

310606

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B. Tech. III Sem. (Main) Exam., Dec. - 2019

Common for EE/EEE

3EE4-06 Analog Electronics

Time: 3 Hours

Maximum Marks: 120

Instructions to Candidates:

Part - A: Short answer questions (up to 25 words) 10×2 marks = 20 marks. All ten questions are compulsory.

Part - B: Analytical/Problem Solving questions 5×8 marks = 40 marks. Candidates have to answer five questions out of seven.

Part - C: Descriptive/Analytical/Problem Solving questions 4×15 marks = 60 marks. Candidates have to answer four questions out of five.

Schematic diagrams must be shown wherever necessary. Any data you feel missing may suitably be assumed and stated clearly. Units of quantities used/calculated must be stated clearly.

Use of following supporting materials is permitted during examination. (Mentioned in form No. 205)

1. NIL

2. NIL

PART - A

- Q.1 What is threshold voltage of a diode? What is its value for Si and Ge diodes?
- Q.2 Define α , β of a BJT and how are α and β related?
- Q.3 What is meant by slew rate of Op-amp? How does it affects its performances?
- Q.4 What is meant by virtual ground in Op-amp?
- Q.5 Define CMRR in Op-amp.
- Q.6 Why is base made thin in BJT?
- Q.7 Over what temperature range can a BJT be used if it is Si and Ge.

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- Q.8 What is the importance of peak inverse voltage in rectifier?
- Q.9 What is value of ripple factor for a half wave and full wave rectifier?
- Q.10 What are the values of gain, input resistance and output resistance of an ideal Op-amp?

PART - B

- Q.1 Explain the operation of a zener diode and draw its circuit equivalent. A zener diode acts as a voltage regulator - explain the meaning of this statement.
- Q.2 Draw the output characteristics of B.J.T and discuss active, saturation and cutoff regions.
- Q.3 Explain Biasing techniques of MOSFETs.
- Q.4 Explain following terms in operational amplifier -
- (a) Input bias current
 - (b) Input offset current
 - (c) Gain band width product
 - (d) Output offset voltage and describe an Op-amp. State some applications of Op-amp. <http://www.mgsuonline.com>
- Q.5 What is zero crossing detector and peak detector? Discuss their use and their circuit.
- Q.6 Explain working of BJT as an amplifier and draw suitable circuit diagram.
- Q.7 Write a short note on Analog to Digital conversion.

PART - C

- Q.1 Draw the circuit of a bridge rectifier. Draw input and output waveform. Write the expression of DC voltage of full wave bridge rectifier.
- Q.2 What do you understand by transistor biasing. What is its need? Explain self-bias and draw circuit.
- Q.3 Explain the working of n-channel MOSFET with suitable circuit diagram. What is the difference between enhancement and depletion mode of operation.
- Q.4 What is clamper circuit? Explain the working of positive and negative clamper circuit.
- Q.5 Discuss P,PI and PID controllers and lead/log compensator using an Op-amp.