Total No. of Questions : 5] [Total No. of Printed Pages : 4

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CS/IT–304

B. E. (Third Semester) EXAMINATION, June, 2009

(New Scheme)

(Common for CS & IT Engg.)

ELECTRONIC DEVICES AND CIRCUITS

Time : Three Hours

Maximum Marks : 100

Minimum Pass Marks : 35

Note : Attempt *one* question from each Unit. All questions carry equal marks. Assume any missing data.

Unit – I

1. (a) Define the following in MOSFET : 10

   (i) Subthreshold conduction

   (ii) Channel length modulation

   (iii) Hot carrier effect

   (iv) Threshold voltage

   (b) Describe the basic operation of an enhancement type MOSFET. 10

Or

   (a) Explain the hybrid parameters with equivalent circuit. 10

P. T. O.

(b) If a silicon transistor in fig. 1 has a minimum value of $h_{fe} = 30$, find the output levels for input levels of 0 and 10 volts. 10

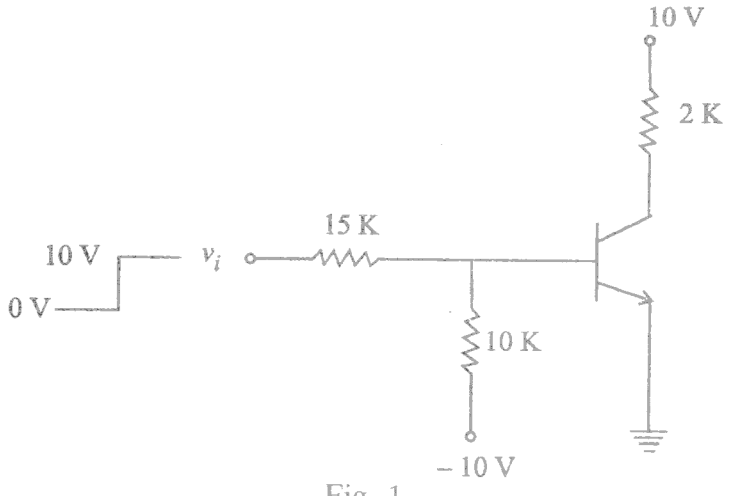

Fig. 1

Unit – II

2. (a) Explain the following terms : 10

(i) Characteristics of negative feedback

(ii) Harmonic distortion

(b) Explain the working of RC coupled transistor amplifier in CE configuration. 10

Or

(a) Discuss various types of distortions associated with amplifiers. 10

(b) Show that the maximum conversion efficiency of the idealized Class B push-pull limits is 78·5%. 10

Unit – III

3. (a) Define the following terms : 8

(i) CMRR

(ii) Slew rate

(iii) Offset voltage

(iv) Impedance

(b) Design a bandpass filter as shown in fig. 2, with a centre frequency f_c = 1 kHz and Q = 5, A_f = 8. Next, find the change in R_3 when centre frequency is changed to 2 kHz, keeping A_f and B_w constant. 12

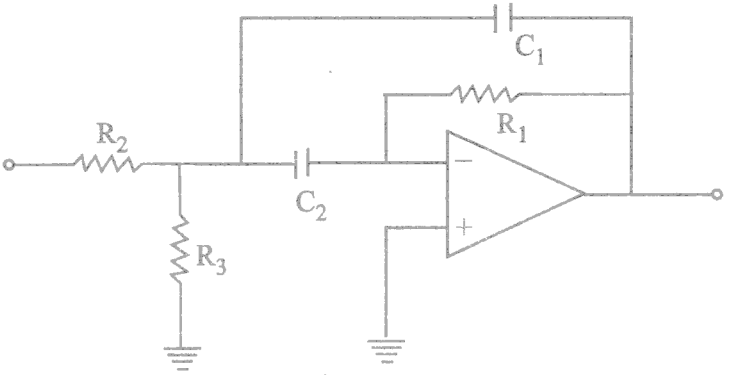

Fig. 2

Or

(a) Discuss the Instrumentation Amplifier using OP-AMP. 10

(b) Explain the working of an astable multivibrator using 555 timer. 10

Unit – IV

4. (a) List different types of oscillator with their applications. 10

(b) Explain the biasing of power amplifier and write its applications. 10

Or

(a) Explain Darlington amplifier. 10

(b) Write the application of 555 timers. Explain the circuit of V to F converter. 10

Unit – V

5. (a) What do you mean by Regulation ? Explain with the help of block diagram of regulator circuit. 10

(b) Differentiate the function of SMPS and UPS. 10

Or

Write short notes on any *two* of the following : 20

(i) Shunt regulators

(ii) Current to Voltage converter

(iii) Bootstrapping