Total No. of Questions : 10] [Total No. of Printed Pages : 3

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401(O)

B. E. (Fourth Semester) EXAMINATION, Dec., 2009

(Old Scheme)

(Common for EC/EI & BM Engg.)

ELECTRONICS – II

Time : Three Hours

Maximum Mark : 100

Minimum Pass Marks : 35

Note : Attempt *one* question from each Unit. All questions carry equal marks. Total *five* questions are to be attempted.

Unit – I

1. (a) Draw the circuit diagram of differential amplifier and derive expressions for common mode gain and CMRR.

   (b) Draw and explain the transfer characteristics of DIFF Amplifier. Over what differential voltage is the DIFF AMP a good limiter ?

Or

2. (a) Analyse differential amplifier circuit using *h*-parameters.

   (b) Draw and explain current mirror circuit.

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Unit – II

3. (a) Explain the following regarding Op-Amp :
   (i) Slew rate
   (ii) Input offset voltage
   (iii) Bias and offset currents

   (b) Draw the circuit diagram of Schmitt trigger and find the expression for threshold voltages. Also give its applications.

Or

4. (a) What are the characteristics of an ideal Op-Amp ? Explain the working of Op-Amp in inverting and non-inverting mode.

   (b) Draw the circuit diagram of instrumentation amplifier and differentiator circuit using Op-Amp and derive the expressions for output voltage.

Unit – III

5. (a) Design a band pass second order Butterworth filter with the following specifications :

   Lower cut-off frequency $F_L = 200$ Hz

   Upper cut-off frequency $F_H = 1$ kHz

   Pass Band gain $= 4$

   (b) Using 555 timer draw the circuit of monostable multivibrator and find the expression for pulse width.

Or

6. (a) Design and explain second order low pass filter with its high cut-off frequency = 5kHz and pass band gain = 4.

(b) With the help of circuit diagram explain V/F and F/V converters.

Unit – IV

7. (a) Explain the working principle of moving coil type microphone. Also draw the constructional details and equivalent circuit.

   (b) Explain in brief different types of loudspeakers and their characteristics.

Or

8. (a) Explain the working of Ribbon microphone. Also define the term sensitivity and noise figure for a microphone.

   (b) Discuss in brief various types of sound recording system. What is reverberation ?

Unit – V

9. (a) Explain two transistor analogy for SCR. Also explain its VI characteristics.

   (b) Draw and explain the behaviour of switching characteristics of a thyristor during its turn on and turn off process.

Or

10. (a) Explain and draw circuits for gate triggering and firing circuit using UJTs.

    (b) What is the use of flywheel diode ? Explain with circuit diagram and wave forms.