Code No: 114CR

R13

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech II Year II Semester Examinations, March - 2022
DATA COMMUNICATION
(Information Technology)

Time: 3 Hours **Max. Marks: 75**

Answer any five questions
All questions carry equal marks
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1. Explain pulse code modulation. What are the different types of noises possible in converting analog signal into digital signal? [15]

2.a) Derive equation for channel capacity.
b) A message source produced 6 symbols A, B, C, D, E and F with probabilities P(A)=1/2, P(B)=1/4, P(C)=1/32, P(D)=1/8, P(E)=1/16 and P(F)=1/32. Derive a uitable coding Scheme to improve coding efficiency. [8+7]

3.a) Draw the FDM diagram and give its advantages over TDM.
b) Explain different switching techniques. [8+7]

4.a) What are the advantages of co-axial cable over two-wire line.
b) Explain attenuation mechanism in fiber optical cables. [8+7]

5.a) A group of 20 servers carry traffic of 10 Erlangs. If the average duration of a call is three minutes, calculate the number of calls put though by a single server and the group as a whole in a one-hour period.
b) What are the different modes of operation of common channel signaling scheme? Explain. [8+7]

6.a) Define first generation analog cellular telephone system and explain.
b) Explain the concepts of personnel communication systems. [8+7]

7.a) Give an account of error detection and correcting capabilities of block codes.
b) The generator polynomial of a (15, 11) Hamming code is identified by $g(x) = 1+x+x^4$. Develop the encoder and syndrome calculator for this code. [7+8]

8. Explain synchronous and asynchronous voice band modems with the help of diagrams. State the merits and demerits of each. [15]

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