Code: 13A04409 **R13**

B.Tech II Year II Semester (R13) Supplementary Examinations December/January 2015/2016

PRINCIPLES OF COMMUNICATIONS

(Electronics and Instrumentation Engineering)

Time: 3 hours Max. Marks: 70

PART – A

(Compulsory Question)

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1 Answer the following: (10 X 02 = 20 Marks)

(a) Draw the block diagram of electrical communication system.

(b) List the types of fluctuation noise.

(c) Define modulation index for amplitude modulation.

(d) List the advantages of SSB-SC modulation over DSB-SC modulation.

(e) Draw the circuit diagram for zero order hold circuit.

(f) What is meant by aliasing effect?

(g) Why ASK is called as ON-OFF keying?

(h) Define quantization error.

(i) An event has six possible outcomes with the probabilities P_1= 1/2, P_2= 1/4, P_3= 1/8, P_4 = 1/16, P_5= 1/32 and P_6 = 1/32. Find the entropy of the system.

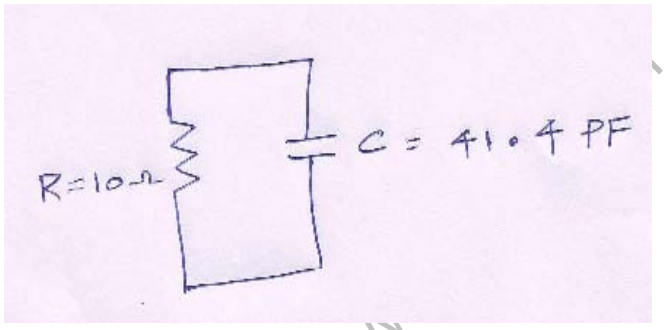
(j) Mention the methods used for error correction.

PART – B

(Answer all five units, 5 X 10 = 50 Marks)

UNIT – I

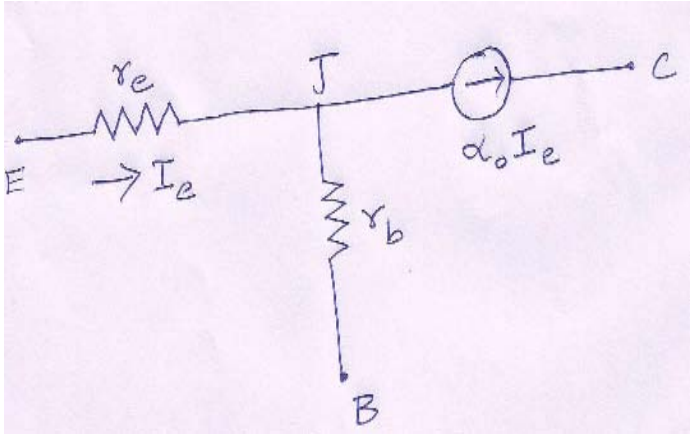
2 (a) Find the root mean square value of the noise voltage at 27°C developed across the capacitor terminal of the circuit given below.



(b) Explain in detail about resistor noise.

OR

3 Determine the various noise sources of a common base transistor amplifier is shown in figure below.



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UNIT – II

4 (a) Draw and explain the block diagram of squaring loop.
(b) Explain in detail about the frequency discrimination method and its limitations for generation of SSB-SC signals.

OR

5 (a) A single tone modulating signal $f(t) = E_m \cos \omega_m t$. Find the frequency deviation.
(b) Compare between amplitude modulation and frequency modulation.

UNIT – III

6 State and explain sampling theorem for band limited signals.

OR

7 (a) Compare FDM and TDM technique.
(b) Explain the generation of pulse position modulation using PPM modulator circuit.

UNIT – IV

8 Explain in detail about QPSK transmitter and receiver with neat sketches.

OR

9 (a) Explain the block diagram of transmitter and receiver for pulse code modulation.
(b) Write notes on limitations of delta modulation.

UNIT – V

10 Find the average code word length and coding efficiency for the message with eight probabilities $P_0 = 1/4$, $P_1=1/8$, $P_2= 1/16$, $P_3 = 1/16$, $P_4 = 1/16$, $P_5 = 1/4$, $P_6 = 1/16$, $P_7 = 1/8$ using Shannon Fano coding.

OR

11 Find all the code vectors for the generator polynomial of a (7, 4) cyclic code is $g(x) = 1 + x + x^3$.

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