

Total No. of Printed Pages:2

SUBJECT CODE NO:- H-237
FACULTY OF SCIENCE AND TECHNOLOGY
B.E. (EC/ECT/E&C) (Sem-II)
Analog Integrated Circuit Design
[Revised]

[Time: Three Hours]

[Max. Marks:80]

Please check whether you have got the right question paper.

- N.B.:i) Q.No.1 and Q.No.6 are compulsory.
 ii) Solve any two questions from Q.No.2 to 5.
 iii) Solve any two questions from Q.No.7 to 10.
 iv) Assume suitable data if necessary & state it clearly.
 v) Figures to the right indicate full marks.

Section A

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|-----|---|----|
| Q.1 | Write short notes (<u>any two</u>) | 10 |
| | a) Electromagnetic simulation. | |
| | b) AC Simulation | |
| | c) Transient simulation | |
| Q.2 | a) On the basis of energy band diagram, explain the different between conductor, Insulator & semiconductor. | 08 |
| | b) Draw a differential amplifier & derive its voltage gain. | 07 |
| Q.3 | a) Derive & explain drain current equation. | 08 |
| | b) Explain Harmonic balance in detail. | 07 |
| Q.4 | a) Draw High Frequency Small Signal Model of a MOSFET. Explain briefly each parasitic. | 08 |
| | b) How can you increase the electron current and reduce the hole current in a pn-junction diode? | 07 |
| Q.5 | a) What is simplified gain of common gate amplifier? Draw circuit diagram of common gate amplifier? | 08 |
| | b) What characteristics of a Power Amplifier specify its linearity? | 07 |

Section B

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| Q.6 | Write short notes (<u>any two</u>) | 10 |
| | a) Return Loss of a power Amplifier. | |
| | b) Efficiency of a power amplifier. | |
| | c) Gain of a power amplifier. | |
| Q.7 | a) Draw circuit diagram of an Op-Amp with lead compensation. | 08 |
| | b) Draw the characteristics of a trans linear cell. | 07 |

- Q.8 a) List the characteristics of classical two stage OpAmp. 08
b) Draw Brokaw cell and explain the working of its part PTAT, CTAT, Beta Helper and Startup Circuit. 07
- Q.9 a) Draw the circuit diagram of a brokaw cell. Point out which transistor form PTAT and CTAT circuits. 08
b) Draw the circuit diagram of a Gillert Cell Mixer and write an expression for its output voltage. 07
- Q.10 a) Explain design of classical op-amp. 08
b) Differentiate single & balanced diode mixers. 07