

B.TECH. SEM -VI ELECTRONICS 2014 COURSE (CBCS) :

SUMMER - 2018

SUBJECT : ELECTRONIC CIRCUIT DESIGN

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

S-2018-2427

Time **02.30 PM TO 05.30 PM**
Max. Marks : 60

N.B.

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

Q.1 What are active and passive components? Describe various types of inductor and capacitor in detail. (10)

OR

- Q.1 a)** Describe working of power transformer. (06)
b) Classify Integrated Circuits (ICs). (04)

Q.2 Design an inductor filter to provide 100 V output voltage at 300Ω load with peak ripple voltage not exceeding 10 V. Use full wave rectifier circuit. (10)

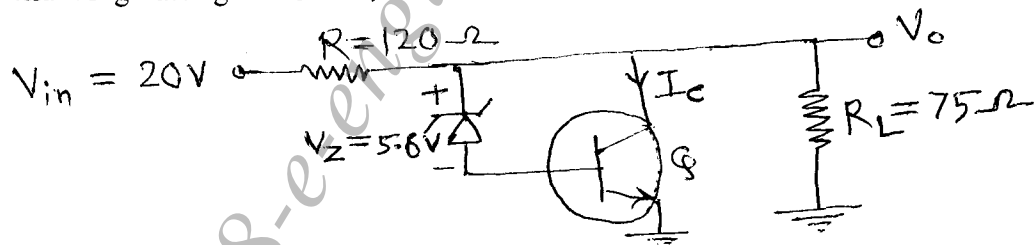
OR

- Q.2 a)** Draw circuit of 'LC-filter' and describe its working along with output voltage characteristics. (06)
b) Draw and explain RC-filter. (04)

Q.3 Draw and explain the functional block diagram of IC-723. Also design a regulator using IC-723 to give the output voltage of 6V at 80 mA. The input voltage is 10 V and $V_{\text{sense}} = 0.65 \text{ V}$. (10)
(Given: $V_{\text{ref}} = 7\text{V}$, $R_1 + R_2 = 10 \text{ k}\Omega$)

OR

- Q.3 a)** Draw circuit of 'Zener shunt regulator' and explain it. (06)
b) Determine the output voltage and the circuit currents for the transistor shunt regulator given below: (04)



Q.4 Draw block diagram of SMPS and explain it. Also describe various types of SMPS. (10)

OR

- Q.4 a)** Design linear power supply using discrete components. (06)
b) Compare linear power supply and SMPS. (04)

Q.5 Design a DAS to monitor temperature of a given systems using an Instrumentation amplifier and thermistor. Use thermistor with reference resistance of $80 \text{ k}\Omega$ at 25°C . The temperature coefficient of thermistor is $-1.2 \text{ k}\Omega/^\circ\text{C}$. Determine the output voltage at 80°C and 10°C . (10)

OR

- Q.5 a)** Draw and explain Multi-channel DAS. (06)
b) Write short note on 'Data Logger'. (04)

Q.6 Design power amplifier using LM380 for following specifications : (10)

$P_0 = 1.5 \text{ W}$
 $R_L = 4 \Omega$
B.W. = 30 Hz to 15KHz
 $A_v = 50$
 $A_{vF} = 200$
Assume $R_1 = 10 \text{ k}\Omega$

OR

- Q.6 a)** Draw pre-amplifier circuits and explain it. (06)
b) Draw and explain graphic equalizer circuit. (04)

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