RAMAKRISHNA MISSION VIDYAMANDIRA

(Residential Autonomous College under University of Calcutta)

B.A./B.SC. FOURTH SEMESTER EXAMINATION, MAY 2012

SECOND YEAR

Date : 25/05/2012 **ELECTRONICS (General)**

Time : 11 am – 1 pm Paper : IV Full Marks : 50

Answer **any five** questions : [5×10]

1. a) Define Amplitude Modulation. [2]
   b) Obtain the mathematical expression of an AM signal. [3]
   c) What are the sidebands in AM? [5]

2. a) Explain why message signals cannot be directly transmitted without modulation. [3]
   b) Discuss the demodulation process of an AM signal. [4]
   c) What is an energy signal? Calculate the energy for a signal g(t). [1+2]

3. a) Define thermal shot and flicker noise. [3]
   b) What is the S-N ratio for a signal? How does it signify the quality of the signal? [2+3]
   c) What do you mean by noise figure and noise temperature? [1+1]

4. An angle modulated signal with carrier frequency w_c in described by the equation :
   $\psi(t) = 10 \cos (w_c t + 5 \sin 100t)$
   a) Find the frequency deviation Δf in Hz. [3]
   b) Find the power of the modulated signal. [4]
   c) Find the phase deviation in radian. [3]

5. a) Define angle modulation. [2]
   b) Define 'frequency modulation index' and 'depth of modulation' of FM. [2+2]
   c) If the frequency modulation index for a signal of 5Khz is 50%, calculate the depth of modulation of the signal. [4]

6. a) Describe the PAM and PCM techniques. [3+3]
   b) What do you mean by a regulated power supply? Describe the construction of a regulated power supply. [1+3]

7. a) Briefly describe the different components of a CRO with a block diagram. [6]
   b) Describe the display principle of a CRO. [4]

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