Reg No.:_____ Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

EIGHTH SEMESTER B.TECH DEGREE EXAMINATION, MAY 2019

Course Code: EC404

Course Name: ADVANCED COMMUNICATION SYSTEMS

Max. Marks: 100 Duration: 3 Hours

PART A

Answer any two full questions, each carries 15 marks. Marks

1 a) With a block schematic explain microwave radio IF repeater station. (8)

b) Explain Hot standby protection switching arrangement of a microwave radio system. (7)

2 a) With a block diagram explain the DVB-T system. (10)

b) How the diversity is enhancing the performance of radio wave propagation? (5)

3 a) How the images compressed with the help of Discrete Cosine Transform(DCT)? Explain. (10)

b) Compare LED and LCD display systems. (5)

PART B

Answer any two full questions, each carries 15 marks.

4 a) Explain the effect of Non-spherical shape of earth on a satellite orbit. (5)

b) With the help of a block diagram briefly explain Satellite Transponder Subsystem. (5)

c) A satellite TV signal occupies the full transponder bandwidth of 36 MHz and it must provide a C/N ratio at the destination earth station of 22 dB. Given that the total transmission loss is 210 dB and the destination earth station G/T ratio is 31 dB/K. Calculate the satellite EIRP required. (5)

Given value k in dB is - 228.6 dB.

5 a) Briefly describe about global positioning satellite system. (5)

b) With the help of figure, describe WLL technology and its advantages. (7)

c) Mention the features of Bluetooth. (3)

6 a) What are the different versions of WLAN. (5)

b) Compare 1G, 2G,3G & 4G systems. (7)

c) State the differences between TDD & FDD in cellular communications. (3)

PART C

Answer any two full questions, each carries 20 marks.

7	a)	What is meant by small-scale fading? List out the factors influencing small-scale fading.	(5)
	b)	With necessary diagrams explain the technique 'Hand off '. Describe the different Hand off strategies.	(10)
	c)	Describe knife edge diffraction model.	(5)
8	a)	Write a short note on MIMO systems.	(5)
	b)	Give the concepts of Push To Talk (PTT) technology.	(5)
	c)	Explain in detail about the characteristics and network architecture of GPRS.	(10)
9	a)	Explain the OFDM implementation of multicarrier modulation with necessary diagrams.	(6)
	b)	Describe the traffic routing in wireless networks.	(8)
	c)	Explain Digital Enhanced Cordless Telecommunications (DECT) data service.	(6)

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Reg No.:_____ Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

EIGHTH SEMESTER B.TECH DEGREE EXAMINATION(S), OCTOBER 2019

Course Code: EC404

Course Name: ADVANCED COMMUNICATION SYSTEMS

Max. Marks: 100 Duration: 3 Hours

PART A

Answer any two full questions, each carries 15 marks.

			Marks
1	a)	Illustrate with figure a "Microwave radio communications link". List the advantages and disadvantages of Microwave Radio Communication.	(5)
	b)	Explain the need for a microwave repeater. Describe a baseband repeater with suitable diagram.	(10)
2	a)	Explain JPEG compression process with relevant figures.	(10)
	b)	Differentiate entropy coding with transform coding.	(5)
3	a)	Explain the following with diagram (i) Space Diversity (ii) Frequency Diversity	(5)
	b)	What are Group of Pictures? Discuss the features of each.	(3)
	c)	With a block diagram explain MPEG2 system.	(7)

PART B

Answer any two full questions, each carries 15 marks.

4	a)	Summarize Newton's laws.	(6)
	b)	Derive the expression of orbital velocity for the circular orbit.	(4)
	c)	Calculate the orbital period of the satellite moving in an elliptical orbit with major axis 60,000km. Given earth's geocentric gravitational constant as $3.98 \times 10^{14} m^3/s^2$.	(5)
5	a)	With the help of a diagram explain pagers and state its application.	(6)
	b)	What are the major subsections of a communication satellite. Explain the function of each block.	(9)
6	a)	Compare the wireless networks PAN and WLAN.	(5)
	b)	List out the features of UMTS.	(5)
	c)	Summarise the working principles of Wireless Local Loop.	(5)

PART C

Answer any two full questions, each carries 20 marks.

7	a)	Explain how the frequency reuse concept is significant in cellular system.	(5)
	b)	How co-channel and adjacent channel interferences affect cellular system capacity.	(5)

	c)	Derive the expression for path loss of Two Ray Ground Reflection model.	(10)
8	a)	Discuss in detail about GSM system architecture.	(10)
	b)	Explain HSCSD for 2.5G GSM.	(5)
	c)	What are the merits of UWB communication?	(5)
9	a)	With necessary schematic, explain the concept of OFDM.	(6)
	b)	Write a short note on DECT.	(6)
	c)	Explain channel assignment and handoff strategies in detail.	(8)

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Reg No.:_____ Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

Eighth Semester B.Tech. Degree Examinations, September 2020

Course Code: EC404

Course Name: ADVANCED COMMUNICATION SYSTEMS

Max. Marks: 100 Duration: 3 Hours

PART A

Answer any two full questions, each carries 15 marks. Marks

1 a) Explain Frequency Modulated microwave radio system with suitable block diagram. (8)

b) Explain the basic principles involved in the compression of fixed pictures. (7)

2 a) Explain how the diversity is enhancing the performance of radio wave propagation? Explain frequency diversity and space diversity with block diagram. (8)

b) Explain the working principles of Liquid Crystal displays. Compare it with plasma and LED displays (7)

3 a) Explain Free-Space Path Loss and derive the expression. Determine the path loss for a 3.4-GHz signal propagating 20,000 m. (7)

b) With a block diagram explain the DVB-T system. (8)

PART B

Answer any two full questions, each carries 15 marks.

4 a) State Kepler's laws of planetary motion. Illustrate in each case their relevance to artificial satellites orbiting the earth. (7)

b) With the help of figure, describe Wireless Local Loop technology. (4)

c) Explain with figure a wide area paging system. (4)

5 a) Explain Global Positioning System. (7)

b) Explain WIMAX architecture with necessary figure. (8)

6 a) Explain link budget calculations in satellite communication systems. Derive the expressions for uplink and down link (8)

b) Compare the important characteristics of second-generation cellular networks, third generation wireless networks and fourth generation wireless technologies. (7)

PART C

Answer any two full questions, each carries 20 marks.

7 a) Describe the ground reflection (two ray) model. Determine the expression for received power and total electric field at a distance 'd' and path loss for ground reflection model. (10)

b) Explain Orthogonal Frequency Division Multiplexing (OFDM).Explain the OFDM implementation of multicarrier transmission system. (10)

8 a) Discuss the 'handoff' strategies employed in the design of a mobile communication system. (10)

b) Write short notes on: - (10)

i) Enhanced Data Rate for Global Evolution (EDGE)

ii) Digital Enhanced Cordless Telecommunications (DECT) data service

9 a) Explain the fading effect due to multipath time delay and Doppler spread. (10)

b) Discuss in detail about GSM system architecture with figure. (10)

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