

Course: B. Tech.

Semester: III

Branch: Electrical Engineering / Electrical and Electronics Engineering / Electrical and Power / Electronics and Power

Subject Code & Name: BTES305 Engineering Material Science

Max Marks: 60

Date: 09/07/2024

Duration: 3 Hr.

Instructions to the Students:

1. All the questions are compulsory.
2. The level of question/expected answer as per OBE or the Course Outcome (CO) on which the question is based is mentioned in () in front of the question.
3. Use of non-programmable scientific calculators is allowed.
4. Assume suitable data wherever necessary and mention it clearly.

(Level/CO) Marks

Q. 1 Attempt any TWO of the following.

12

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|--|-----|---|
| A) Distinguish between Electronic conduction & Ionic conduction. | CO1 | 6 |
| B) Explain classification of Conducting material? Write its properties in details. | CO1 | 6 |
| C) Explain Quantum free electron theory. | CO1 | 6 |

Q.2 Attempt any TWO of the following.

12

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|--|-----|---|
| A) Explain the behavior of Dielectrics in static and alternating field. | CO2 | 6 |
| B) Derive Clausius – Mosotti relation. | CO2 | 6 |
| C) Distinguish between Piezoelectric, Pyroelectric and Ferroelectric materials?
Write applications of Dielectric material in details. | CO2 | 6 |

Q. 3 Attempt any TWO of the following.

12

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|---|-----|---|
| A) Explain Integration techniques? Write note on LSI & VLSI circuits. | CO3 | 6 |
| B) Explain Intrinsic and Extrinsic semiconductor with appropriate diagram. | CO3 | 6 |
| C) Explain Plain carbon steel, High speed steel and Copper alloy? Write its applications. | CO3 | 6 |

Q.4 Attempt any TWO of the following.

12

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|--|-----|---|
| A) Explain Soft and Hard magnetic materials. | CO4 | 6 |
| B) Explain Special purpose materials and its magnetic properties. | CO4 | 6 |
| C) Explain Spontaneous magnetization, Magnetostriction and Diamagnetism in magnetic materials. | CO4 | 6 |

Q. 5 Attempt any TWO of the following.		12
A) What is Structural materials? Explain it in detail.	CO5	6
B) Explain Galvanization and Impregnation of material? Write its advantages and applications.	CO5	6
C) What is Refractory materials? Write its classification and applications in details.	CO5	6

***** End *****

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