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B. Tech ECE (Semester 4th)
ANALOG ELECTRONIC CIRCUITS
Subject Code: BECES1-402
Paper ID: [18111316]

Time: 03 Hours **Maximum Marks: 60**

Instruction for candidates:

1. Section A is compulsory. It consists of 10 parts of two marks each.
2. Section B consist of 5 questions of 5 marks each. The student has to attempt any 4 questions out of it.
3. Section C consist of 3 questions of 10 marks each. The student has to attempt any 2 questions.

Section – A **(2 marks each)**

Q1. Attempt the following:
   a) Draw the small signal h-parameter model of BJT in CB configuration.
   b) Differentiate between current amplifier and trans-conductance amplifier.
   c) Draw and label voltage series feedback topology.
   d) Define CMRR and briefly explain its significance.
   e) Why o/p of an astable multivibrator does not have sharp edges?
   f) Draw the electrical equivalent model of an OP AMP.
   g) Why do we prefer negative feedback in amplifier circuits?
   h) Discuss the concept of Virtual Ground as applicable to OP AMP.
   i) What is the condition for sustained oscillations in oscillators?
   j) How harmonic distortion is minimized in push-pull amplifier?

Section – B **(5 marks each)**

Q2. How I/O impedances of a voltage amplifier are modified using negative feedback?
Q3. Describe the operation of Colpitts Oscillator with neat diagram and develop the condition for sustained oscillations.
Q4. Discuss the applications of an OPAMP as inverting and non-inverting amplifier with neat diagrams.
Q5. What are multistage amplifiers? Derive the expression for overall voltage gain of a multistage amplifier in terms of individual voltage gains.
Q6. Describe the operation of Class-B push pull amplifier with neat diagrams. Obtain the expression for maximum efficiency.

Section – C **(10 marks each)**

Q7. What is the need of a multivibrator circuit? Describe the operation of a Mono-stable multivibrator with neat diagram and associated O/P current and voltage waveforms.
Q8. What is the need of ADC circuits? Discuss briefly different ADC circuits with their relative merits and de-merits.
Q9. Write the followings:
   a) Explain the operation of an RC phase shift oscillator with neat diagram and derive the expression for condition for sustained oscillations.
   b) Discuss the operation of OPAMP as an Integrator and Differentiator.