

B.Tech. SEM -IV Electronics 2014 Course (CBCS) : WINTER - 2018

SUBJECT: ANALOG COMMUNICATION

W-2018-2350

Day: Friday
Date: 16/11/2018

Time: 02.30 PM TO 05.30 PM
Max. Marks: 60

N.B:

- 1) All questions are **COMPULSORY**.
- 2) Figures to the right indicate **FULL** marks.
- 3) Draw neat diagrams **WHEREVER** necessary.
- 4) Use non-programmable **CALCULATOR** is allowed.

Q.1 Classify following Types of communication channels with diagram and advantages. (10)

- i) Twisted pair cables
- ii) Co-axial cables
- iii) Fiber optic cables

OR

- a) Discuss the necessity of Modulation in detail. (06)
- b) Define types of modulation in short. (04)

Q.2 a) Define Noise. Discuss Natural Noise sources. (06)

- b) An amplifier operating over frequency range from 3MHz to 10 MHz and has 20 K Ω input resistance. Calculate r.m.s. noise voltage at input to the amplifier at room temperature. (04)

OR

- a) Define following terms: (06)
 - i) Signal to noise ratio
 - ii) Noise figure
 - iii) Noise temperature

- b) Discuss Man made noise sources. (04)

Q.3 a) For an AM double sideband full carrier envelop with $V_{max} = 20V$ and $V_{min} = 4V$. Determine:- (06)

- i) Peak amplitude of carrier
- ii) Modulation Index with percent modulation
- iii) Peak amplitude of upper and lower sideband frequencies

- b) Draw the block diagram for high level and low level AM transmitters. (04)

OR

A transmitter radiates 9KW power with carrier unmodulated and 10.125KW when carrier is modulated. Calculate modulation Index, percent modulation. If another sine wave corresponding to 40% modulation is transmitted simultaneously, determine total radiated power. (10)

P.T.O.

- Q.4** a) Differentiate between AM and FM. (06)
b) Draw the spectrum of FM signal and comment on bandwidth. (04)

OR

- a) Draw and explain Noise Triangle in FM. (06)
b) Define Frequency modulation and draw the FM wave. (04)

- Q.5** a) Define AGC. Draw the graph of AGC, mention advantages and disadvantages. (06)
b) Draw and explain TRF receiver. (04)

OR

Draw block diagram of double conversion communication receiver and explain each block. (10)

- Q.6** Define sampling theorem and explain Natural and Flat-Top sampling. (10)

OR

- a) Explain aliasing error and aperture effect in sampling process. (06)
b) Differentiate between PAM, PWM and PPM. (04)

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