

RAMAKRISHNA MISSION VIDYAMANDIRA

(Residential Autonomous College affiliated to University of Calcutta)

B.A./B.Sc. FOURTH SEMESTER EXAMINATION, MAY 2016

SECOND YEAR [BATCH 2014-17]

ELECTRONICS (General)

Date : 27/05/2016

Time : 11 am – 1 pm

Paper : IV

Full Marks : 50

Answer any five of the questions:

[5×10]

1. a) Prove that in amplitude modulation, maximum average power transmitted by an antenna is 1.5 times the carrier power. 3
b) The antenna current of AM broadcast transmitter modulated to the depth of 40% by an audio sine wave is 11 amp. It increases to 12 amp. As a result of simultaneous modulation by another audio sine wave. What is the modulation index due to this second wave? 7
2. a) Draw the block diagram for generation and detection of PCM system. 5
b) Explain low level and high level AM modulation with block diagram. 3
c) What are the Frequency Component in AM wave? 2
3. Draw and explain the working principle of Generation of PAM. 10
4. A FM wave is represented by the following equation —
$$V = 10 \sin [5 \times 10^8 t + 4 \sin 1250t]$$

Find (i) carrier and modulating frequencies
(ii) Modulation index and maximum deviation
(iii) The power dissipated by this FM wave in a 5Ω resistor. 10
5. a) Mention the advantages of FM over AM. 3
b) Derive the expression of signal to noise ratio of DSB – SC system. 5
c) What is TDMA? 2
6. Compare between ASK, FSK and PSK. Draw the waveform of 11001 bit pattern for ASK, FSK and PSK modulation scheme. 10
7. a) Define modulation. 1
b) Why is modulation needed in a communication system? 2
c) Justify— “Frequency modulation is an angle modulation”. 3
d) What do you mean by distortionless transmission? 2
e) What is the significance of S/N? 2
8. Answer the following:—
a) Define Noise. Differentiate with Distortion. 2
b) What do you mean by 3G system? 2
c) What is Manmade Noise? 2
d) What do you mean by BPSK? 2
e) What is ‘quantization’? 2