TED (10)–3056 Reg. No. .....

(REVISION—2010) Signature .....

THIRD SEMESTER DIPLOMA EXAMINATION IN ELECTRICAL AND ELECTRONICS ENGINEERING—MARCH, 2014

MECHANICAL ENGINEERING

[*Time* : 3 hours

(Maximum marks : 100)

Marks

PART—A

(Maximum marks : 10)

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

1. Define piezometer.
2. What is the use of a differential manometer ?
3. State Bernoulli's theorem.
4. Write the classification of steam turbines according to the action.
5. What is specific speed of a turbine ? (5x2=10)

PART—B

(Maximum marks : 30)

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

1. The pressure gauge reads 1MPa pressure. The barometric pressure of the atmosphere is 765mm of mercury. Find the absolute pressure.
2. What are the assumptions in Bernoulli's theorem ?
3. Describe the term laminar flow and turbulent flow.
4. Write the classification of boilers.
5. Write six advantages of steam turbines over steam engines.
6. What are the different efficiencies of a centrifugal pump ?
7. Write the advantages of water turbines. (5x6=30)

PART—C

(Maximum marks : 60)

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

UNIT – I

III (a) Write difference between U-tube differential manometer and inverted U-tube differential manometer. 7

(b) A simple U-tube manometer containing mercury is connected to a pipe in which a fluid of specific gravity 0.85 and having a vacuum pressure is flow. The other end of the manometer is open to atmosphere. Find the vacuum pressure in pipe, if the difference in mercury level in two limbs is 500mm and the height of fluid in the left from the centre of pipe is 150mm below. 8

OR

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Marks

IV (a) What are the different types of fluid flow ? 7

(b) A differential manometer is used to measure the difference of pressure of oil of specific gravity 0.8 contained in two pipes at the same level. If the deflection of the manometric liquid, which is mercury, be 100mm. Determine the difference of pressure of oil in the two pipes. 8

UNIT – II

V (a) Explain the different losses that occur in a flow through pipes. 7

(b) Water flows through a pipe 200mm diameter 60m long with a velocity of 2.5m/s. Find the head lost in friction by using Darcy's formula if f = 0.005 and by using Chezy's formula when C = 55. 8

OR

VI (a) What is a pitot tube ? How will you determine the velocity at any point with the help of pitot tube ? 7

(b) A venturimeter with inlet diameter 150mm and throat diameter 80mm is laid its axis horizontal and is used to measure the flow of water. The mercury manometer shows a gauge difference measured as 150mm. Assume the co-efficient of meter as 0.95. Calculate the discharge. 8

UNIT – III

VII (a) Briefly describe about fire tube boiler and water tube boiler. 7

(b) Write the classification of steam turbines. 8

OR

VIII (a) What are the mountings and accessories of the boiler ? 7

(b) What are the factors to be considered in selecting a boiler ? 8

UNIT – IV

IX (a) Briefly describe about Francis turbine with figure. 7

(b) Write eight comparisons between reciprocating pumps and centrifugal pumps. 8

OR

X (a) Explain different types of casings used in centrifugal pumps. 7

(b) Write the differences between impulse turbine and reaction turbine. 8

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