

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

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- (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

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## 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

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