

TED (15) 3034

Reg.No -----

(REVISION 2015)

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THIRD SEMESTER DIPLOMA EXAMINATION IN ELECTRICAL AND ELECTRONICS ENGINEERING

MODEL QUESTION PAPER

MECHANICAL ENGINEERING

(Maximum Marks : 100)

[Time : 3 hrs]

PART A

Maximum Marks :10)

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

1. What is a fluid? Give example?
2. Define stream line flow?
3. State the purpose of a venturimeter?
4. State the principle of a reaction turbine?
5. What is the function of a foot valve? (5X2=10)

PART B

(Maximum Marks : 30)

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

1. Convert a vacuum pressure of 120mm of mercury in to absolute pressure. Atmospheric pressure is 10.3 m of water.
2. Differentiate:
i) steady and unsteady flow
ii) uniform and non uniform flow
3. Calculate the loss of head when a pipe of diameter 150 mm is suddenly enlarged to a diameter of 225 mm. The rate of flow of water through the pipe is 80 liters/ sec.
4. List down the assumptions of Bernoulli's theorem.
5. Classify steam boilers
6. Briefly describe the selection of turbines based on specific speed?
7. Describe an airlift pump (5X6=30)

PART – C

(Maximum Marks : 60)

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

UNIT 1

III a) List the different types of manometers and specify their use? 6

b) A U-tube differential manometer connects two pipes P and Q. Pipe P contains an oil of specific gravity 1.5 under a pressure of 120 KPa and pipe Q contains another oil of specific gravity 0.9 under a pressure of 120 KPa. The pipe P lies 2.5m above pipe Q. Find the level difference of mercury in the manometer. 9

OR

IV a) Define atmospheric pressure, gauge pressure and absolute pressure. 6

b) A simple manometer containing mercury is connected to a pipe in which an oil of specific gravity 0.8 is flowing. The pressure in the pipe is vacuum. The other end is open to atmosphere. Find the vacuum pressure in pipe, if the difference of mercury level in the two limbs is 200mm and height of oil in the left limb from the center of pipe is 150mm below. 9

UNIT II

V a) Explain Hydraulic gradient line and total energy line with supporting figures. 7

b) An oil of specific gravity 0.9 is flowing through a venturimeter having inlet diameter 200mm and throat diameter 10mm. The oil mercury differential manometer shows a reading of 200mm. Calculate the discharge of oil through the horizontal venturimeter. Take $C_d = 0.98$. 8

OR

VI a) Explain the phenomenon of water hammer and its effects. 7

b) Water flow through a pipe of 150mm diameter, 1.5 km long with a velocity 2.5m/sec. Find the head loss due to friction. i) Using Darcy formula, $f = 0.012$

ii) Using Chezy formula, $C = 50$ 8

UNIT III

- VII a) Explain the working of a water tube boiler. 7
B) Illustrate the working of a 2 stroke diesel engine. 8

OR

- VIII a) Illustrate the working of an exhaust turbine used in thermal power plant. 7
b) Compare two stroke and four stroke engines. 8

UNIT IV

- IX a) Define i) water power ii) overall efficiency iii) brake power 7
b) Explain the working of a Kaplan turbine with neat sketch. 8

OR

- X a) Write notes on i) multistage pumps ii) deep well pump 7
b) Illustrate the working of a reciprocating pump. 8
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