SECTION – D

8. (a) Discuss large signal operation of Op-Amp. 10

(b) Write a short note on shunt-shunt feedback amplifier. 10

9. (a) Draw the circuit diagram of an Op-Amp used as inverting amplifier and derive the expression for its voltage gain, input resistance and output resistance. 10

(b) Explain the small signal operation of MOS differential amplifier. 10

Roll No. .....

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B. Tech. 4th Semester (EE) Examination – May, 2017

ANALOG ELECTRONICS

Paper : EE-202-F

Time : Three Hours] *[Maximum Marks : 100*

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) Why is silicon preferred over germanium in the manufacturing of semiconductor devices ? 4

(b) Make a difference between E-MOSFET and DE-MOSFET. 4

(c) What is the requirement of biasing circuit in BJT ? 4

(d) Why transistor is called current controlled device ? 2

(e) What is differential amplifier ? 2

(f) Define the concept of virtual ground in an Op-Amp. 4

SECTION – A

2. (a) Explain the behaviour of PN junction at no bias, reverse bias and forward bias. Sketch V-I characteristics of PN junction diode. 10

(b) A simple full wave bridge rectifier circuit has an input voltage of 240 V ac rms. Assume the diodes to be ideal. Find the output dc current, dc voltage and rms values of output currents and voltages. Assume load resistance to be 10 KΩ. 10

3. (a) What is meant by a clamping circuit ? Give different types of clamping circuits along with their output waveforms. 10

(b) Explain the following : 10

(i) Filter circuits

(ii) Peak to peak detector

SECTION – B

4. Write short note on the following :

(a) High frequency MOSFET model. 10

(b) MOSFET internal capacitances. 10

5. (a) Draw and explain MOSFET as an amplifier. 10

(b) Develop small signal equivalent circuit of NMOS device including body effect. 10

SECTION – C

6. (a) Write short note on transistor as a switch. 10

(b) Discuss analysis of transistor amplifier in CE configuration using its hybrid-π model. 10

7. (a) Draw and explain circuit diagram of transistor CE amplifier. Also plot its frequency response curve. 10

(b) Write in detail about transistor internal capacitances. 10