BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(END SEMESTER EXAMINATION)

CLASS: MTECH **SEMESTER: II**
BRANCH: ECE **SESSION: SP/19**

SUBJECT: EC566 OPTICAL WIRELESS COMMUNICATION

TIME: 3 Hours **FULL MARKS: 50**

INSTRUCTIONS:
1. The question paper contains 5 questions each of 10 marks and total 50 marks.
2. Attempt all questions.
3. The missing data, if any, may be assumed suitably.
***4*. Before attempting the question paper, be sure that you have got the correct question paper.**
5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.

Q.1(a) Classify the optical wireless communication. Explain the criteria for selecting components for any two subclasses of OWC. [5]

Q.1(b) List the factors responsible for Atmospheric transmission limitations. Determine the Lagrange Invariant of "optical system of any shape conformed by any number of elements". [5]

Q.2(a) Sketch DTIRC concentrator design. Explain the reason for choosing every portion of DTIRC shape and structure. Predict the position where the application of index matching gel is most advantageous in DTIRC design.? [5]

Q.2(b) Estimate the importance of Fresnel lens for Imaging concentrator. Explain groove design in Fresnel lens using its front and cross sectional diagram? [5]

Q.3(a) Explain the need and operation of BJT Based laser driver amplifiers with appropriate circuit diagram. [5]

Q.3(b) Compare between EAM and MZM. Explain Dual-drive MZM and its advantage. [5]

Q.4(a) Contrast PIN and APD photodetector parameters. A detector operating at 800nm produces the output current of 80 μA for an incident light beam of power 800 μW. Evaluate the Quantum efficiency and responsivity of the detector. [5]

Q.4(b) Compare two main types of RMA. Explain the main specifications considered when designing an RMA. [5]

Q.5(a) Explain the Optical Multiple Access Technique WDMA for OWC. [5]

Q.5(b) Describe the Link Access Protocol [IrLAP] of IrDA. Explain the IrLAP Frame. [5]

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