(Following Roll No. to be filled by candidate)

Roll No.

B.Tech.

FIRST SEMESTER EXAMINATION 2015-16

EME101

MANUFACTURING PROCESSES

Time: 2 Hours **Max. Marks: 50**

Note:

- Attempt all questions.
- Marks and numbers of parts to be attempted are mentioned in each question.
- Illustrate the answers with suitable sketches.

1. Attempt **any four parts** of the following: [4 x 3.5]
   a. What are plain carbon steels? Discuss the classification and applications of plain carbon steel.
   b. Draw the Stress-Strain diagrams for (i) ductile material and (ii) brittle material.
   c. Explain the following operations on lathe machine:
      i. Facing
      ii. Turning
      iii. Threading
   d. How does the fatigue failure occur? What is the main reason for this kind of failure?
   e. Explain the following terms with suitable example:
      i. Ductility
      ii. Toughness
      iii. Creep
   f. Write the composition, properties and uses of Brass and Bronze.

2. Attempt **any three parts** of the following: [3 x 4]
   a. Differentiate between hot and cold working of metals. Classify the metal forming operations and mention their applications.
   b. Describe with neat sketch, the steps in casting process. What is the function of core in casting?
   c. What is the working principle of rolling? Describe the different types of rolling mills used for rolling.
   d. Define the following terms with sketch as used in sand casting: (i) Sprue (ii) Core-prints (iii) Runner (iv) Riser

3. Attempt **any three parts** of the following: [3 x 4]

   a. Give a brief description of lathe machine with the help of neat sketch. List the different types of lathes available giving main features of each.
   b. Describe the function of the following lathe parts:
      i. Head stock
      ii. Lead screw
      iii. Carriage
      iv. Feed rod
   c. Describe the working principle of a drilling machine with the help of neat sketch. Differentiate between drilling and boring.
   d. What is welding? What are the different types of power sources used in arc welding? What are the advantages and limitations of each?

4. Attempt **any two parts** of the following: [2 x 6]
   a. What is the process of heat treatment? Name the various heat treatment processes. Differentiate between normalizing and annealing.
   b. What are the objectives of plant layout? Classify the plant layouts and explain with suitable examples.
   c. Write short notes on the following:
      i. Up and down milling
      ii. Powder metallurgy
      iii. Electroplating
      iv. Extrusion