## RAMAKRISHNA MISSION VIDYAMANDIRA

(Residential Autonomous College affiliated to University of Calcutta)

## B.A./B.Sc. THIRD SEMESTER EXAMINATION, DECEMBER 2018

## SECOND YEAR [BATCH 2017-20] ELECTRONICS [General]

Date : 18/12/2018

Time: 11 am - 1 pm Paper: III Full Marks: 50

1. a) Explain the working of a multi range ammeter with a schematic diagram.  b) A ImA meter movement with an internal resistance of 100 Ω is to be converted into a 0-100 mA. Calculate the value of shunt resistance required.  c) Calculate the sensitivity of a 200 μA meter movement which is to be used as a dc voltmeter.  2. a) Define sensitivity of a voltmeter.  b) Calculate sensitivity of a voltmeter.  c) Explain with a neat diagram the working principle of a thermocouple.  [1+3]  3. a) Describe briefly the forms of noise to which a transistor is prone.  [5]  b) Define and explain noise temperature.  c) A receiver connected to an antenna whose resistance is 50 Ω has an equivalent noise resistance of 30 Ω. Calculate the receiver's noise figure and its equivalent noise temperature.  c) A receiver connected to an antenna whose resistance is 50 Ω has an equivalent noise resistance of 30 Ω. Calculate the receiver's noise figure and its equivalent noise temperature.  c) Define modulation index. Sketch amplitude modulated signal for a modulation index of μ = 0.5, where m(t) = A cos ω <sub>m</sub> 7. Explain tone modulation with a neat sketch of modulated waveform. [2+2+2]  5. a) Draw and explain the operation of envelope detector.  b) Distinguish between FM and PM signals.  c) C Calculate the power developed by an AM wave in a load of 100 Ω when the peak voltage of the carrier is 100 volt and modulation index in 0.6.  2. 2. Calculate the power developed by an AM wave in a load of 100 Ω when the peak voltage of the carrier is 100 volt and modulation index in 0.6.  2. 2. Write a short notes on amy four of the following:  c) Design 2-input NAND and NOR gates using CMOS technology.  c) Explain briefly frequency demodulation.  d) What do you mean by transducers? Explain with appropriate example.  e) State briefly any crystal growth technique.  f) Mention the basic characteristics of a signal.  g) Compar	Answer <i>any five</i> questions from the following: $[5 \times 10]$				
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