

B.Tech sem-II Electrical.

B.Tech. SEM -II Electrical 2014 Course (CBCS) : SUMMER - 2019  
SUBJECT: ELECTRICAL AND ELECTRONICS DEVICES  
(ONLY ELECTRICAL)

Day : Friday  
Date : 31/05/2019

Time : 10.00 AM TO 02.00 PM  
Max. Marks: 60.

S-2019-2541

N.B.:

- 1) All questions are **COMPULSORY**.
- 2) Figures to the **RIGHT** indicate full marks.
- 3) Draw neat and labeled diagrams **WHEREVER** necessary.

- Q.1 a) A  $100\mu\text{F}$  capacitor in series with 1 Megaohm resistor is connected suddenly to 10 V DC supply. How much time is required for the capacitor to charge completely. Write down equation and draw charging curve. If the same capacitor is connected to 10V, 50 Hz ac supply (without resistor), what will be the current through capacitor? (06)
- b) Describe the types of capacitors and their applications. (04)

OR

- Q.1 a) A coil is wound with 800 turns. When the current of 6A flows, flux of 0.06 mwb links the turns. Find (06)
- (i) Self inductance
  - (ii) Emf induced in the coil, if the current is reversed in 12 sec.
  - (iii) Energy stored in the coil
- b) Write down specifications of resistors. State the properties of material used for resistors. (04)

- Q.2 a) Compare PMMC and moving iron type measuring instrument on the basis of deflecting torque, damping torque, applications, advantages, etc. (06)
- b) State and explain any four static characteristics of measuring instrument. (04)

OR

- Q.2 a) Describe the construction and principle of operation of D'Arsonval galvanometer with neat diagram. (06)
- b) Draw neat diagram for extension of range of ammeter and derive equation for external resistance required to connect in the circuit. (04)

- Q.3 a) Draw neat diagram of Wheatstone's bridge and explain measurement of resistance using the bridge. What are the limitations of Wheatstone's Bridge? (05)
- b) How limitations are overcome in Kelvin's double bridge. Draw diagram of Kelvin's double bridge and write down balance equation. Why is it necessary to take readings in forward and reverse direction? (05)

OR

- Q.3 a) Draw neat diagram of Megger. Describe construction and operation for measurement of insulation resistance. (05)
- b) Describe loss of charge method for measurement of resistance with neat diagram and equation. (05)

- Q.4 a)** Define the following terms: (04)  
(i) Line regulation (ii) Load regulation (iii) TUF (iv) Rectifier efficiency
- b)** Explain how voltage, current, time period and frequency can be measured with the help of oscilloscope. (06)

**OR**

- Q.4 a)** Compare half wave, full wave and bridge rectifiers. (05)
- b)** With neat diagram, explain full wave diode bridge rectifier with R-L load, draw the voltage and current waveforms. (05)

- Q.5 a)** Derive the equation of DC load line for CE amplifier and explain the criteria for selection of the operating point. (05)
- b)** Explain various parameters of JFET. (05)

**OR**

- Q.5 a)** With neat circuit diagram, explain frequency response of transistor amplifier. (05)
- b)** With neat circuit diagram, explain common base transistor characteristics, draw nature of input and output characteristics for this configuration. (05)

- Q.6 a)** Explain with neat diagram and suitable waveforms, working of astable multivibrator. (05)
- b)** With neat diagram explain construction and operation of R-C coupled multistage transistor amplifier. (05)

**OR**

- Q.6 a)** With neat diagram, explain operation of Wein bridge oscillator. (05)
- b)** Derive the expression for gain of feedback amplifiers hence state advantages and limitations of negative feedback. (05)

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