TED (15)-3044   Reg No…….

(Revision-2015)   Signature

Third Semester Diploma examination in Engineering/Technology.

ELECTRONIC DEVICES AND CIRCUITS

MODEL QUESTION PAPER

                                                                   Time   3 Hours

Maximum Marks: 100

PART A

I (Answer the following questions in one or two sentences. Each question carry 2 marks.)

1   Define Q-point.

2   State the need of multi stage amplifiers.

3   List the applications of tuned amplifiers.

4   Write the meaning of positive feedback and where is it used?

5   List the types of multi vibrators.

                                                         (5 X2 = 10)

PART B.

II (Answer any five of the following questions. Each question carry 6 marks).

1   For a single stage CE amplifier with voltage divider bias, Vcc=30 volts, R1=490 Ohms, R2=68 Ohms, R_C=120 Ohms, R_E=20 Ohms and R_L=180 Ohms. Calculate I_{CQ} and V_{CEQ} and rc (output AC impedance).

2   Compare different coupling schemes used in multi stage amplifiers.

3   Draw the circuit diagram of single ended class A power amplifier and list its drawbacks.

4   A parallel resonant circuit consists of a capacitance of 100 MFD and an inductance of 100 micro H. The series resistor is 10 Ohms. Find   resonant frequency and impedance at resonance .

5   Briefly describe the construction of N channel JFET with diagram.

6   Explain the basic principle of LC oscillator.

7 Prove that the output of   RC differentiator circuit is proportional to the derivative of the input.

<div align="right">(5 X 6 = 30).</div>

PART C

(Answer one full question from each module. Each question carry 15 marks)

MODULE I

III a) Explain AC and DC load line with a graph   (7)

b) Draw the circuit diagram of two stage direct coupled amplifier and list its advantages and applications.   (8).

<div align="center">OR</div>

IV a)   Draw the frequency response of transformer coupled amplifier and explain the reason for its narrow band width. Also list its applications.

<div align="right">(9)</div>

b)   In a CE amplifier R_L = 9 K, R_C = 9 K, Beta = 50 and R_{in} = 3 K. Find the voltage gain and output voltage.   (6)

MODULE II

V a) Draw the circuit of single tuned amplifier and explain its working.   (9)

b) Write the advantageous, disadvantageous and application of push pull amplifier. (6)

<div align="center">OR</div>

VI a)   A parallel RLC tuning circuit consists of an inductance of 200 micro henries and a capacitance of 50 micro farad. The series resistor is 10ohms. Find the quality factor, band width and resonant frequency.   (8)

b)   Write the importance of impedance matching in power amplifiers. In a single stage power amplifier, the output transformer windings, N1=200, N2=50, and loud speaker impedance is 12 Ohms. Find the effective load impedance experienced by the transistor amplifier.   (7)

MODULE III

VII a) Compare regenerative and degenerative feed back. (6)

b)Explain the effects of negative feedback. (9)

OR

VIII a) In a feedback amplifier, the basic amplifier gain is 150. The feedback factor is 3. Calculate the ever all gain if a) positive feedback and b) negative feedback. (6)

b) With a circuit diagram write the working principle of UJT relaxation oscillator. (6)

MODULE IV

IX a) Draw and explain the circuit diagram of a BJT Colpit'ts oscillator. (7).

b) Explain the working of transistorized bi stable multi vibrato circuit with suitable diagrams. (8).

OR

X a) Describe the working principle of crystal oscillator circuit with circuit diagram (9)

b) Draw the circuit diagram of Schmitt trigger circuit and waveforms and define LTP and UTP. (6)

_____