

International Islamic University Chittagong (IIUC)

Department of Electronic and Telecommunication Engineering

Final Examination

Program: **B.Sc. (Engg.)**

Course Code: **ETE 3529**

Total Marks: **50**

Semester: **Spring 2024**

Course Title: **Telecommunication Switching and Networks**

Time: **2 Hour 30 Minutes**

(i) Answer the following questions. The figures in the right-hand margin indicate full marks.

(ii) Course Outcomes (COs) and Bloom's Levels are mentioned in additional Columns.

Course Outcomes (COs) of the Questions								
CLO1	Understand and analyze the basic concepts related to telecommunication system.							
CLO2	To develop ability to define, analyze and distinguish electromechanical, electronic, digital, and analog switching systems.							
Bloom's Levels of the Questions								
Letter Symbols	R	U	Ap	An	E	C		
Meaning	Remember	Understand	Apply	Analyze	Evaluate	Create		
PART A								
Q1.	a)	Define Erlangs and Grade of Service (GOS). If a group of 20 trunk carries 10 erlangs and the average call duration is 3 minutes, calculate (a) average number of calls in progress (b) total number of calls originating per hour.				CLO1/ CLO2	Ap/ E	5
	b)	During a busy hour, 1400 calls were offered to a group of trunks and 14 calls were lost. The average call duration has 3 minutes. Find (a) Traffic offered (b) Traffic carried (c) GOS and (d) The total duration of period of congestion				CLO2	E	5
Q2.	a)	Write about the various types of network services from the network planning point of view.				CLO1/ CLO2	An/ E	5
	b)	Show the different levels of network management. What are the various networking plans?				CLO2	E	5
OR								
Q2.	a)	Write about the types of networks which can be used for any services (voice or data transfer). Write about mesh connected networks and star topology from the routing point of view.				CLO1/ CLO2	Un/ E	5
	b)	Explain the International Numbering Plan. Also, write about the world numbering zones including zone code, zone, example country and country code. Write about the National Numbering Plan.				CLO2	E	5
PART B								
Q3.	a)	What is digital multiplexing? Write about the features of DWDM.				CLO1/ CLO2	Un/ E	5
	b)	Explain the Asynchronous time division multiplexing with necessary cases and figures.				CLO2	E	5
Q4.	a)	What is SONET? What are the advantages of SONET?				CLO1/ CLO2	Un/ E	5
	b)	Write about the SONET network and layers. Also, write about the four layers of SONET overhead.				CLO2	E	5
Q5.	a)	Explain the OSI layer specifications. Show the OSI network architecture.				CLO1/ CLO2	Un/ E	5
	b)	Write about the ISDN services with the conceptual view of ISDN. Write about the advantages of ISDN.				CLO2	E	5
OR								
Q5.		What are the types of ISDN and ISDN channels. Explain the SONET frame format with all necessary figures.				CLO1/ CLO2	Un/ E	10