Reg. No. :

B.E. / B.Tech. DEGREE EXAMINATION, DEC 2020

Fourth Semester

Electronics and Communication Engineering

15UEC405 - DIGITAL COMMUNICATION

(Regulation 2015)

Duration: 1:15hrs   Maximum: 30 Marks

PART A - (6 x 1 = 6 Marks)

(Answer any six of the following questions)

1. The channel capacity of mutual information is   CO1- R

   (a) C=supI(X;Y)   (b) C=Blog(1+S/N)   (c) C=Bln(S/N)   (d) C=sup B(X:Y)

2. Examples of digital communication are   CO1- R

   (a) ISDN   (b) Modems   (c) Classical telephony   (d) All the above

3. The maximum error correction of hamming code is.   CO2- R

   (a) d≤k+1   (b) d≥2k+1   (c) d=k+1   (d) none of these

4. What is a sampling unit?   CO2- R

   (a) The basic unit containing the elements of the population to be sampled

   (b) The sampling frame

   (c) All the individual elements of the final sample, drawn together

   (d) The method used to collect the sample

5. Which type is used and preferred in digital logic circuits   CO3- R

   (a) NRZ-M   (b) NRZ-L   (c) Bipolar RZ   (d) RZ-AMI

6. Noise figure measures the   CO3- R

   (a) Power degradation   (b) Noise degradation

   (c) SNR degradation   (d) None of these

7. The matched filter is a baseband signal receiver, which works in   CO4- R
   presence of.

   (a) Thermal noise   (b) white Gaussian noise   (c) Pepper noise   (d) None of these

8. Which modulation scheme is also called as on-off keying method? CO4- R

    (a) ASK   (b) FSK   (c) PSK   (d) GMSK

9. The multiple symbols are transmitted in one frequency hop is called as ---- CO5- R

    (a) DSSS   (b) Frequency hopping

    (c) Slow frequency hopping   (d) Fast frequency hopping

10. Pseudorandom signal _____ predicted CO5- R

    (a) Can be   (b) Cannot be   (c) May be   (d) None of these

PART – B (3 x 8= 24 Marks)

(Answer any three of the following questions)

11. Apply Shannon-Fano encoding procedure to find the code word for the messages A1, A2, A3, A4 and A5 with respective probabilities 0.35, 0.25, 0.20, 0.15 and 0.05. Also find the redundancy of the code CO1- App   (8)

12. For a systematic linear block code, the three parity check digits P1, P2,P3 are given by $P_{k,n-k}$ =[101 111 110 011] CO2- App   (8)

    (i) Construct generated matrix.

    (ii) Assess the t code generated by the matrix.

13. For the sequence 10111001, sketch the waveform supporting the following data formats. CO3- U   (8)

    (i) Unipolar RZ

    (ii) Polar NRZ

    (iii) Alternate mark inversion

    Draw the corresponding spectrum of the above formats and explain.

14. Discuss the transmitter, receiver and signal space diagram of QPSK and describe how it produces the original sequence with the minimum probability of error with neat sketch CO4- Ana   (8)

15. Discuss about the Direct Sequence Spread Spectrum Techniques with necessary diagrams and write its applications CO5- U   (8)

54405