Reg. No:

SRM Institute of Science and Technology

Tiruchirappalli Campus, Trichy – 621 105

Faculty of Engineering and Technology

Continuous Learning Assessment- II, Sixth Semester, April/May-2025

Department of ECE

21ECE223T Satellite Communication and Broadcasting

(B. Tech - Regulations 2021)

Date: 07.05.2025 FN

Time: 90 Minutes **Max. Marks**: 50

	Answer ALL Questions.		
	PART A – (10 x 1 = 10 marks)		
1.	The spin rate is typically in the range of_____ during the launch phase. (A) 100 to 50 rev/min (B) 50 to 100 rev/min (C) 150 to 10 rev/min (D) 10 to 150 r e v / min	CO 3	K 1
2.	Which subsystem transmits information about the satellite to the earth station? (A) Tracking (B) Telemetry (C) Command (D) Acquisition	CO 3	K 1
3.	In a spin stabilized GEO satellite, the spin axis is (A) Perpendicular to the orbital (B) In the plane of the orbit plane (C) Inclined at 45O at the orbital plane (D Inclined at 6O to the orbit plane	CO 3	K 1
4.	The available bandwidth of a C-band transponder is (A) 600 MHz (B) 500 MHz (C) 550 MHz (D) 1000 MHz	CO 3	K 3
5.	The isotropic power gain for a paraboloid antenna in antenna subsystem 1 3 1 (A) G = n (πD2/ λ) (B) G = n ($\pi \lambda$ 2/ D) (C) G = n (πD/ λ)2 (D) G = n (πD/ λ2)	CO 3	K 1
6.	Multiple access scheme that relies on spread spectrum technique is called (A) Time division multiple access (B) Frequency division multiple access (C) Space division multiple access (D) Code division multiple access	CO 4	K 1
7.	The number of earth stations that can be accommodated in common 1 signaling channel of SPADE system excluding	CO 4	K 3

	reference station is (A50 (B) 49 (C) 12 (D) 128		
8.	The satellite sends different information signals using vertical/horizontal electromagnetic polarization is _____ (A) Multiple coverage across (B) Dual polarization (C) Spatial separation (D) Spread spectrum	CO 4	K 1
9.	In preassigned TDMA, the common signalling channel(CSC)c a n accommodate up to earth stations. (A) 94 (B) 48 (C) 49 (D) 50	CO 4	K 1
10.	Which timing control, the earth station receives its own transmission? (A) Open-loop timing control (B) Loop back timing control (C) Feedback timing control (D) Feedback closed loop timing control	CO 4	K 1

	Answer All Questions.		
	PART B – (4× 4 = 16 Marks)		
11.	Explain in detail about ALOHA and Slotted ALOHA schemes with packet diagrams. *For each explanation – 2 marks*	CO 3	K 2
12.	Describe the propagation mechanism effects in terms of IEEE standard. *For explanation – 4 marks*	CO 3	K 2
13.	Illustrate the interference geometry between a VSAT and a satellite of another system. *For explanation – 3 marks and diagram – 1 mark.*	CO 4	K 2
14.	With an aid of neat diagram, explain direct sequence spread spectrum. *For Description – each 4 marks*	CO 4	K 2

Answer ALL Questions.			
PART C – (2 x 12 = 24 marks)			
15.	Explain in detail about various Multiple access techniques in satellite communication with necessity diagrams. *For each explanation – 3 marks*	CO 3	K 2
OR			

16.	Describe the rain and ice effects in satellite communication, how cloud attenuation will act a barrier in Satellite-Earth Links. *For each answers – 6 marks*	CO 3	K 2
17.	Derive the expression of calculating the link margins for VSAT star network. *For derivation – 6 marks and explanation – 6 marks*	CO 4	K 2
	OR		
18.	A Frequency - Division Multiple Access System has medium range message traffic. It uplinks 168 voice channels and signals received by four earth stations distributed evenly. Sketch the scenario and explain the operation. *For identification – 6 marks and explanation – 6 marks*	CO 4	K 3

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