BACHELOR OF TECHNOLOGY (C.B.C.S.) (2020 COURSE)
B.Tech.Sem - III R&A : : SUMMER - 2022
SUBJECT : ELECTRONIC CIRCUITS

Day : Thursday

Date : 2/6/2022

S-24780-2022

Time : 02:30 PM-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 **WHEREVER** necessary.
4) Draw neat and labelled diagram **WHEREVER** necessary.
5) Use of non – programmable **CALCULATOR** is allowed

Q.1 Define the concept of D.C. load line. Describe the shifting of operating point near to the cut – off region, near to saturation region and at the center of active region with suitable diagram. **(10)**

OR

Q.1 a) Describe the operation of voltage divider biasing circuit. Derive the stability factor for voltage divider biasing circuit. **(06)**

b) Describe the requirements of biasing circuits. **(04)**

Q.2 Describe the construction and operation of n–channel Depletion type MOSFET with drain characteristics and transfer characteristics in detail. **(10)**

OR

Q.2 a) Explain the operation of JFET amplifier in common Drain configuration mode. **(06)**

b) Differentiate between BJT and JFFT. **(04)**

Q.3 What is the need of multistage amplifier? Describe operation RC coupled multistage amplifier in detail. **(10)**

OR

Q.3 a) Differentiate between RC coupled, Transformer coupled and direct coupled amplifier. **(06)**

b) Justify the statement 'Low frequency response of CE Amplifier is affected due to imperfect by passing of emitter resistance'. **(04)**

Q.4 Derive the expression for the input resistance, output resistance, gain and bandwidth of an amplifier with current shunt feedback. **(10)**

OR

Q.4 a) List the advantages of negative feedback. Derive the relation between gain with and without feedback in transistor amplifier. **(06)**

b) Explain types of basic amplifiers. **(04)**

Q.5 A class B push pull power amplifier is supplied with Vcc = 50V. The signal swings the collector voltage down to Vmin = 5 V, The total power dissipation of both transistors is 40W. Calculate the total power and conversion efficiency. **(10)**

OR

Q.5 a) Describe the operation of class B push – pull amplifier in detail with the help of waveforms. **(06)**

b) Derive the expression for efficiency of class A power amplifier with resistive load (Series fed). **(04)**

Q.6 Describe the working of Hartley oscillator with circuit diagram. Derive the expression for frequency of oscillation and condition for starting oscillation. **(10)**

OR

Q.6 A colpitt's oscillator is designed with C_1 = 100 pF and C_2 = 7,500 pF. The inductance is variable. Determine the range of inductance values, if the frequency of oscillations is to vary between 950 KHz and 2050 KHz **(10)**

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