

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  $3.98 \times 10^{14} \text{m}^3/\text{s}^2$ . (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)

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- 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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