USN ☐☐☐☐☐☐☐☐☐☐

15NT32

Third Semester B.E. Degree Examination, Dec.2018/Jan.2019
Basics of Materials Science

Time: 3 hrs.

Max. Marks: 80

Note: Answer any FIVE full questions, choosing one full question from each module.

Module-1

1   a. Write a brief note on nanomaterials and their classifications.   (08 Marks)
    b. Explain about Piezo electric materials and their applications.   (08 Marks)

OR

2   a. Explain about the importance and applications of advanced ceramic materials.   (06 Marks)
    b. Discuss about the importance and applications of biomaterials.   (04 Marks)
    c. Explain about the importance and applications of composite materials.   (06 Marks)

Module-2

3   a. Describe about electrical resistance and measurement of electrical resistance by four probe method.   (10 Marks)
    b. Discuss about super conductors and their technological applications.   (06 Marks)

OR

4   a. With the help of band gap energy, and bonding model explain in detail about conductors, semi conductors and insulators.   (12 Marks)
    b. Write a short note on Hall effect.   (04 Marks)

Module-3

5   a. Brief about luminescence, its types, and applications.   (08 Marks)
    b. Write a detailed note on scattering of light.   (08 Marks)

OR

6   a. Discuss in detail about photonics and importance and applications of photonic materials.   (08 Marks)
    b. Explain about construction and working of LED's.   (08 Marks)

Module-4

7   a. Differentiate between hard and soft magnetic materials.   (06 Marks)
    b. Explain about garnets and their applications.   (04 Marks)
    c. Explain the properties and applications of magnetic thin films.   (06 Marks)

OR

8   a. Discuss in detail about the classification of magnetic materials.   (08 Marks)
    b. Explain the importance and applications of magneto plumbites and magnetic bubbles.   (08 Marks)

Module-5

9   a. Write a brief note on point defects of materials.   (10 Marks)
    b. Define and explain fatigue and Creep.   (06 Marks)

OR

10 a. What is hardness? Explain about Brinell and Rockwell hardness tests.   (10 Marks)
    b. What is UTM? Discuss about the components of a UTM.   (06 Marks)

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