Roll No. .....

3091

B. Tech. 4th Semester (ECE) Examination – May, 2023

ANALOG CIRCUITS

Paper : PCC-ECE-206-G

Time : Three hours] *[Maximum Marks : 75*

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

Note : Attempt ***five*** questions in all, selecting ***one*** question from each Section. Question No. **1** is ***compulsory***. All questions carry equal marks.

1. (a) What are various advantages of negative feedback ? 4

   (b) Discuss Barkhausen criterion. 4

   (c) What is oxidation process during IC fabrication ? 3

   (d) What do you mean by Offset Null in 741 IC. 4

SECTION – I

2. Explain Hybrid Pi model and derive its common emitter short circuit gain. 15

3. Discuss concept of feedback and give general characteristics of – ve feedback. 15

SECTION – II

4. Explain the following : 15

   (a) Wien Bridge Oscillator

   (b) Colpitts Oscillator.

5. Explain Push Pull amplifiers and Distortion in Push Pull amplifier. 15

SECTION – III

6. Explain series and shunt voltage regulators. 15

7. Discuss various steps used for the process of Integrated circuit fabrication. 15

SECTION – IV

8. Explain Block diagram and Pin diagram of OP-Amp and give characteristics of an ideal OP-Amp. 15

9. Explain Input Bias current and Input Offset current of OP-Amp. 15

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B. Tech. 4th Semester (ECE) Examination – July, 2021

ANALOG CIRCUITS

Paper : PCC-ECE-206-G

Time : Three Hours] *[Maximum Marks : 75*

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

Note : Attempt *five* questions in all, selecting *one* question from each Section. Question No. **1** is ***compulsory***. All questions carry equal marks.

1. (a) Write down the diffusion and ion implantation process. 5

(b) What is feedback ? Why negative feedback is used in the amplifier ? 3

(c) What is Barkhausen criteria and its conditions for sustained oscillations ? 3

(d) Define the following terms : 4

(i) Slew rate

(ii) Line regulation

(iii) Minimum load resistance

(iv) Input bias current

SECTION – I

2. Write in detail about the Darlington pair amplifier and derive its main characteristics values. 15

3. Why voltage series feedback topology is preferred in practical circuits and prove it mathematically ? 15

SECTION – II

4. Explain in detail about the phase shift oscillator and derive the conditions for sustained oscillations in it ? 15

5. What is push pull amplifier ? Write in detail about class B push amplifier ? 15

SECTION – III

6. Write short note on : 15

(a) Basic shunt regulator

(b) IC voltage regulator

7. Explain twin tub CMOS process step by step along with neat diagram of each step ? 15

SECTION – IV

8. (a) Draw and explain the block diagram of OP-AMP and characteristics of ideal OP-AMP. 10

   (b) What is common-mode configuration and CMRR ? 5

9. (a) Write down a short note on astable operation of 555 timer. 8

   (b) What is DAC ? Explain any *one* DAC in detail. 7