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Question Paper Code : 40950

B.E./B.Tech. DEGREE EXAMINATION, APRIL/MAY 2018

Second/Third Semester

Electrical and Electronics Engineering

EC 6202 – ELECTRONIC DEVICES AND CIRCUITS

(Common to : Biomedical Engineering/Electronics and Instrumentation Engineering/
Instrumentation and Control Engineering/Medical Electronics/Robotics and
Automation Engineering)
(Regulations 2013)

Time : Three Hours

Maximum : 100 Marks

Answer ALL questions

PART – A

(10×2=20 Marks)

1. What is diffusion capacitance of PN junction ?
2. What is hole current in PN diode ?
3. Compare JFET and BJT.
4. What is break over voltage of SCR ?
5. Draw h-model of BJT in CB configuration.
6. What is source follower ?
7. What is cross over distortion ?
8. Write the advantages of push pull amplifier.
9. Which type of feedback circuit increases gain of amplifier ?
10. Write the expression for frequency of oscillation of RC phase shift oscillator.

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PART – B

(5×13=65 Marks)

11. a) Explain the working of full wave rectifier and derive expression for ripple factor, voltage, current, efficiency, PIV and transformer utilization factor. (13)

(OR)

- b) Briefly discuss the following :
i) LED
ii) Laser Diode. (6+7)

12. a) With neat diagram explain the working of enhancement MOSFET and depletion MOSFET with its necessary characteristics curve. (13)

(OR)

- b) Describe the working of SCR with necessary diagram and its V-I characteristics curve. (13)

13. a) Draw the h-parameter model of CE amplifier and derive its voltage gain, current gain, input impedance and output impedance. (13)

(OR)

- b) Explain the mid band analysis of single stage CE, CB and CC amplifiers. (13)

14. a) i) Explain briefly about working of BJT emitter coupled differential amplifier. (6)

- ii) What is CMRR ? Derive expression for common mode and differential mode gain of differential amplifier. (7)

(OR)

- b) What is neutralization ? Explain any 2 methods of neutralization techniques with necessary circuit diagram. (13)

15. a) Explain the construction and working of Hartely oscillator and derive the expression for frequency of oscillation. (13)

(OR)

- b) Explain the construction and working of Colpitts oscillator and derive the expression for frequency of oscillation. (13)



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PART - C

(1×15=15 Marks)

16. a) The hybrid parameters for CE amplifier are $h_{ie} = 1000\Omega$, $h_{fe} = 150$, $h_{re} = 1.2 \times 10^{-4}$, $h_{oe} = 25 \times 10^{-6}$ ohms. The transistor has load resistance of $10K\Omega$ in collector and supplied from signal source of resistance $5K\Omega$. Calculate the values of input impedance, output impedance, current gain and voltage gain.

(OR)

- b) i) In a Colpitts oscillator, $C_1 = C_2 = C$ and $L = 100 \times 10^{-6}$ H. The frequency of oscillation is 500 KHz. Determine the value of C. (8)
- ii) In Colpitts oscillator, the desired frequency is 500 KHz. Find the value of L. Assume $C = 1000$ pF. (7)