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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.



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)



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)

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