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BIEL-005

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B.Tech. ELECTRONICS AND COMMUNICATION ENGINEERING (BTECVI)

Term-End Examination

June, 2013

BIEL-005 : ANALOG ELECTRONIC CIRCUITS

Time : 3 hours *Maximum Marks : 70*

Note : *(i) Attempt **any five** questions.*

*(ii) All questions carry **equal** marks.*

(iii) All the questions are to be answered in English language only.

*(iv) Use of scientific calculator is **permitted**.*

1. (a) What are the h-parameters of a linear ciruit ? Define them. 7

(b) A CE amplifier has the following h - parameters : 7

$h_{ie} = 1100$ ohm $h_{re} = 2.5 \times 10^{-4}$

$h_{fe} = 50$ $h_{oe} = 25$ micromho

if load and source resistance both are 1 kilo - ohm, find current gain and voltage gain.

2. (a) What are the various methods of cascading a two stage transistor amplifier ? Discuss their relative advantages and disadvantages. 7

(b) The gain of an amplifier is 50 its collector resistance $R_C = 600\Omega$ and the input impedance $R_{in} = 1.2k\Omega$. Calculate overall gain when two such amplifier are cascaded through R-C coupling. Comment on the results. 7

3. (a) Draw the hybrid π-model of BJT in CE connection and derive equation for current gain. 7

(b) A BJT has $g_m = 38$ m mho, 7
$r_{b'e} = 5.9k\Omega$, $h_{ie} = 6\ k\Omega$,
$r_{bb'} = 100\Omega$, $C_{b'e} = 63PF$
and hfe = 224 at 1KHz. Calculate α and β cut-off frequencies and f_T gain-band width product.

4. (a) Define class A, B and C amplifiers, giving their relative merits and demerits. 7

(b) Draw the circuit diagram of push-pull amplifier and explain its working. 7

5. (a) Draw the circuit diagram of double-tuned amplifier. Explain how the frequency response of this amplifier is better than that of single-tuned amplifier ? 7

(b) Draw the series resonant circuit. Plot a curve showing the variations of circuit current with frequency, and explain it briefly. 7

6. (a) Distinguish current feedback and voltage feedback with appropriate circuit diagram. 7

(b) Draw the circuit diagram of emitter follower and explain its working. 7

7. (a) Draw the circuit digram of R - C phase shift oscillator and explain its working. 7

(b) With neat sketch explain briefly the operation of Colpitts Oscillator. 7

8. Write short notes on **any two** : **7x2=14**

(a) Monostable multi-vibrator

(b) 555 Timer

(c) UJT