RAMAKRISHNA MISSION VIDYAMANDIRA
(Residential Autonomous College under University of Calcutta)

B.A./B.Sc. FOURTH SEMESTER EXAMINATION, MAY 2015
SECOND YEAR
Date : 28/05/2015   **ELECTRONICS (Gen)**
Time : 11 am – 1 pm   **Paper : IV**   Full Marks : 50

Group – A

Answer **any one** question from the following :0

1. Derive the equation of Transmission efficiency of an AM signal. [5]
2. What are the limitations of Quantization in PCM system? How they are overcome? [5]

Answer **any two** questions from the following :

3. a) A 1.0 MHz Carrier signal with amplitude 5V is amplitude Modulated by a 400 Hz Sinusoidal modulating signal. The depth of modulation is 60 percent. Write the equation of this AM wave. [5]
   b) An AM wave is represented by the equation
   $$e = 6.5 (1+0.5 \sin 5027\ t) \cos 10053 \times 10^3\ t$$
   where 't' is expressed in seconds. What information can be gathered from this equation? [5]

4. a) Describe the basic characteristics of signal. [3]
   b) Define Frequency modulation and Phase modulation. How to convert Phase modulation to Frequency modulation? [3+4]

5. a) What is Sampling? Classify it. [3]
   b) Discuss the Generation Method of PAM with a neat block diagram. [7]

6. Write short note on **(any two) :** [5+5]
   a) Carson's Rule
   b) Signal-to-Noise Ratio
   c) VSB
   d) Energy Signal and Power Signal.

Group – B

Answer **any one** question from the following :

7. Illustrate the classification of Secondary Instruments. [5]
8. Mention the advantages of SMPS. [5]

Answer **any two** questions from the following :

9. Draw and explain the working principle of a CRO. [10]
10. In a CRT, the anode to Cathode Voltage is 2000V. The parallel deflector plates are 1.5 cm long and spaced 5mm. The Screen is 50 cm from the Centre of the deflecting plates. Find —
    (a) beam speed
    (b) deflection sensitivity of the tube. Mass of electron = 9.109×10^{-31} Kg, charge on electron = 1.602×10^{-19} C. [10]
11. Draw and explain the working principle of a Regulated Power Supply. [10]
12. Write short notes **(any two)** [2×5]
    a) Lissajous Figure
    b) Essential features of an Indicating Instrument
    c) Fluorescent Screen
    d) Different components of CRT

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