Q.P. Code : 5058

(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 necessary

Q.1 Answer any four from the following   20

  a) Explain zener diode as a voltage regulator.

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

  c) Explain thermal stabilization and compensation.

  d) Draw and explain the effect of coupling on performance of BJT amplifiers.

  e) Explain Barkhausen criterion for sustained oscillations.

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

Q.2 a) What are the advantages of negative feedback? Explain.   20

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

Q.3a) Derive the expression for voltage gain, current gain, input impedance, output impedance

    of CE amplifier   20

  b) What are the types of MOSFET? Explain their construction and working.

Q.4 a) Derive an expression for the voltage gain of CS differential amplifier.   20

  b) What type of feedback is used in oscillators? Why? Explain Colpitts Oscillator with neat diagram.

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

    feedback amplifier.   20

  b) Draw circuit for R-C phase shift oscillator. Derive an expression for its frequency of oscillation.

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

  i) Darlington pair   ii) Wien bridge oscillator   iii) Frequency response of BJT amplifier.

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