

--	--	--	--	--	--	--	--	--	--

Third Semester B.E. Degree Examination, June/July 2016
Building Materials and Construction Technology

Time: 3 hrs.

Max. Marks: 100

*Note: Answer FIVE full questions, selecting
at least TWO questions from each part.*

PART – A

- 1 a. Define foundation and enumerate the objectives of the foundations. (05 Marks)
b. What is safe bearing capacity of soil? List the types of methods adapted to examination of ground and explain any two of them. (07 Marks)
c. List the types of foundation and explain any two of them with neat sketches. (08 Marks)
- 2 a. Explain the classification of stone masonry with neat sketches. (08 Marks)
b. Explain: i) Queen closer ii) King closer, with neat sketches. (04 Marks)
c. Explain any two of the following :
i) English Bond ii) Flemish Bond iii) Cavity walls. (08 Marks)
- 3 a. Write a neat diagram of segmental arch and label it. (04 Marks)
b. List the classification of arches and explain any one of them in detail. (08 Marks)
c. Write short notes on: i) Chejja ii) Canopy iii) Balcony iv) Lintels (08 Marks)
- 4 a. Define a pitched roof and explain its various types. (10 Marks)
b. Give a list of materials which are commonly used as floorings and give a brief description of any four of them in detail. (10 Marks)

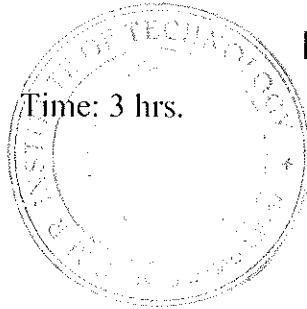
PART – B

- 5 a. Explain with neat sketches of i) Ledge and braced doors ii) skylights. (08 Marks)
b. Discuss the provisions of doors and windows with respect to the following :
i) Location ii) Size. (05 Marks)
c. Explain the properties of materials used in doors and windows. (07 Marks)
- 6 a. Explain the requirements of a good staircase. (04 Marks)
b. List the types of stairs and explain with neat sketches of Dog-legged stairs and circular stairs. (10 Marks)
c. The inside dimensions of a stair case in a residential building are 2.0 m × 4.60 m. The height of floor is 3.30 m and the roof consists of RCC slab is 12 cms thickness. Design a proper layout of dog legged staircase for this building. (06 Marks)
- 7 a. Mention the tools which are required in the plastering work. (04 Marks)
b. Enumerate the defects found in plastering work. (08 Marks)
c. Explain briefly painting on different surfaces. (08 Marks)
- 8 a. Differentiate between the following :
i) Formwork and Scaffolding ii) Damp-proofing and Water – proofing. (12 Marks)
b. Write short notes on : i) Form work for columns ii) Effects of dampness. (08 Marks)

--	--	--	--	--	--	--	--	--	--

Third Semester B.E. Degree Examination, June/July 2016

Material Science and Metallurgy



Time: 3 hrs.

Max. Marks: 100

- Note:** 1. Answer *FIVE* full questions, selecting at least *TWO* questions from each part.
2. Missing data may be assumed suitably, if any.

PART – A

- 1 a. Define APF. With a neat sketch obtain an expression for density packing factor of HCP structure. (08 Marks)
- b. Give brief classification of crystal defects. Explain them briefly. (06 Marks)
- c. List the factors affecting diffusion. Explain them briefly. (06 Marks)
- 2 a. Define engineering stress and strain and true stress and true strain. Establish the relationship between true strain and engineering strain. (07 Marks)
- b. List and explain the mechanical properties in elastic and plastic region. (07 Marks)
- c. Define CRSS? Obtain the expression for the same. (06 Marks)
- 3 a. Explain: i) Cup and cone fracture ii) Ductile to Brittle transition. (08 Marks)
- b. What are the different fatigue protection methods? Explain briefly. (06 Marks)
- c. What is stress relaxation? Derive an expression for the same. (06 Marks)
- 4 a. What is solid solution? With neat sketches explain different types of solid solution. (06 Marks)
- b. Explain Hume-Rothary rules and Gibbs phase rule. (06 Marks)
- c. Differentiate Homogeneous and Heterogeneous nucleation. How do you compute the critical size of nucleus and activation energy for the homogeneous nucleation? (08 Marks)

PART – B

- 5 a. A binary alloy of composition 60%A and 40%B consists two phases namely liquid and solid at a particular temperature. The composition of solid phase is 23%B and that of liquid phase is 68% B. Estimate the amount of solid and liquid phases in the alloy. (08 Marks)
- b. Draw Fe – Fe₃C diagram and show all phases, fields, temperature and composition. Write all invariant reactions. Also explain the solidification of steel containing 0.4%C. (12 Marks)
- 6 a. Explain TTT diagram (for 0.8%C steel) by super imposing the cooling curves on it. (12 Marks)
- b. Differentiate between :
 - i) Austempering and martempering
 - ii) Annealing and Normalising (08 Marks)
- 7 a. Give composition, micro structure, properties and applications of different types of cast – Irons. (12 Marks)
- b. Write a note on Magnesium alloys and Titanium alloys. (08 Marks)
- 8 a. Define composite. Give brief classification of composites. (06 Marks)
- b. With neat sketch explain production of composites, by pultrusion process. (08 Marks)
- c. Enumerate the merits, demerits and application of composites. (06 Marks)