DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

Supplementary Examination – 2021-2022 [Back Log]

Course: B. Tech. Final Year | **Branch : Electronics Engineering** **Semester : VII**

Subject Code & Name: BTEXC701- Antenna and Wave Propagation

Max Marks: 60 **Date:13/08/2022** **Duration: 3.45 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.**		
A)	Derive an expression for solution of wave equation.	**Level 03**	**6**
B)	A wave of 500 MHz is propagating through a lossless material ($\mu_r = 1$, $\varepsilon_r = 3.5$) having maximum electric field intensity of 35 V/m, Find a) The phase constant b) Wavelength inside the material c) Intrinsic impedance	**Level 04**	**6**
C)	Define wave polarization, What are different types of wave polarization, Define each	**Level 06**	**6**
Q.2	**Solve Any Two of the following.**		
A)	Derive an expression for fundamental equation for free space propagation.	**Level 03**	**6**
B)	Write a short note on a) Ground wave propagation b) Space wave propagation	**Level 05**	**6**
C)	Explain structure of atmosphere in detail.	**Level 05**	**6**
Q. 3	**Solve Any Two of the following.**		
A)	What are different types of an antenna? Explain with examples.	**Level 06**	**6**
B)	Explain following terms related to an antenna	**Level 05**	**6**

a) Field Radiation Pattern	b) Directivity
c) Directive Gain	d) Effective Area

C)	Explain different types of radiation patterns in antenna	**Level 05**	**6**
Q.4	**Solve Any Two of the following.**		
A)	Derive an expression for **E** and **H** fields for Hertzian dipole antenna.	**Level 03**	**6**
B)	What is lens antenna? What are its types?	**Level 05**	**6**
C)	Determine null to null beamwidth of a (a) endfire array and (b) broadside array when array length is 20λ and number of elements are 15.	**Level 04**	**6**

Q. 5 Solve Any Two of the following.

A)	Explain Yagi Uda Antenna.	**Level 05**	**6**
B)	Explain Parabolic antenna. Also explain its types based on feeding mechanism used	**Level 05**	**6**
C)	Explain construction and design details of Microstrip antenna.	**Level 05**	**6**

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