Seat No._____

GANPAT UNIVERSITY

B. TECH. SEMESTER IV (EC) ELECTRONICS & COMMUNICATION ENGINEERING
REGULAR EXAMINATION, MAY/ JUNE-2012
2EC 403:- ANALOG ELECTONICS

TIME: 3 HOURS **TOTAL MARKS: 70**

INSTRUCTION:-

1. Attempt all questions.
2. Answers to the two sections must be written in separate answer books.
3. Figures to the right indicate full marks.
4. Assume suitable data, if necessary.

SECTION-I

1 **(A)** The amplifier has a bandwidth of 150 KHZ and voltage gain of 50.What will be the bandwidth and gain if amplifier has 5 % negative feedback? **4**

(B) State and briefly explain Barkhausen criterion for oscillation? **4**

(C) Define multivibrators. Give classification of multivibrators. **4**

OR

1 **(A)** Differentiate low and high frequency oscillators. Explain working principle of RC phase shift oscillator. **6**

(B) Draw the block diagram of the PLL system. Explain the function of each block. Also define capture range and lock range. **6**

2 **(A)** Draw functional block diagram of IC 555 timer and explain function of each pin. **7**

(B) Explain the working principle of series regulator. **4**

OR

2 **(A)** What do you understand by feedback in amplifiers? Describe with necessary derivation the effect of negative feedback on the bandwidth and distortion in an amplifier. **5**

(B) Calculate A_{vf}, R_{if}, R_{of}, R'_{of} for the emitter follower circuit shown below. Assume $h_{re}=h_{oe}=0$, $h_{ie}=1.1.K\Omega$, $h_{fe}=50$, $R_S=R_L=10K\Omega$. $R_e=1K\Omega$. **6**

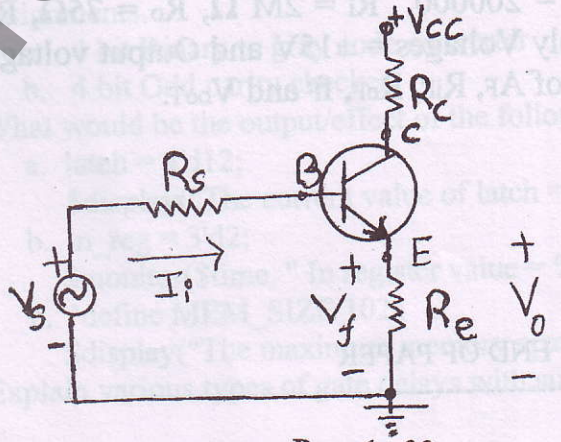

Fig. 1

3 (A) Explain working of Monostable multivibrator using necessary circuit diagrams and waveforms with the help of IC 555. 6

(B) Derive an expression for the input impedance and output impedance with feedback of a current shunt feedback amplifier. 6

SECTION-II

4 (A) Derive the equation of voltage gain for differential amplifier with one op-amp. 4

(B) Explain second order high pass butterworth filter. 4

(C) Explain voltage to current converter with grounded load. 4

OR

4 (A) Define the following terms: 4

(i) Sweep speed error (ii)CMRR (iii) Offset voltage adjustment range (iv) Break frequency

(B) Derive the equation of voltage gain for differential amplifier with two op-amps. 4

(C) Explain averaging and summing amplifier using non-inverting configuration of op-amp. 4

5 (A) Explain exponential sweep circuit for time base generators. 4

(B) Explain zero crossing detector in detail. 4

(C) Explain inverter using op-amp. 3

OR

5 (A) Draw and explain frequency responses for low pass and band pass active filter. 4

(B) Explain schmitt trigger in detail. 4

(C) Explain current to voltage converter using op-amp in detail. 3

6 (A) Explain the differentiator using op-amp in detail. 4

(B) Explain the square wave generator using op-amp. 4

(C) The 741C op-amp having the following parameters is connected as a inverting amplifier with A = 200000, R_i = 2M Ω, R_o = 75Ω, R_1=470 Ω, R_F=4.7k Ω, fo = 5Hz, Supply Voltages = ±15V and Output voltage swing = ±13V. Calculate the values of A_F, R_{iF}, R_{oF}, f_F and V_{ooT}. 4

END OF PAPER
