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Sub Code:EME063

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**B TECH
(VI SEM) THEORY EXAMINATION 2017-18
ADVANCED MATERIALS TECHNOLOGY**

Time: 3 Hours

Total Marks: 100

Note: 1. Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

1. Attempt *all* questions in brief. **2 x 10 = 20**

- a) Define graphite flakes?
- b) What are the uses of tungsten steel?
- c) Draw and explain the structure of martensite?
- d) What is critical cooling rate'?
- e) What is bauxite?
- f) Explain properties of aluminum.
- g) What do you mean by biomaterial?
- h) What do you mean by viscoelasticity?
- i) Define moderators.
- j) Define fusion process.

SECTION B

2. Attempt any *three* of the following: **10 x 3 = 30**

- a) What are the different types of carbon steels commonly available? What are the effects of alloying elements on the properties of steel?
- b) Enumerate various heat treatment processes and explain any two of them briefly.
- c) Explain various polymerization mechanisms and differentiate between addition and condensation polymerization mechanism.
- d) Draw the stress-strain diagram of bone and explain it.
- e) Briefly explain the radiation proof materials with suitable example.

SECTION C

3. Attempt any *one* part of the following: **10 x 1 = 10**

- a) Give the composition, properties and uses of the following alloy steels: high speed steel, silicon steel, stainless steel, vanadium steel and tungsten steel.

- b) Give the composition, properties and uses of the following materials: cast iron, grey cast iron, malleable and alloy cast irons.

4. Attempt any *one* part of the following: 10 x 1 = 10

- a) Explain TTT diagram with neat diagram.
b) State the effect of tempering temperature on the mechanical properties of steel.

5. Attempt any *one* part of the following: 10 x 1 = 10

- a) What are the ceramics materials? Explain some common properties and applications of ceramics materials.
b) Name some of the processing methods of polymers and explain any one in detail.

6. Attempt any *one* part of the following: 10 x 1 = 10

- a) Explain various mechanical properties of skin like elasticity, hardness, fatigue.
b) Explain the various effects of degradation and corrosion with example.

7. Attempt any *one* part of the following: 10 x 1 = 10

- a) Enlist various types of fissile and fertile materials with examples.
b) Briefly discuss the safety and radioactive waste disposal.