Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

PDDC Sem. III Examination May-2011

Subject code: X30902 **Subject Name: Analog and Digital Electronics**

Date:20/05/2011 **Time: 10.30 am – 01.00 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)** What are the feedback configurations? Draw an Op-amp non inverting amplifier circuit and obtain the frequency response curve for it. Derive an expression for it. **07**

(b) Define and explain the following Op-amp parameters and describe the laboratory method for measuring them with necessary circuit diagram and formulas: **07**

(1) Input offset voltage (2) Input bias current.
(3) Open loop voltage gain.(4) CMRR

Q.2 **(a)** Draw and Explain the use of op-amp as a Schmitt trigger. **07**

(b) What do you mean by input offset voltage? Draw and explain offset voltage compensating network **07**

OR

(b) Sketch the circuit of Op-amp as Integrator and explain with necessary waveforms. **07**

Q.3 **(a)** Sketch the diagram of 555 timers as an Monostable Multivibrator. Explain it's working and derive equation for frequency of output waveform. **07**

(b) Draw the block diagram of phase locked loop IC 565. Explain the working principle of PLL. **07**

OR

Q.3 **(a)** Prove that NOR and NAND gates are universal. **07**

(b) Explain De'Morgans theorem s giving necessary logic expressions and diagrams **07**

Q.4 **(a)** List the various logic families available and explain in brief the specifications of Digital IC'S. **07**

(b) Describe the operation preformed by following circuits in brief **07**

(1) Half Adder (2) Parallel Adder

OR

Q.4 **(a)** Explain Binary ripple counter in detail **07**

(b) Write short notes on: **07**

(i) BCD to 7-segment decoder and

(ii) Gray code

Q.5 **(a)** What do you mean by a K map? List it's advantages and disadvantages. **07**

(b) Describe J K flip flop. How J-K flip-flop differ from S-R flip-flop? **07**

OR

Q.5 **(a)** Describe multiplexers with its application. **07**

(b) Draw the connection diagram and block diagram of audio power amplifier IC LM 380 and explain it's operation **07**

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