

B.Tech. Civil (Construction Management)

Term-End Examination

June, 2017

00905

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

Time : 3 hours

Maximum Marks : 70

*Note : Answer any **seven** questions. All questions carry equal marks. Use of scientific calculator is allowed.*

1. (a) Discuss briefly the different kinds of pile driving equipments used in construction projects.
- (b) A centrifugal pump operating at 2500 rpm requires 60 kW power to discharge 90 litres/sec against a head of 90 m. Find its capacity, head and power required at 2100 rpm. 5+5
2. (a) How do temperature and atmospheric pressure affect the rated output of an equipment ? Explain with suitable example.

- (b) For speedy and economic construction of a project, what are the general considerations in the selection of construction equipment ? 5+5
3. (a) What are the various costs considered while fixing the hire charges of construction equipment ?
- (b) What are the advantages of compressed air as a prime mover ? What factors would you consider in planning a compressed air system ? 5+5
4. (a) What options are available for financing the purchase of an equipment ? How should a contractor choose a particular option ?
- (b) A jetting pump is to be designed to deliver 0.4 cumec under a head of water of 8 m. The coefficient of discharge may be taken as 0.8. Determine the dimension of the base and the tip of the nozzle assuming that the ratio of diameter of base to nozzle is 8. 5+5
5. (a) Describe in detail the preventive maintenance of an equipment.
- (b) What are the guidelines for aligning haul roads and how will you plan the access roads in a project area ? 5+5

6. (a) What do you understand by equipment planning ? How do you select the number and size of machines ?
- (b) What are the advantages and disadvantages of purchase of an equipment as compared to renting it ? 5+5
7. (a) How are job and management factors considered in obtaining the average output of equipment ?
- (b) Explain what is downtime of a machine. How are downtime costs computed ? 5+5
8. (a) Describe the role of a project manager in equipment maintenance and repair schedule.
- (b) Explain why the costing records are maintained on any job. What are the various types of costing records ? 5+5
9. (a) How are IC engines classified ? What are the characteristics of IC engines needed for heavy construction equipment ?
- (b) What are the functions and requirements of the ignition system on petrol engines ? 5+5

10. Write short notes on any *five* of the following : $5 \times 2 = 10$

- (a) Productivity
 - (b) Permits
 - (c) Safety in Construction Work
 - (d) Log Book
 - (e) Priming
 - (f) Air Cleaner
 - (g) Breakdown Maintenance
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