

NATIONAL INSTITUTE OF TECHNOLOGY DURGAPUR**Even Semester End-term Examination, 2021-22****Course Code:** ECO 441

Full Marks: 30

Course Name: Communication Engineering

Time: 90 Minutes

Question Paper No.: NITDGP/ECO 441/1

Date of Exam: 29/04/2022

Instructions: Answer all the questions.

Materials to be supplied: NIL.

Question No.	Body of the Question	Marks	Mapped CO
1	A modulating signal $10 \times \sin(2\pi \times 10^3 t)$ is used to amplitude modulate a carrier signal $20 \times \sin(2\pi \times 10^4 t)$. Determine the modulation index.	5	CO#1
2	Derive the relation between amplitude, bit duration, and bit energy of a digital CW carrier.	5	CO#1
3	Describe generation and detection of a FSK signal with neat diagrams.	5	CO#2
4	Describe the components of a mobile phone network. What do you mean by a cell?	5	CO#3
5	What are the major improvements in a 3G cellular network compared to 2G? How 4G networks further improve these metrics?	5	CO#4
6	Compare between GEO, MEO and LEO satellites. Which type of satellite is most suitable for providing internet access to Earth? Why?	5	CO#4

Course Outcomes

CO#1: Analyze and identify the methods of communications.

CO#2: Demonstrate the use of communication in different scenarios.

CO#3: Differentiate between analog/ digital, wired/ wireless communication.

CO#4: Understand the current technology trends in communication engineering.