



Reg. No. :

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

## Question Paper Code : X 60495

B.E./B.Tech. DEGREE EXAMINATIONS, NOV./DEC. 2020

Third Semester

Electrical and Electronics Engineering

EE 2203/EE 35/080280018/10133 EE 305 A –ELECTRONIC DEVICES AND  
CIRCUITS

(Regulations 2008/2010)

Time : Three Hours

Maximum : 100 Marks

Answer ALL questions

PART – A

(10×2=20 Marks)

1. Draw the symbol for PN junction diode and zener diode.
2. Draw the input and output waveforms of a bridge rectifier.
3. Calculate  $I_c$  for a transistor that has  $\alpha_{dc} = 0.98$  and  $I_B = 100 \mu A$ . Determine the value of  $\beta_{dc}$  for the transistor.
4. State any two applications of Opto coupler.
5. Define cut off voltage.
6. What are the different types of MOSFETs ?
7. State Barkhausen's criterion for oscillation.
8. Mention the types of feedback amplifier connections.
9. List the elements used in linear and nonlinear wave shaping circuits.
10. Name the different multivibrators.

PART – B

(5×16=80 Marks)

11. a) i) Explain the operation and characteristics of a Zener diode. (8)  
ii) Explain with neat sketch the operation of full wave diode rectifier with waveforms. (8)

(OR)

- b) Explain the operation and principles of series and shunt voltage regulators using Zener diode.



12. a) i) For the transistor CE configuration, derive the input and output characteristics. (10)  
ii) Compare CB, CE and CC configurations. (6)

(OR)

- b) i) Draw the hybrid equivalent circuit for a CE transistor and derive expressions for various parameters. (12)  
ii) What are power transistor ? Give examples. (4)

13. a) Describe the operation of N channel FET, thus obtain the VI characteristics. What is the significance of pinch-off voltage ?

(OR)

- b) i) Compare the construction, operation and characteristics of enhancement and depletion MOSFET. (10)  
ii) What is the significance of darlington connection ? (6)

14. a) Explain the general characteristics of a negative feedback amplifier : Represent

- i) voltage-series  
ii) voltage-shunt  
iii) current series and  
iv) current shunt feedback connections diagrammatically. (16)

(OR)

- b) Explain the construction and working of Harvey oscillator with neat diagrams. (16)

15. a) Explain the working principle of clipper and clamper circuits with neat circuit diagram and wave forms. (16)

(OR)

- b) i) Explain the working principle of Schmitt trigger circuit with neat sketch and wave forms. (8)  
ii) Draw and explain with the circuit diagram and wave forms of the UJT based saw tooth oscillator. (8)
-