

**B.Tech. Civil (Construction Management)/
B.Tech. Civil (Water Resources
Engineering)**

Term-End Examination

June, 2008

**ET-581(F) : MECHANICAL EQUIPMENT IN
CONSTRUCTION**

Time : 3 hours

Maximum Marks : 70

Note :

- (i) Attempt any **seven** questions.
- (ii) All questions carry equal marks.
- (iii) Use of non-programmable calculators is allowed.

1. A construction machine costs Rs. 15000/- and has an expected life of 5 years and salvage value of Rs. 3000/-. It is expected to work 2000 hours in a year. Compute the yearly depreciation for the machine using the following methods.

$$4 \times 2 \frac{1}{2} = 10$$

- (a) Straight line
- (b) Double declining balance
- (c) Sum of the years' digits
- (d) Sinking Fund

2. What are different kinds of motor graders ? Explain various operations of motor grader. What factors will affect its output ? 3+4+3=10
3. How are bulldozer and tree dozer operated ? How is the output of dozer estimated ? 5+5=10
4. How are cranes classified ? Explain the working of Derrick Crane and Gantry Crane. 2+4+4=10
5. A 4-ply, 900 gm weight, 500 m wide belt on a conveyor 150 m long (L), up a 20% slope is to be used to transport 250 tph of 125 mm unsized gravel weighing 2000 kg/m³ using 12.7 mm idlers. Determine the power required to operate the belt. Take pulley friction and drive losses at 5 and 10% respectively of total power required. 10
6. How would you estimate the output of a vibratory roller ? What factors would affect the output of compactors ? 5+5=10
7. (a) What is aggregate cooling ? How are coarse aggregates cooled ? 6
- (b) What are the causes for temperature rise during concrete operations ? 4
8. (a) How does a needle vibrator compact concrete ? 5
- (b) List out merits and demerits of a straddle type Jumbo. 5

9. How do the following gates function ?

5+5=10

- (a) Sluice gate
- (b) Ring follower gate

10. Write short notes on any *four* :

$4 \times 2\frac{1}{2} = 10$

- (a) Scraper
- (b) Elevator
- (c) Rear dump truck
- (d) Trencher
- (e) Power shovel
- (f) Luffing cableway

