(3 Hours)

[Total Marks : 80

N.B.: (1) Question No.1 is compulsory
      (2) Answer any three (3) questions from the remaining.
      (3) All questions carry equal marks.

1. Write short notes on the following with neat sketches wherever necessary. **20**
    (a) DIAPHRAGM WALL
    (b) Mechanical Moles
    (c) DRAG LINE
    (d) BULLDOZER

2. Find the OWNING COST & OPERATING COSTS for a construction equipments **20**
used in the large site with following given data:
PURCHASE COST = Rs.15 Lakhs
USEFUL LIFE = 10 Years (2000 Hrs. per Year)
OPERATING FACTOR = 0.65
ENGINE = 40 H.P (Diesel Type)
SALVAGE VALUE = 10% of PURCHASE COST
MAINTENANCE & REPAIRS = 85% OF DEPRECIATION
INVESTMENT COST = 12% OF Average Annual Investment
Lubricating Oil = 20% of Fuel Cost
Labour Cost = Rs.15, 000/- per month
Assume any other data, if missing, as per the rules and state the same while
doing all the detailed calculations.

3. (a) Draw neat sketch for "TUNNEL BORING MACHINE" and explain in detail **10**
how it works for tunneling purpose.
   (b) Draw neat sketch for "WELL-POINT SYSTEM" and how it works on the **10**
large site.

4. (a) Draw neat sketches for "Jaw Crusher" and "Gyratory Crusher" and explain **10**
them how work.
   (b) Explain in detail about "Mass Concreting" and "Vacuum Concreting" along **10**
with sketches.

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5. (a) Explain about the following:
   (i) PILE DRIVING HAMMERS   5
   (ii) CENTRIGUGAL PUMP   5

   (b) Explain the following with neat sketches:
   (i) Lining of Tunnels & Ventilation in Tunnels   5
   (ii) Air Compressor   5

6. Explain any four(4) from the following with neat sketches   20
   (a) TYPES OF CLADDING
   (b) SAND DRAINS
   (c) ROCK ANCHORS
   (d) FOUNDATION GROUTING
   (e) JACK HAMMERS
   (f) ROLLERS & COMPACTORS
   (g) Methods of "Depreciation" and formula for each method.