APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

Scheme for Valuation/Answer Key

Scheme of evaluation (marks in brackets) and answers of problems/key

SEVENTH SEMESTER B.TECH DEGREE EXAMINATION, DECEMBER 2018

Course Code: EE401

Course Name: ELECTRONIC COMMUNICATION

Max. Marks: 100 Duration: 3 Hours

PART A

Answer all questions, each carries 5 marks

1. Listing of 5 advantages wrt modulation index, bandwidth, amplitude, power requirement, waveforms, performance etc. OR, explanation of at least 3 important points. (5)

2. Basic concept- (1) + at least 3 factors for choice wrt adjacent channel rejection, selectivity, tracking difficulty, image frequency rejection, side band cut off, stability- (4). (5)

3. Sketch- (1) +Operation-(3) + advantage or need for IL scanning- (1) (5)

4. Sketch with basic explanation - (2) + merits & demerits: 2 points each- (3) (5)

5. Basics and sketches like freq-time bands- (2) + at least 3 points such as spectrum use, complexity, capacity, duplex, hand off, use of filters, battery life etc- (3) (5)

6. CDMA wrt DSSS or FHSS (Ref: Haykin): Basic Concept- (1) + freq-time chara/sketch- (1) + Important features like need for spreading/encoding & decoding, advantages, application etc (4-5 points)- (3) (5)

7. Block schematic showing important components such as light source, detector, OFC, and few possible accessories- (2) + operation of the arrangement referring to at least 5 blocks among the light source, detector, OFC, and possible accessories like modulator/demodulator/ coder/ decoder/ repeater/coupling/splicer- (3) (5)

8. Basic Concept and method- (2) + sketch- (1) + important features like relevance, capacity enhancement, etc and applications (3-4 points)- (2) (5)

PART B

Answer any two full questions, each carries 10 marks.

9. a) Equation and steps- (2), + power saving: a) 83% -(1) + b) 94%- (1) (4)

b) Analog multiplier followed by BPF or Balanced Modulator followed by SB suppression filter etc; Block diagram- (1) + frequency spectrum- (1) + Basic equations and derivation- (3) + explanation- (1) (6)

10. a) Figures and explanation- (2) each (4)

b) Either Travis (triple tuned) detector or Foster Seeley Discriminator (Phase discriminator): Circuit- (2) + characteristic- (1) + operation- (3) (6)

11. Block diagram- (3) + basic operation with relevance of major blocks like RF, LO, IF, detector stages- (7) (10)

PART C

Answer any two full questions, each carries 10 marks.

12. a) Block diagram- (2) + operation referring to major blocks- (3) (5)

b) Sketch- (3)+ operation referring to major blocks-(2) (5)

13. a) Equation and steps- (2) + r =686 km – (2) (4)

b) Block schematic- (1) + waveforms- (1) + operation of stages like S/H etc- (4) (6)

14. a) Block schematic- (1)+ waveforms- (1) + operation/relevance of stages like sampling, quantizer, encoder etc- (4) (6)

b) Either Differential PCM or Delta Modulation: Sketch- (2) + features/ modifications wrt PCM- (2). (4)

If only an attempt is made to explain the need for any modified PCM version by mentioning the demerits of PCM, a maximum mark of 2 can be given.

PART D

Answer any two full questions, each carries 10 marks.

15. a) Block diagram/ schematic- (2) + operation wrt major components such as transponder/transmitter/receiver stages/antenna/ control- (4) (6)

b) Listing of 5 advantages referred to bandwidth, low loss, size, security, noise immunity, minimum shock hazard etc, OR, explanation of at least 3 important points. (4)

16. a) Any 2 among Photodiode/PIN diode/avalanche PD etc: Figure- (1) + features (at least 4 points) - (2): for each detector. (6)

b) Listing of at least 3 features wrt wireless applications- (2) + Explanation of any of the star/mesh/cluster topology of Zigbee with sketch- (2) (4)

17. a) Listing of 3 features wrt wireless applications (2) + Explanation wrt the features such as adhoc networking, frequency hopping, WPAN, piconet etc with sketch- (3) (5)

b) Basic Concept and relevance wrt capacity enhancement- (2) + sketch- (1) + Important features including frequency reuse, transmitter power, D/R ratio etc- (2) (5)

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