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## EC-4003 (CBGS)

## B.E. IV Semester

Examination, May 2018

## **Choice Based Grading System (CBGS)**

## **Integrated Circuits and its Applications**

Time: Three Hours

Maximum Marks: 70

Note: i) Attempt any five questions out of eight questions.

- ii) All questions carry equal marks.
- iii) Assume suitable data, if required.
- 1. a) What are the advantages and disadvantages of negative feedback?
  - b) With neat diagram explain single input balanced output differential amplifier? 7
- a) Explain the construction and working of RC phase shift Oscillator.
  - b) With neat sketches explain the operation of colpitt's oscillator.
- a) Draw the block diagram of an Op-amp and write the function of each block.
  - b) Discuss input bias current, Common Mode Rejection Ratio of an op-amp.

4. a) Draw the circuit of a first order Butterworth High pass filter and derive the gain and phase angle equation. 7

 b) Design a low pass filter with a cutoff frequency of 1 KHz and with the pass band gain 2.

a) Explain how an Op-amp can be used as summing amplifier.
Draw the diagram of a three input summer and obtain the expression for the output.

 Explain how Op-amp is used as an Integrator and Differentiator.

 a) Explain the operation of Monostable multivibrator using IC555 Timer. Derive the expression of time delay of a Monostable Multivibrator using IC555.

 Explain the function of each of the pins in IC555 timer and explain the functional diagrams of a IC555 timer.

7. a) What is an instrumentation amplifier? With neat diagram explain instrumentation amplifier with Transducer Bridge?

b) What is a sample and hold circuit? With neat diagram, describe the operation of sample and hold circuit. 7

 a) Explain fixed and adjustable voltage regulators with suitable diagrams.

 b) Draw and explain zero crossing detector with input and output waveforms.

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