ES-220 (EE/EX)

B.E., IV Semester

Examination, June 2017

Choice Based Credit System (CBCS)

Material Science

Time : Three Hours] [Maximum Marks : 60

Note: i) Attempt any five questions out of eight.

ii) All questions carry equal marks.

1. a) What is Bonding? Explain different Bonding in materials.

b) Discuss recent advances and future trends of smart and nano materials.

2. a) Explain the mechanical behavior of materials and alloys.

b) Compare the properties of Copper and Aluminium.

3. a) Explain the properties and applications of Ferrous and non-Ferrous alloys.

b) Explain the advantages and applications of SF6.

4. a) Discuss the applications of traditional and advanced ceramics.

b) Explain the properties and applications of polymers.

5. a) State the meaning of semiconductors. Give examples of some semiconductor materials.

b) Explain with suitable diagrams the Conduction band, Valance band and Forbidden energy band in solids.

6. a) Explain magnetically hard material with examples giving composition and properties of each.

b) Explain the term diamagnetism, paramagnetism, ferromagnetism, antiferromagnetism and ferrimagnetism with reference to magnetic dipole moments of the atoms and interaction among them.

7. a) What is Superconductivity? Explain the effect of magnetic field and frequency on Superconductivity.

b) What are the basic requirements of optical communication? How light can be transmitted in optical fiber cables?

8. Write a short note on any two of the following:

a) Laws of mixtures

b) Nano-electronics

c) Superalloys

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