

T24/T35/T50/T51/T52/TML063/EE/2016

Time : 3 Hours

Marks : 80

Instructions :

1. All Questions are Compulsory.
 2. Each Sub-question carry 5 marks.
 3. Each Sub-question should be answered between 75 to 100 words. Write every questions answer on separate page.
 4. Question paper of 80 Marks, it will be converted in to your programme structure marks.
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1. Solve any **four** sub-questions.
 - a) Explain the role of crystal structure in engineering materials and state how crystalline is different from amorphous. 5
 - b) List chemical and physical properties that are important for a material to be used for a door knob. 5
 - c) What are dislocations? What is their roll in materials? 5
 - d) Explain purpose of establishing a BH curve on a material. 5
 - e) State the type of strain that applies to the following design situations. 5
 - i) Trailer hitch pulling a trailer
 - ii) Chains carrying a child on a swing
 - iii) A baseball bat hitting a ball
 - iv) A compression spring (coil) on an automobile
2. Solve any **four** sub-questions.
 - a) What is the difference between polymer blend and a polymer alloy? 5
 - b) What differentiate an engineering plastic from a commodity plastic? 5
 - c) Describe the condensation polymerization process for making nylon. 5
 - d) Where are urea and melamine formaldehydes used? 5
 - e) Describe range of properties available in poly urethanes. 5

3. Solve any **four** sub-questions.
- a) What causes creep in thermoplastics? In thermosets? 5
 - b) Explain specific wear rate/wear factor in plastics. 5
 - c) What are the properties to be considered in plastic for electrical applications? 5
 - d) Discuss the use of UV curing of polymer coatings and adhesives. 5
 - e) Describe the mechanism of adhesion for polymers that are used as adhesives. 5
4. Solve any **four** sub-questions.
- a) What is temper rolling and what is its significance? 5
 - b) Explain the use of Joining test data for determining hardenability. 5
 - c) When would you use a softening heat treatment on a steel? 5
 - d) Identify an alloy steel that could be used on a part that will be carburized. 5
 - e) What are the minimum requirements for quench hardening of steel? 5

