

TED (15) – 3034

(REVISION — 2015)

Reg. No.

Signature

THIRD SEMESTER DIPLOMA EXAMINATION IN ELECTRICAL
AND ELECTRONICS ENGINEERING — OCTOBER, 2016

MECHANICAL ENGINEERING

[Time : 3 hours

(Maximum marks : 100)

PART — A

(Maximum marks : 10)

Marks

I Answer the following questions in one or two sentences. Each question carries 2 marks.

1. List different types of manometers.
2. Define steady flow and unsteady flow.
3. List out major and minor losses in a pipe flow.
4. Write the energy conversion take place in Impulse turbine.
5. Define the multi stage pump, mention function.

(5×2 = 10)

PART — B

(Maximum marks : 30)

II Answer *any five* questions from the following. Each question carries 6 marks.

1. Explain the Piezometer, mention its limitations.
2. An oil of specific gravity 0.8 under a pressure of 120 KN/m². Express the pressure head in meters of water and meters of oil.
3. State Bernoulli's theorem, mention its limitations.
4. Explain the phenomenon of water hammer.
5. Compare water tube and fire tube boilers.
6. List the classifications of IC engines.
7. Define the specific speed of a turbines. Write its significance.

(5×6 = 30)

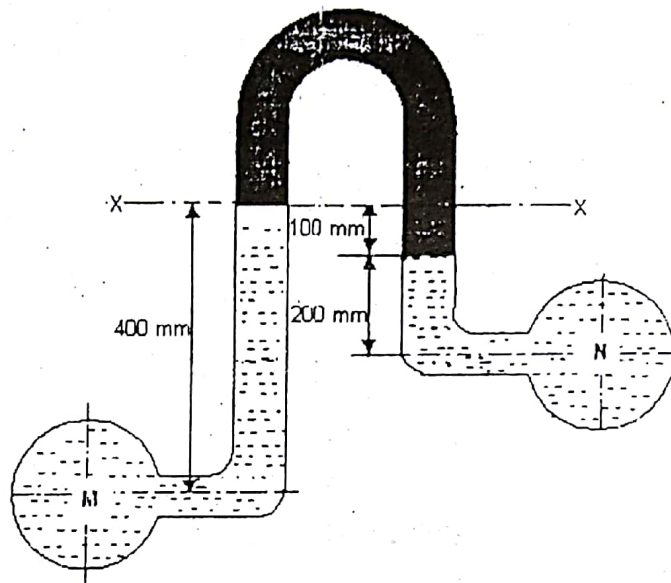
PART—C

(Maximum marks : 60)

(Answer *one* full question from each unit. Each full question carries 15 marks.)

UNIT – I

- III (a) Explain the working principle of differential manometers. 7
- (b) An inverted differential manometer is connected to two pipes M and N, which carries water. The fluid in the manometer is oil of specific gravity 0.9, for the manometer readings are as shown figure. Find the pressure difference between M and N.



8

OR

- IV (a) Explain the terms atmospheric pressure, absolute pressure, gauge pressure and vacuum pressure. Write the relation between them with the help of a diagram. 7
- (b) A U-tube mercury manometer is connected to two pipes M and N. Pipe M is 60mm below pipe N. The specific gravity of liquid in pipe M and N is 1.6 and 0.85 respectively. Mercury level in the left limb is 80mm below the center of pipe M. Find the pressure difference between two pipes in KN/m^2 , if the level difference of mercury in the two of the manometer is 120mm. 8

UNIT – II

- V (a) Explain the constructional details of Venturi meter. 7
- (b) Water is flowing in a pipe line of 1.5 Km long and 225mm diameter at the rate of 32 liters/s. Determine the loss of head due to friction. Assume Darcy constant f for the pipe as 0.01. 8

OR

- VI (a) Explain hydraulic gradient line and total energy line with suitable sketch. 7
- (b) A horizontal venturi meter $160\text{mm} \times 80\text{mm}$ is used to measure the flow of oil of specific gravity 0.8. The reading of differential manometer connected to the inlet and throat is 50mm of mercury. Determine the rate of flow. Take Cd of venturi meter as 0.95. 8

UNIT – III

- VII (a) Explain the working of a simple boiler. 7
- (b) Differentiate between petrol engine and diesel engine. 8

OR

- VIII (a) Explain the working of steam turbine. 7
- (b) Explain the working of 4 stroke petrol engine. 8

UNIT – IV

- IX (a) Explain the working of Pelton wheel with sketch. 7
- (b) Describe working of Reciprocating pump. 8

OR

- X (a) Differentiate between Francis turbine and Kaplan turbine. 7
- (b) Explain the working of centrifugal pump. 8