

G 1410

(Pages : 2)

Reg. No.....

Name.....

B.TECH. DEGREE EXAMINATION, MAY 2016

Sixth Semester

Branch : Automobile Engineering/Mechanical Engineering/Production Engineering
AU 010 602/ME 010 602/PE 010 602—HEAT AND MASS TRANSFER (AU, ME, PE)

(New Scheme—2010 Admission onwards)

[Regular/Improvement/Supplementary]

Time : Three Hours

Maximum : 100 Marks

*Use of approved data books is permitted.
Assume any missing data if required.*

Part A

*Answer all questions.
Each question carries 3 marks.*

1. Discuss the mechanism of heat conduction in solids and gases.
2. Define Prandtl Number. What is its physical significance ?
3. Explain Reynolds-Courlburn analogy.
4. Define effectiveness of a heat exchanger.
5. Explain Fick's law of diffusion.

(5 × 3 = 15 marks)

Part B

*Answer all questions.
Each question carries 5 marks.*

6. Explain critical radius of insulation.
7. Explain the significance of dimensionless numbers in forced convection.
8. Explain the laws of radiation.
9. Discuss the classification of heat exchangers.
10. Discuss the finite difference method of solving 2 dimensional steady-state heat conduction problem without heat generation through a rectangular slab.

(5 × 5 = 25 marks)



Turn over

G 1429

(Pages : 2)

Reg. No.....

Name.....

B.TECH. DEGREE EXAMINATION, MAY 2016

Sixth Semester

Branch : Mechanical Engineering

ME 010 603—THERMAL SYSTEMS AND APPLICATIONS (ME)

(New Scheme—2010 Admission onwards)

[Regular/Improvement/Supplementary]

Time : Three Hours

Maximum : 100 Marks

Part A

*Answer all questions.
Each question carries 3 marks.*

1. Draw $p-v$, $T-s$ and $h-s$ diagrams for an ideal Rankine cycle.
2. What is the significance of critical pressure ratio on discharge through the nozzle ?
3. What are the applications of Gas turbine ?
4. Define overall loss coefficient for a solar collector.
5. Explain the concept of draught.

(5 × 3 = 15 marks)

Part B

*Answer all questions.
Each question carries 5 marks.*

6. Distinguish between mountings and accessories of the boiler. Name any two mountings and two accessories.
7. What is meant by governing of steam turbines ? Give the different methods for governing in steam turbines.
8. Describe with neat sketch the working of a simple constant pressure closed cycle gas turbine.
9. Describe the working of solar power plant.
10. What are the advantages and disadvantage of a thermal power plant ?

(5 × 5 = 25 marks)

Part C

*Answer all questions.
Each full question carries 12 marks.*

11. Draw a schematic diagram of a water tube boiler. Clearly mark the position of the economiser and superheater in the boiler and indicate the path of the flue gases.

Or

Turn over

