

B067315(067)

B. Tech. (Third Semester) Examination, Nov.-Dec. 2020

ENGINEERING MATERIAL

Time Allowed : Three hours

Maximum Marks : ~~80~~ 100

Minimum Pass Marks : ~~28~~ 35

Note : Attempt all questions. Part (a) of each question carries 2 marks and is compulsory.

Attempt any two parts from (b), (c) and (d).

1. (a) Define Yield strength. 24
- (b) Explain Homogenous and Heterogeneous nucleation.
How metal solidifies in a ingot? 78

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- (c) Explain the effect of grain size on properties of metal. 78
- (d) What is the purpose of tensile test performed for a metal? Write principle of determination of tensile test of a metal. 78
2. (a) What is elastic and plastic deformation? 24
- (b) What do you understand by deformation of metals? Explain the deformation by slip? 78
- (c) Differentiate between hot working and cold working. 78
- (d) Explain Recovery, Recrystallization and grain growth. 78
3. (a) What is solid solution? 24
- (b) Describe Hume Rothery Rules. 78
- (c) Classify phase diagram and explain the term : phase, system, component, alloys, liquid and solid. 78
- (d) Explain Fe-C equilibrium diagram describing various phases present on it. 78
4. (a) Define heat treatment process. 24

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- (b) What are the various objectives of heat treatment process? 78
- (c) What do you understand by Annealing? What are the types of annealing? 78
- (d) Explain following Hardening process : 78
- (i) Flame Hardening
- (ii) Cyaniding
5. (a) Define Ferrous and Non-Ferrous metal. 24
- (b) What is cast iron? Give composition, properties and application of Gray cast iron and white cast iron. 78
- (c) What are the properties and applications of copper and aluminium? 78
- (d) Write short notes on Piezoelectric Materials, Electrostrictive Materials. 78