RAMAKRISHNA MISSION VIDYAMANDIRA

(Residential Autonomous College affiliated to University of Calcutta)

B.A./B.Sc. FOURTH SEMESTER EXAMINATION, MAY 2018

SECOND YEAR [BATCH 2016-19]

Date : 25/05/2018 **ELECTRONICS (General)**

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

Answer <u>any five</u> of the following questions : [5×10]

1. a) How PCM is different from PAM? [3]
   b) What are the benefits of regenerative repeater in PCM communication link? [3]
   c) What are the limitations of Quantization in PCM? How can they be overcome? [2+2]

2. a) What is Flicker noise? [2]
   b) What is signal to noise ratio? How does it signify the quality of the signal? [2+3]
   c) Write in brief on Thermal Noise. [3]

3. a) Draw an explain the generation and demodulation of PAM signal. [4+4]
   b) Differentiate between periodic and aperiodic signals with proper examples. [2]

4. Write short notes on **<u>any two</u>** of following : [2×5]
   a) Noise bandwidth b) Sampling c) Shanon's limit
   d) BPSK e) DPCM

5. a) State and explain the need of modulation. [2]
   b) Derive an expression for amplitude modulated carrier. Define modulation index. [4+1]
   c) A 100KHz carrier signal with amplitude 3V is modulated by 500Hz sinusoidal modulating signal. The depth of modulation is 50%. Write the equation of AM wave. [3]

6. a) State how sidebands are produced for AM waves. [2]
   b) A 100MHz carrier is frequency modulated by a modulating signal of 100KHz. Mention how many side frequencies will be produced in this case. [2]
   c) A 100MHz carrier is frequency modulated, the modulation index being 4. The frequency of the information signal is 10KHz. What is the maximum frequency deviation? [3]
   d) Compare SSB – SC and DSB. [3]

7. a) State and explain the scheme of FSK. [4]
   b) What do you mean by multiple access technologies in cellular communication? [2]
   c) Write a short note on TDMA. [4]

8. a) Compare frequency and phase modulation. [3]
   b) A FM wave is represented by the following equation $V = 10\sin[5\times10^{8}t + 4\sin 1250t]$.
   Calculate — i) Carrier and modulating frequencies [2]
   ii) Modulation index and maximum deviation [3]
   iii) Power dissipated by the FM wave in a 5Ω resistor. [2]

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