

B.TECH. SEM -II ELECTRICAL 2014 COURSE (CBCS) :
SUMMER - 2018

SUBJECT : ELECTRICAL & ELECTRONICS DEVICES

Day : **Monday**
Date : **11/06/2018**

S-2018-2220

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

N.B.:

- 1) All questions are **COMPULSORY**.
- 2) Figures to the right indicate **FULL** marks.
- 3) Use of non-programmable **CALCULATOR** is allowed.
- 4) Assume suitable data if necessary.

- Q.1**
- a) Explain different types of capacitors. State specifications and applications of it. [06]
 - b) If a parallel plate capacitor (filled with an insulator) went through the following changes simultaneously, permittivity doubles, plate separation halves, plate area increased to 4 times. How would the capacitance be affected? [04]

OR

- a) Determine the value of resistor for the following color code: [04]
 - i) Green Blue Red Gold
 - ii) Brown Black Orange Silver
 - iii) Blue Gray Yellow gold
 - iv) Violet Red Green Silver
- b) What are the different types of inductors? Sketch and explain. Write down equations of inductance, inductive reactance, energy stored in inductance. What are the specifications and applications of it? [06]

- Q.2**
- a) A millimeter of 25 ohms resistance reads upto 100 milliamp. What resistance is necessary to enable it to be used as [04]
 - i) A voltmeter upto 10V
 - ii) An ammeter upto 10A.Draw connection diagram in each case.
 - b) Draw neat labelled diagram of repulsion type moving iron instrument and explain its principle of operation with torque equation. State its advantages and limitations. [06]

OR

- a) Draw neat diagram of galvanometer and explain its principle of operation with torque equation. [06]
- b) Define: i) Sensitivity ii) Resolution iii) Accuracy of instrument [04]

- Q.3**
- a) What is the difference between earth tester and megger? What should be the value of earth resistance? [04]
 - b) Sketch diagram of ohmmeter and explain its operation. [06]

P.T.O.

OR

- a) Draw neat diagram of Kelvin's double bridge for resistance measurement. [06]
Write down balance equation. What is the value of unknown resistance if ratio arm is 10 and standard resistance is 50 milliohm?
- b) Classify the following resistances and state approximate value of resistor: [04]
i) Resistance of 1 kw geyser.
ii) Resistance of ammeter.
iii) Resistance of human body.
iv) Internal resistance of battery.

- Q.4 a) Draw and explain V – I characteristics of zener diode. [04]
- b) In an experiment, the voltage across 1 kW resistor is applied to CRO. The screen shows a sinusoidal signal of total vertical occupancy of 3 cm and total horizontal occupancy of 2 cm. The front panel controls volts/div and times/div are on 5V/div and 5 ms/div respectively. Calculate the maximum and rms values of voltage across resistance and current through resistance. Also find its frequency. [06]

OR

- a) Define the following terms and explain their significance in relation with rectifying circuit: [04]
i) Ripple factor ii) TUF
- b) A bridge rectifier circuit has secondary voltage of 12 Vrms. Assume secondary resistance and diode forward resistance to be negligible. Load resistance is 100Ω. Calculate peak load current, DC load current, rms load current and PIV across each diode. [06]

- Q.5 a) Draw and explain JFET characteristics. [06]
- b) What are multivibrators? Explain operation of BJT as astable multivibrator. [04]

OR

- a) Compare common base, common emitter and common collector BJT amplifier. [05]
- b) With neat diagram and necessary waveforms, explain DC load line analysis. [05]

- Q.6 a) With neat diagram explain RC coupled multistage BJT amplifier. [06]
- b) Compare positive and negative feedback amplifiers. [04]

OR

- a) With neat diagram explain transformer coupled multistage BJT amplifier. [05]
- b) Draw and explain RC phase shift oscillator. [05]

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