Seat No.: \_\_\_\_

Enrolment No.\_\_\_\_

### **GUJARAT TECHNOLOGICAL UNIVERSITY** BE - SEMESTER-IV(OLD)• EXAMINATION – WINTER 2016

Subject Code:141101

Date:22/11/2016

**Total Marks: 70** 

## **Subject Name: Advance Electronics**

Time:02:30 PM to 05:00 PM

#### 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 various coupling schemes of two stages of amplifiers? Explain in 07 brief each one of them.
  - (b) State the advantages, disadvantages and applications of RC coupled amplifiers. 07
- Q.2 (a) List the parameter those affecting to the transistor at high frequencies. Draw the hybrid  $\pi$  model for CE configuration and explain it. Also derived the equation for any two above listed parameter for CE configuration.
  - (b) Draw and explain the two cascaded CE transistor stage. Explain the significance 07 of each component connected into it, also derived required equation.

#### OR

- (b) Classify and discuss types of amplifier on the basis of magnitudes of input and output resistances of amplifier relative to the source and load impedances, respectively. Draw necessary equivalent diagrams.
- Q.3 (a) State the condition on  $1+A\beta$  which a feedback amplifier must satisfy in order to 07 be stable
  - (b) How do you define the cut-off frequencies of an amplifier and what do you understand by the bandwidth of an amplifier? Why do we take 70.7% of the mid band gain?

#### OR

- Q.3 (a) Classify and discuss types of amplifier on the basis of magnitudes of input and output resistances of amplifier relative to the source and load impedances, respectively. Draw necessary equivalent diagrams.
  - (b) What are the different types of distortion can occur while a signal is amplified by 07 an amplifier? Give the reasons for each type of distortion.
- Q.4 (a) What is CMRR? What is the significance of CMRR? List and Explain the 07 methods to improve the CMMR.
  - (b) Draw op-amp based Wien bridge oscillator. Obtain frequency of oscillation and discuss amplitude stabilization for the same.

#### OR

- Q.4 (a) List the characteristics of ideal OP-AMP. Derive the expression of voltage gain 07 for inverting and non inverting mode of OP-AMP.
  - (b) What is oscillator? Explain the concept of oscillation. Explain the concept of 07 oscillation Properly with Barkhausen criteria.

# Q.5 (a) Compare TTL and ECL IC logic families.

(b) What is Digital to Analog Convertor? Draw and Explain R-2R DAC? Also give 07 the advantages and disadvantages of R-2R Digital to Analog convertor.

#### OR

- Q.5 (a) Classify the logic families. Give comparisons with the advantages and 07 disadvantages of each logic families.
  - (b) Explain working of successive approximation ADC with block diagram. 07

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