

Third Semester B. E. (Electrical and Electronics) Examination
(New)

ELECTRONIC DEVICES AND CIRCUITS

Paper – 3 EX 04

(USC – 10365)

P. Pages : 3

Time : Three Hours]

[Max. Marks : 80

- Note :** (1) Separate answer book must be used for each section in the subject Geology, Engineering material of Civil branch and separate answer book must be used for Section A and B in pharmacy and Cosmetic Tech.
(2) Answer **Three** questions from Section A and **Three** questions from Section B.
(3) Due credit will be given to neatness and adequate dimensions.
(4) Assume suitable data wherever necessary.
(5) Illustrate your answer wherever necessary with the help of neat sketches.

SECTION A

1. (a) Show that rectifier efficiency for half wave rectifier is 40.6 %. 7
(b) Explain working of center tap full wave rectifier and draw input – output waveform. 6

OR

2. (a) A full wave rectifier has peak output voltage of 20 V at 50 Hz and uses shunt capacitor filter with $C = 25 \mu\text{f}$ connected load is of 5 K Ω . Determine :—
(i) DC load current
(ii) DC output voltage
(iii) Ripple factor. 7
(b) Draw and explain V – I characteristics of PN diode and explain the effect of temperature on characteristics. 6

3. (a) Explain operation of NPN transistor also discuss doping level for Emitter, base and collector. 7
(b) What stability factor ? Derive expression for it. 6

OR

4. (a) Draw and explain self bias circuit. State its advantages over fixed bias circuit. 7
(b) Explain H parameter model of transistor amplifier in CE configuration. 6
5. (a) Explain RC coupled amplifier with frequency response. 7
(b) What is multistage amplifier ? Explain the effect of cascading on performance of amplifier. 7

OR

6. (a) Explain frequency response of direct coupled amplifier. Also discuss its advantages and disadvantages. 7
(b) What is necessity of Darlington connection ? Explain Darlington Emitter follower. 7

SECTION B

7. (a) Show that collector efficiency of class A power amplifier is 50 %. 7
(b) Show that maximum efficiency of class B will not exceed 78.5 %. 6

OR

8. (a) Draw and explain class B push pull amplifier with its advantages. 7
(b) Explain in detail Barkhausen criterion for oscillation. 6
9. (a) What is PIN diode ? Why is it called PIN diode ? Why is it suitable for microwave switch ? 7

- (b) Draw and explain varactor diode. 6

OR

10. (a) Differentiate Schottky and PIN diode on the basis of construction and characteristics. 7
(b) Explain in detail phototransistor. 6
11. (a) With the help of neat sketch explain operation of JFET. 7
(b) Differentiate between Enhancement mode and Depletion mode of MOSFET. 7

OR

12. (a) Compare features of BJT and FET. 7
(b) Explain UJT relaxation oscillator in detail. 7

