GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER–III • EXAMINATION – WINTER 2013

Subject Code: 130902   **Date: 28-11-2013**
Subject Name: Analog and Digital Electronics
Time: 02.30 pm - 05.00 pm   **Total Marks: 70**
Instructions:
1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Q.1 **(a)** Define CMRR for a 741C op-amp.   **07**
A 741C op-amp having the following parameters is connected as non-inverting amplifier: $R_1 = 1k\Omega$, $R_F = 10k\Omega$, $A = 250\times10^3$, $R_i = 1M\Omega$, $R_o = 50\Omega$, $f_0 = 5Hz$, supply voltages $= \pm15V$, output voltage swing $= \pm13V$.
Compute the values of A_F, R_{iF}, R_{oF}, f_F and V_{ooT}.

(b) Discuss Slew Rate with reference to 741C op-amp.   **07**

Q.2 **(a)** State and prove De Morgan's theorems.   **07**
(b) Do as directed: **07**
   (i) $(4F7.A8)_{16} = ($ $)_8$ (ii) $(420.6)_{10} = ($ $)_8$
   (iii) $(F297)_{16}   = ($ $)_2$ (iv) $(2EB7)_{16} = ($ $)_{10}$
   (v) $(452)_{10}   = ($ $)_{16}$ (vi) $(10110)_2   = ($ $)_{16}$
   (vii) $(2035)_8   = ($ $)_{16}$

OR

(b) Reduce the following using K-map: **07**
   a. $\Sigma m\ (5,6,7,9,10,11,13,14,15)$
   b. $\Pi M\ (1,2,3,5,6,7,8,9,12,13)$

Q.3 **(a)** Describe the working of an integrator circuit with relevant diagrams.   **07**

(b) Explain the working of a summing and averaging amplifier when connected in **07**
inverting mode.
OR
Q.3 **(a)** Discuss the working of wein bridge oscillator.   **07**
(b) Write a short note on Zero Crossing Detector.   **07**

Q.4 **(a)** Explain the working of JK master slave flip-flop.   **07**
(b) Discuss the applications of flip-flops.   **07**
OR
Q.4 **(a)** Describe the working of look-ahead-carry adder.   **07**
Q.4 **(b)** Explain in brief the working of parity checkers.   **07**

Q.5 **(a)** Discuss voltage regulator LM317.   **07**
(b) Discuss working of IC555 with function of each pin.   **07**
OR
Q.5 **(a)** Describe the basic building blocks of PLL.   **07**
(b) Define: **07**
(i)set up time   (ii)hold time   (iii)preset   (iv)clear   (v)fan in   (vi)fan out
(vii)propagation delay time
****