Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

B. E. Sem. - V - Examination – June- 2011

Subject code: 151006

Subject Name: Applied Electronics

Date:30/06/2011 **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)** Draw the block diagram of a regulated d.c. power supply and explain briefly the function of each block. **07**

(b) Draw the block diagram of an OP-AMP and explain the function of each block. **07**

Q.2 **(a)** Explain the operation of an astable multivibrator using IC 555. Draw its circuit diagram and waveforms. **07**

(b) Define the following parameters. **07**

1) Common Mode Rejection Ration (CMRR)
2) Latching current (I_L) of an SCR.
3) Trace period and retrace period of C.R.T.

OR

(b) With the help of the block diagram, explain the operation of a single trace Cathod Ray Oscilloscope. (CRO) **07**

Q.3 **(a)** Derive the expression of OP-AMP for non-inverting closed loop voltage gain. (A_{vf}) **07**

(b) Explain the construction and operating principle of a semiconductor strain gauge. State its advantages and applications. **07**

OR

Q.3 **(a)** Define intrinsic stand off ratio (η) of UJT and explain its use as relaxation oscillator. Draw the relevant waveforms. **07**

(b) Explain construction and principle of operation of photoconductive cell. **07**

Q.4 **(a)** Explain in detail the half adder and full adder circuit using logic diagram. **07**

(b) Design a monostable 555 timer circuit to produce an output pulse 165 msec wide. Draw the circuit diagram. Determine the value of external component R_A if C=1 μF **04**

(c) Compare RTD and Thermocouple. **03**

OR

Q.4 **(a)** Draw the block diagram of 8051 microcontroller. Explain each block briefly. **07**

(b) Differentiate between microprocessor and microcontroller. **04**

(c) Explain Read Only Memory (ROM) **03**

Q.5 Write a short note. **(ANY TWO)** **14**

(a) Linear Variable differential Transformer (LVDT)

(b) Phase measurement with the help of the Lissajous figures.

(c) Successive Approximation Analog –To- Digital conversion.

(d) 1) I-Pod 2) RFID.

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