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Reg No.:_____ Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

Seventh Semester B.Tech Degree (S, FE) Examination January 2023 (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 block diagram schematic and relevant filter characteristics explain the development of VSB modulation using filter method. (5)

2 Explain the feedback action associated with the automatic gain controller (AGC) unit for communication receivers. (5)

3 Explain any three processes happening during the blanking time of TV systems. (5)

4 Explain the need for sample and hold circuit in PCM. Mention any two modifications to improve the performance of SH circuit. Justify your suggestions. (5)

5 Explain the frequency hopping procedure for CDMA implementation. (5)

6 Explain the suitability of any pn-junction based photo detector in an optical fibre based communication system. Also mention any two demerits of the selected detector. (5)

7 With a block schematic explain the operational features of GPS unit. (5)

8 Explain the critical factors to be considered during the frequency reuse strategy. (5)

PART B

Answer any two full questions, each carries 10 marks.

9 a) Why do we go for high frequency carrier based modulation in communication systems? (4)

b) With neat block diagram schematic, explain the development of SSB modulation using phase shift technique. (6)

10 a) Explain the operational features of Foster Seeley discriminator for FM detection. (7)

b) Explain any three demerits of direct TRF AM receiver. (3)

11 With suitable sketches and relevant characteristics explain: (10)

i) Any three amplifiers used for high level transmitter,

ii) Any three advantages of intermediate frequency stage in AM receivers,

iii) Any three differences between modulation indices m_a and m_f for AM and FM.

PART C

Answer any two full questions, each carries 10 marks.

12 a) With the help of suitable layouts explain any two schemes and applications of CCTV systems. (6)

b) Calculate the maximum range of a radar system with a peak pulse power of 400 kW and operates with a wavelength of 4cm. The minimum receivable power is 10^{-12} W, while the capture area of its antenna is $6m^2$ and the radar cross sectional area of target is 15 m^2 (4)

13 a) With relevant characteristics explain the need for encoder for PCM systems. (5)

b) With suitable sketches and characteristics explain how does delta modulation becomes an advancement of PCM. (5)

14 a) With the help of suitable sketches and relevant equations explain the factors affecting the minimum range to be measured by a pulsed radar system. (4)

b) Explain the role of any three essential blocks for demodulation process of PCM signal. (6)

PART D

Answer any two full questions, each carries 10 marks.

15 a) Explain the block diagram of an earth station required for satellite communication. (4)

b) 'TDMA is better than FDMA for digital satellite communication'. Justify the statement with at least three valid points. (6)

16 a) Explain any three specific functions of Mobile Telephone Switching Office (MTSO) for call processing. (5)

b) With the help of suitable sketches explain the suitability of Zig-Bee for wireless networking. (5)

17 With the help of suitable sketches explain the relevance of the following in communication systems: (10)

i) Multi mode step index optical fibres,

ii) Co-channel interference,

iii) Bluetooth technology.

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