter = 18 cm  
Nozzle diameter = 2.6 cm
- (b) How are I.C. engines classified ? What are the characteristics of I.C. engines needed for heavy construction equipment ? 5+5