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VIVEKANANDHA COLLEGE OF ENGINEERING FOR WOMEN
[AUTONOMOUS INSTITUTION AFFILIATED TO ANNA UNIVERSITY, CHENNAI]
Elayampalayam – 637 205, Tiruchengode, Namakkal Dt., Tamil Nadu.

**Question Paper Code: 8009**

B.E. / B.Tech. DEGREE SUPPLEMENTARY EXAMINATIONS – FEB. / MAR. 2020
Third Semester
Electrical and Electronics Engineering
U15EE301 – ELECTRON DEVICES AND CIRCUITS
(Regulation 2015)

Time : Three Hours Maximum : 100 Marks

Answer ALL the questions

PART – A

(10 x 2 = 20 Marks)

1. What is a rectifier and list its types?
2. Differentiate between Zener breakdown and avalanche breakdown.
3. Define alpha and beta of a transistor.
4. Define Early effect.
5. Draw the hybrid model of a CE amplifier.
6. What is Milers' theorem?
7. What is meant by CMRR of a Differential amplifier?
8. Write down the need of cascading the amplifiers.
9. What is the expression for the frequency of oscillation of Wien bridge oscillator?
10. Which is most commonly used feedback arrangement in a cascaded amplifier and why?

PART – B

(5 x 13 = 65 Marks)

11. a) Explain the construction and working of PN diode with a neat sketch.

(OR)

b) Discuss about Zener shunt regulator and explain the principle and operation of Laser diode with a neat diagram.

12. a) Explain the construction and analyze characteristics of UJT with a neat sketch.

(OR)

b) With a neat sketch, explain the construction and working characteristics of a SCR.

13. a) Explain about CE amplifier and derive the expression for h parameters of the same. Also, derive the expression for gain, input impedance and output impedance of CE amplifier.

(OR)

b) Explain about CS amplifier (MOSFET) and derive the expression for gain, input impedance and output impedance and also draw its small signal equivalent circuit.

14. a) Explain with a neat sketch the working of a single tuned voltage amplifier using FET.

(OR)

b) Explain the different types of neutralization technique used in tuning amplifier.

15. a) Draw and describe the four types of topology for feedback of an amplifier. Derive the expression for gain with negative feedback. Mention the advantages of negative feedback amplifier.

(OR)

b) Explain the operation of crystal oscillator with the neat diagram and write the expression for its frequency of oscillation.

## PART – C

(1 x 15 = 15 Marks)

16. a) A shunt capacitor filter is required to supply 30 V DC to a load resistance of 1 kΩ with maximum permissible ripples of 0.01. Find the value of the capacitor if the input to the filter is supplied from a :

- Half-wave rectifier
- Full-wave rectifier

(OR)

b) Explain the input and output characteristics of a CE transistor configuration. List out the comparisons between CE, CB and CC configurations.

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