

Reg No.: \_\_\_\_\_

Name: \_\_\_\_\_

**APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY**

Seventh Semester B.Tech Degree Regular and Supplementary Examination December 2021 (2015 Scheme)

**Course Code: EE401****Course Name: Electronic Communication**

Max. Marks: 100

Duration: 3 Hours

**PART A***Answer all questions, each carries 5 marks.*

Marks

- 1 With the help of suitable circuit arrangement and relevant characteristics explain how does a varactor diode help in the generation of FM. (5)
- 2 Explain the operational features of super heterodyne AM receiver. (5)
- 3 Explain the constraints on the transmitter pulse power  $P_t$  and minimum receivable power  $P_{min}$  for enhancing the radar range (5)
- 4 With the help of block diagram and relevant characteristics explain the pulse position modulation (PPM). (5)
- 5 Explain any one of the spread spectrum technique for CDMA implementation. (5)
- 6 Why do you suggest semiconductor laser as an efficient light source in an optical fibre based communication system? (5)
- 7 'SDMA is better than TDMA for digital satellite communication'. Justify the statement with at least three valid points. (5)
- 8 Identify any three features of Wi-Max and explain how does it benefit for wireless applications. (5)

**PART B***Answer any two full questions, each carries 10 marks.*

- 9 a) A broadcast AM radio transmitter radiates 10 kW when the modulation percentage is 50. Determine the carrier power. If another sine wave is also simultaneously transmitted with a modulation index of 0.3, determine the overall modulation index and total transmitted power. (4)
- b) With the help of relevant characteristics and equations explain the importance of vestigial SB modulation. (6)
- 10 a) With neat block diagram, explain the operation of SSB pilot carrier transmitter. (4)
- b) With suitable sketches and relevant circuits explain how do you achieve S-shaped characteristics for an FM detector. (6)

- 11 a) With the help of suitable circuit arrangement and relevant characteristics explain the development of SSB generation using balanced modulator. (7)
- b) Explain the effects of the image frequency and method of image frequency rejection. (3)

**PART C**

*Answer any two full questions, each carries 10 marks.*

- 12 a) With the help of relevant sketches explain the essential components of composite video signal of a monochrome TV. (6)
- b) Mention any three specific advantages of HDTV system. Explain how these features can be achieved. (4)
- 13 a) With suitable sketches explain the role of low pass filter in the demodulation of pulse amplitude modulated signals. (5)
- b) Mention any three modifications to improve the performance of PCM systems. Justify your suggestions. (5)
- 14 With suitable sketches explain any three disadvantages of the following: (10)
- i) Pulse width modulation scheme,
  - ii) Duplexer mode in RADAR systems,
  - iii) Cable TV systems

**PART D**

*Answer any two full questions, each carries 10 marks.*

- 15 a) Mention any three disadvantages of FDMA systems. Explain how these are rectified in other MA systems? (5)
- b) Explain any four advantages of fiber optic cables over coaxial cables for improved performance of the communication system. (5)
- 16 a) Identify any three features of WiFi and explain how does it benefit for wireless applications. (5)
- b) With suitable sketches explain the reasons for adjacent channel interferences. How can you minimise them? (5)
- 17 Explain with suitable sketches how do the following concepts improve the performance of communication systems. (10)
- i) Zig Bee
  - ii) Cell sectoring
  - iii) Guard band in FDMA systems

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