

[Total No. of Questions - 9] [Total No. of Printed Pages - 2]  
(2125)

15152

**B. Tech 5th Semester Examination**  
**Micro Electronics & LIC (OS)**  
**EC-5003**

**Time : 3 Hours**

**Max. Marks : 100**

*The candidates shall limit their answers precisely within the answer-book (40 pages) issued to them and no supplementary/continuation sheet will be issued.*

- Note :** (i) Each question carries 20 Marks. Section E is compulsory.  
(ii) Attempt any five questions in all, selecting at least one Question from each section A, B, C & D.

**SECTION - A**

1. What is an integrated circuit? Classify and discuss integrated circuits. Give the fabrication steps of a BJT and Resistor. (2+10+8=20)
2. What are thick and thin film technologies? Discuss ion implantation technology. (10+10=20)

**SECTION - B**

3. Draw an FET Differential Amplifier and show the balanced and unbalanced outputs. Give circuit and explain the functioning of a current mirror. (10+10=20)
4. Give characteristics of an ideal OP-Amplifier. Design a difference Amplifier using OP-Amplifier. (10+10=20)

**SECTION - C**

5. Enumerate advantages of negative feedback in Amplifiers. What are different negative feedbacks? Explain with block diagrams. (10+10=20)

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**2**

**15152**

6. Explain the frequency response of an OP-Amp with a diagram. What do you understand by compensated and non-compensated OP-Amps? Give high frequency equivalent circuit of an Op-Amp. (10+10=20)

**SECTION - D**

7. Draw circuit of a peaking Amplifier and explain its working. Draw integrator circuit using Op-amp & derive relationship for output. (10+10=20)
8. What are uses of an instrumentation amplifier? Giving circuit diagram, explain how its output is evaluated? (10+10=20)

**SECTION - E**

(Compulsory. Give short answers)

9. (i) What is the advantage of differential amplifiers and Op-Amps?  
(ii) What is slew rate? Give its typical value with units.  
(iii) What is CMRR? Should it be high or low and why?  
(iv) What is a wave shaping circuit? Give an example.  
(v) What are the utilities and advantages of active filters?  
(vi) Draw the self explanatory circuit diagram of 555 timer circuit.  
(vii) What is an oscillator?  
(viii) Give an example of a comparator circuit using Op-Amp.  
(ix) What is monolithic technology?  
(x) What is a planar process? Give a cascaded amplifier configuration. (10×2=20)