DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

Winter Examination – 2022

Course: B. Tech. **Branch : Electrical** **Semester : III**

Subject Code & Name: Engineering Material Science (BTES305)

Max Marks: 60 **Date:** **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	**Solve Any Two of the following.**		**12**
A)	Explain concept of conductivity in metal and describe the Ohms law.	**L2**	**6**
B)	Explain the phenomenon of superconductivity with application of superconductors.	**L2**	**6**
C)	State and explain Meissner effect with neat diagram.	**L2**	**6**
Q.2	**Solve Any Two of the following.**		**12**
A)	What is polarization? State & explain types of polarization.	**L2**	**6**
B)	State and explain point defects in crystal with neat diagram.	**L2**	**6**
C)	Write a short note on dielectric constant & dielectric breakdown.	**L2**	**6**
Q. 3	**Solve Any Two of the following.**		**12**
A)	Draw & explain the band diagram of semiconductor. State the application of semiconductors.	**L3**	**6**
B)	Explain the mechanism of conduction in semiconductors & state the properties of semiconductors.	**L3**	**6**
C)	Write note on Fermi level and electron-hole concentration.	**L3**	**6**
Q.4	**Solve Any Two of the following.**		**12**
A)	Classify different magnetic materials & explain their properties.	**L3**	**6**
B)	Compare Soft & Hard magnetic materials.	**L3**	**6**
C)	Write short note on piezoelectric, pyroelectric and ferroelectric materials**.**	**L3**	**6**
Q. 5	**Solve Any Two of the following.**		**12**
A)	What is refractory materials? Explain properties of refractory materials.	**L3**	**6**
B)	Why Galvanization & Impregnation of materials is needed for materials?	**L3**	**6**
C)	Explain the X-ray diffraction using Bragg's law.	**L3**	**6**

***** End *****