Roll No. .....

24356

B. Tech. (ME) 6th Sem.

Examination – May, 2015

HEAT TRANSFER

Paper : ME-306-F

Time : Three Hours] *[Maximum Marks : 100*

Before answering the question, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

Note : There are 9 questions in total . Question No. 1 is ***compulsory***. Students have to attempt ***five*** questions in total, selecting at least ***one*** question from each Section. All questions carry equal marks.

1. (a) What is Conduction ? Explain. 4

(b) Mention and explain different Co-ordinate system. 4

(c) What are reversible and irreversible processes ? Explain. 4

(d) State and explain law of conservation of energy. 4

(e) Explain shape factor. 4

SECTION – A

2. Explain spherical co-ordinate system. 20

3. Derive an expression for heat conduction through plane wall. 20

SECTION – B

4. What is fin performance ? Explain how it is calculated ? 20

5. Explain relaxation method. 20

SECTION – C

6. Explain hydrodynamic boundary layer and equation of continuity. 20

7. Explain radiation shields and heat exchange between non-black bodies. 20

SECTION – D

8. Explain performance variables for parallel flow heat exchanger. 20

9. A 1.0 mm diameter and 150 mm long wire is submerged horizontally in water at 7 bar temperature. The wire has a steady state applied voltage drop of 2.15 V and a current at 131.5 A. Calculate the heat flux and boiling heat transfer coefficient if the surface of the wire is to be maintained at 180°C. 20
