RAMAKRISHNA MISSION VIDYAMANDIRA
(Residential Autonomous College affiliated to University of Calcutta)

SECOND YEAR [2017-20]
B.A./B.Sc. THIRD SEMESTER (July – December) 2018
Mid-Semester Examination, September 2018

Date : 27/09/2018

Time : 12 noon- 1 pm
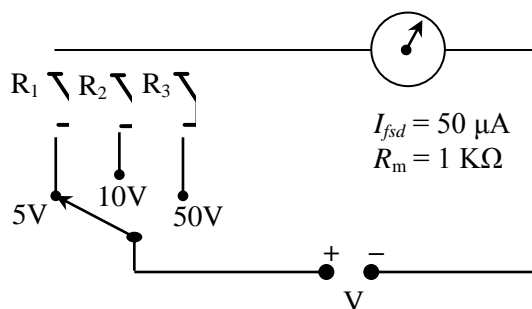
ELECTRONICS (General)

Paper: III

Full Marks : 25

Answer **<u>any five</u>** questions**:** (5 × 5)

1. a) What do you mean by signal? Plot continuous digital signal and discrete analog signal.

    b) Define power and energy signal. Give a comparative study of these two types of signals. 2+3

2. a) Write a short note on thermal noise.

    b) Define noise resistance and SNR. 3+2

3. a) What do you mean by noise bandwidth?

    b) An amplifier operating over the frequency range from 19 MHz to 21 MHz has a 10 KΩ input resistor. What is the r.m.s. noise voltage at the input to this amplifier if the ambient temperature is 300K? 2+3

4. a) What is modulation?

    b) Derive an expression for frequency modulated carrier wave. Define depth of modulation. 1+4

5. a) Draw the circuit of a diode detector employed for amplitude demodulation.

    b) State the working principle of the above mentioned diode detector. 1+4

6. a) What do you mean by sidebands?

    b) Draw the frequency spectra for DSB, DSB-SC and SSB. 2+3

7. a) Draw a universal shunt circuit used for constructing multirange ammeter.

    b) Discuss its working principle. 2 +3

8. Calculate the value of multiplier resistance for the multiple range dc voltmeter circuit as show below: 5

I_{fsd} = 50 μA
R_m = 1 KΩ

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