TED (15) – 3044

(REVISION — 2015)

Reg. No. .....

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THIRD SEMESTER DIPLOMA EXAMINATION IN ENGINEERING/ TECHNOLOGY — APRIL, 2017

ELECTRONIC DEVICES AND CIRCUITS

(Common for EL, EC and BM)

[*Time* : 3 hours

(Maximum marks : 100)

PART — A

(Maximum marks : 10)

Marks

I Answer the following questions in one or two sentences. Each question carries 2 marks.

1. List different methods of inter stage coupling.
2. Write the relationship between frequency, Q and bandwidth.
3. Define thermal runaway.
4. Define negative feedback.
5. List the applications of LC oscillator. (5 × 2 = 10)

PART — B

(Maximum marks : 30)

II Answer *any five* of the following questions. Each question carries 6 marks.

1. Draw the frequency response of transformer coupled amplifier and explain about F_L, F_H and bandwidth.
2. Draw AC and DC load line of a CE amplifier and explain the important points such as Q point, cut off point and saturation point.
3. Write the conditions of a series RLC circuit below resonant frequency, above resonant and at resonant frequency.
4. Illustrate the types of negative feedback in amplifiers with diagrams.
5. Explain the effects of negative feedback.
6. State and explain Barkhausen criterion for oscillation.
7. Draw the circuit diagram of Hartley oscillator and write the equation for frequency of oscillation. (5 × 6 = 30)

[P.T.O.

Marks

PART — C

(Maximum marks : 60)

(Answer *one full* question from each unit. Each full question carries 15 marks.)

UNIT — I

III (a) Explain the potential divider biasing technique with relevant circuit diagram. 8

(b) Draw the circuit diagram of two stage transformer coupled amplifier and list its advantages. 7

OR

IV (a) Draw the frequency response of RC coupled amplifier and explain the reason for flat response in the mid frequency range. 9

(b) In a CE amplifier R_L = 12 K, R_C = 12 K, Beta = 100 and r'e = R_{in} = 3 K. Find the voltage gain and power gain. 6

UNIT — II

V (a) Draw the circuit of parallel RLC circuit and derive the equation for resonant frequency. Also write the relation between resonant frequency, Q and bandwidth. 7

(b) Draw the circuit of class B push pull power amplifier and explain its operation. 8

OR

VI (a) Draw the circuit and frequency response of single tuned amplifier. Write its applications. 8

(b) Write the importance of impedance matching in power amplifiers. In a single stage power amplifier, the output transformer windings, N1 = 300, N2 = 25 and loud speaker impedance is 16 Ohms. Find the effective load impedance experienced by the transistor amplifier. 7

UNIT — III

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

(b) Explain the working principle of UJT with a diagram. 9

OR

VIII (a) The basic gain of an amplifier is 160, when negative feedback is applied, the gain reduces to 80. Find the fraction of the output that is feedback to the input. 6

(b) Describe the working principle of depletion type MOFET with a diagram. 9

UNIT — IV

IX (a) Draw and explain the circuit diagram of a BJT RC phase shift oscillator. 7

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

OR

X (a) Describe the working principle of a free running multi vibrator circuit with suitable diagram and waveforms. 9

(b) Draw the circuit diagram of Schmitt trigger circuit and explain its working. 6

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