

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE			
Winter Examination – 2022			
Course: B. Tech.	Branch : All	Semester : I	
Subject Code & Name: Engineering Physics (BTBS102P)			
Max Marks: 60	Date:23/03/23	Duration: 3 Hr.	
<i>Instructions to the Students:</i>			
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)	Describe the construction and working for producing ultrasonic waves using magnetostriction method.	CO1	6
B)	Define free oscillation. Set up a differential equation for free oscillations and find it's solution.	CO1	6
C)	Define ultrasonic waves. List their applications in various fields. Give the details of any one application with labeled diagram.	CO1	6
Q.2	Solve Any Two of the following. https://www.batuonline.com		12
A)	Derive an expression for darkness due to reflected light for thin film interference.	CO2	6
B)	Explain the production of polarization due to birefringence (Double refraction) with neat diagram.	CO2	6
C)	Explain the construction and working of He-Ne laser with neat and labeled diagram.	CO2	6
Q.3	Solve Any Two of the following.		12
A)	Derive Schrodinger's time independent wave equation.	CO3	6
B)	With neat diagram, explain the construction & working of Geiger-Muller Counter.	CO3	6
C)	Explain with neat diagram, how isotopes can be separated with the help of Bainbridge mass spectrograph.	CO3	6
Q.4	Solve the following.		12
A)	Describe the production of characteristic X-rays. Calculate the minimum wavelength of X-rays, if the X-ray is operated	CO4	6

	at 20 kV.		
B)	Calculate the relation between atomic radius and lattice constant for BCC and FCC.	CO4	6
Q. 5	Solve Any Two of the following.		12
A)	Differentiate between conductor, semiconductor and insulator on the basis of energy band diagram and discuss their properties.		6
B)	Explain Meissner effect in superconductors. State any two applications of superconductors.		6
C)	Explain B-H curve for ferromagnetic materials. Write the significance of B-H curve.		6
*** End ***			

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