DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

Regular End Semester Examination – Winter 2022

Course: B. Tech. **Branch : Electronics Engineering** **Semester : VII**

Subject Code & Name: BTEXPE704C & Fiber Optic Communication

Max Marks: 60 **Date:07/02/2023** **Duration: 3Hr.**

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)	Define i) Refraction, ii) Skew ray, iii) Meridional ray.	Level 2	**6**
B)	Define Numerical aperture of a step index fiber.	Level 3	**6**
C)	With a neat Diagram explain Meridional rays and Derive the expression for acceptance angle for Meridional rays.	Level 2	**6**
Q.2	**Solve Any Two of the following.**	Level 1	
A)	Calculate the refractive index of the core and cladding material of a fiber from following data: NA= 0.22 , Δ= 0.012	Level 1	**6**
B)	Explain linear scattering losses. a. Rayleigh scattering losses b. Mie scattering losses		**6**
C)	What are different types of optical fibers? Explain with a neat sketch.	Level 3	**6**
Q. 3	**Solve Any Two of the following.**		
A)	Explain propagation modes in multimode graded index fibers?	Level 4	**6**
B)	Describe any one fiber fabrication process with neat diagram?	Level 1	**6**
C)	Define internal quantum efficiency. Derive an expression for internal quantum efficiency.	Level 2	**6**
Q.4	**Solve Any Two of the following.**		
A)	What are directional couplers? Explain the 2x2 fiber coupler.	Level 1	**6**
B)	Explain APD in detail	Level 2	**6**
C)	Explain principle of WDM networks.	Level 2	**6**
Q. 5	**Solve Any Two of the following.**		
A)	Explain Raman amplifier.	Level 1	**6**
B)	Explain the concept of self-phase modulation.	Level 1	**6**

C) Explain stimulated Brillouin scattering Level 1 **6**

***** End *****