QP Code : 4785

(3 Hours) Total Marks:80

N.B.: (1) Question No.1 is compulsory.

(2) Answer any **three** from remaining five questions

(3)Figures to the right indicate full marks.

(4) Assume suitable data if it is necessary

Q.1 Answer any FOUR from the following 20

a) Explain different types of coupling.

b) Explain the construction and principle of operation of LED with one application.

c) Draw and explain voltage divider biasing for BJT.

d) Draw and explain the construction of Junction Field Effect Transistor.

e) Explain Barkhausen criterion for sustained oscillations.

f) Draw and explain dual input balanced output differential amplifier using BJT.

Q.2a) What is the effect of negative feedback on input impedance, output impedance, voltage gain, current gain and bandwidth? 10

b) Explain the operation of CLC filter in full wave rectifier with neat diagram and waveforms. 10

Q.3a) Derive the expression for voltage gain, current gain, input impedance, output impedance of common collector amplifier. 10

b) Explain the construction and characteristics of Enhancement MOSFET. 10

Q.4 a) Draw and explain the AC analysis of dual input balanced output differential amplifier. 10

b) Draw circuit diagrams for Hartley and Colpitts oscillator. Compare them and also write formulae for their frequency of oscillations. 10

Q.5a) What are the different types of feedback amplifier? Explain current series negative feedback amplifier. 10

b) Draw circuit for Wien bridge oscillator. Derive an expression for its frequency of oscillation. 10

Q.6 Write short notes on any two of the following. 20

i) Zener diode as a voltage regulator

ii) UJT as a relaxation oscillator

iii) Thermal stabilization and compensation

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