AU – 2524

Third Semester B. E. (Elect. Engg./Elec. and Power) (CGS) Examination

ELECTRONIC DEVICES AND CIRCUITS

Paper – 3 EP 04 / 3 EX 04 / 3 EL 04 / 3 EE 04

(USC – 10480)

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) Diagrams and chemical equations should be given wherever necessary.
(6) Illustrate your answer wherever necessary with the help of neat sketches.
(7) Use pen of Blue / Black ink / refill only for writing the answer book.

SECTION A

1. (a) Explain the working of PN junction diode with its characteristics. 7

   (b) What do you mean by Rectifier ? Explain Halfwave rectifier in detail. 7

OR

2. (a) What are different type of filter ? Explain working of capacitor input filter with proper waveforms. 7

   (b) Give expressions for TUF and Ripple factor of full wave Rectifier. 7

3. (a) Explain the amplification action in Bipolar Junction Transistor. 6

   (b) What is Bias stabilization ? Prove that

$$S = \frac{1+\beta}{1-\beta\left(\frac{dI\beta}{dIC}\right)}$$

7

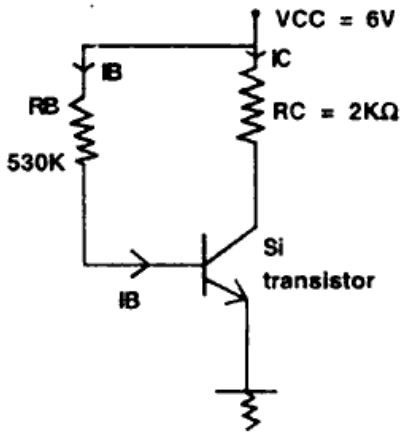
OR

4. (a) Explain the working of NPN transistor with its input output characteristics. 7

(b) For the following circuit $\beta = 100$.
Determine

(i) Operating point

(ii) Stability factor.



6

5. (a) Explain Bootstrapped emitter follower with circuit diagram. How input impedence increases in it ? 7

(b) Explain with proper circuit diagram cascaded amplifier. 6

OR

6. (a) What is RC coupled amplifier ? Explain its frequency response. 7

(b) Explain Emitter follower circuit. What are the techniques to increase its input impidence. 6

SECTION B

7. (a) How power amplifiers are classified. Explain with suitable diagrams. 8

(b) What is Wein bridge oscillator ? How is Barkhausen criteria satisfied there ? 6

OR

8. (a) Explain transformer coupled class A power amplifier. How is impedence matching occurs there ? 7

   (b) What is LC tank circuit ? Explain any one LC oscillator in detail. 7

9. (a) Explain the working of light emitting diode with its construction and characteristics. 6

   (b) Explain Tunneling phenomenon in Tuunel diode with the help of Energy band diagrams. 8

OR

10. (a) Explain with neat diagrams working of PIN diode in detail. 7

    (b) Explain the characteristics of Tunnel diode with various regions in it. 7

11. (a) Explain n – channel Enhancement type MOSFET on the basis of construction operation and characteristics. 7

    (b) Explain UJT as a relaxation oscillator. 6

OR

12. (a) Explain the following with reference to JFET.

    (i) Drain Resistance (rd)

    (ii) Transconductance (gm)

    (iii) Amplification factor (μ)

    Also prove that $\mu = rd \times gm$. 8

    (b) Prove that

$$gm = gmo \left(1 - \frac{VGS}{VP}\right)$$ 5