Dronacharya College of Engineering

Department of Applied Sciences and Humanities

Set of Important Long Answer Questions

Subject with code: BOE (EC-101-F)

Section-A

Chapter I: Semiconductor & Diode

Q1 Derive the expression for diode current and its characterstics.

Q2 Compare the practical & ideal characteristics of a p-n junction diode.

Q3 Distinguish both intrinsic & extrinsic semiconductors. What is the effect of temperature on the conductivity of a semiconductor?

Q4 Write short note on the following:

1. Covalent bond 2. AC or Dynamic Resistance 3. Knee & breakdown voltage 4. Barrier potential

Q5 What are the various breakdown mechanisms in junction diode? Explain them briefly.

Chapter II: Transistor

Q6 What is feedback in amplifiers? Explain four configurations of feedback. Give advantages of negative feedback.

Q7 Which configuration of transistor is best suited for amplification? Why.

Q8 How Transistor acts as an amplifier? Explain with the help of diagram.

Q9 Discuss the working of RC coupled amplifier. Explain why gain of amplifier decreases at low and high frequencies?

Q10 Explain the concept of cascaded amplifier. Why cascading is required?

Q11 What are multistage amplifiers ? Explain R-C coupled amplifier with the help of its frequency response.

Q12 Explain emitter bias and voltage divider biasing in transistors.

Q13 Explain Input & output characteristics of CE Configuration.

Section-B

Chapter I: Oscillator

Q14 Derive the expression for positive feedback. Explain barkhausen criterion.

Q 15 Explain with diagram working of wein bridge oscillator. Give its advantages and disadvantages.

Chapter II: Op-amp

Q16 Discuss the characteristics of an ideal opamp.

Q17 Explain how opamp act as an integrator and differentiator.

Q18 Explain SMPS and voltage regulator.

Q19 What is UPS? Explain the online and offline mode of UPS.

Section-C

Chapter I: Digital Electronics

Q20 What are the universal gates. Draw all gates with these gates.

Q21 Explain SR and JK flip-flop with circuit diagram.

Chapter II: Electronic Instruments

Q22 Explain the block diagram of CRO with labeled diagram.

Q23 Draw neat and clean block diagram of function generator and explain it.

Section-D

Q24. Which is better between LCD and LED? Why? Explain different types of LCD in detail?

Q25. Enumerate the application of LED in electronic display?

Q26. Write a short note on (i) LED (ii) 7-segment display.

Q27. Explain seven segment display.

Q28. Explain fourteen segment display.

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Set of Possible Short Answer / Objective Type Questions

Subject with code: BOE (EC-101-F)

Section-A

Chapter I: Semiconductor devices

Q1 Define static and dynamic resistances.

Q2 What is potential barrier in case of p-n junction diode ?

Q3 Why silicon is more preferred than germanium?

Q4 What is difference between diffusion and drift current?

Q5 Give one example of p-type semiconductor.

Q6 What is forbidden energy gap?

Q7 What is the value of forbidden energy gap for semiconductors?

Q8 What happens to the conductivity of semiconductors with the rise in temperature?

Q9 Why doping is done in semiconductors.

Q10 What is reverse saturation current?

Q11 Which type of impurity is added for n- type & p-type semiconductor?

Q12 Draw energy band diagram for insulator, conductor, and semiconductor.

Q13 In an ideal diode what is the value of resistance in forward bias(0conductor) and reverse bias (perfect insulator

infinite ?

Q14 Which diode is used as voltage regulator?

Chapter II: Amplifier

Q15. What is the relation between α and β in transistor configurations ?

Q16. Why collector is made larger than emitter & base?

Q17. Which configuration of amplifiers is best suited for amplification?

Q18. What is feedback in amplifiers ?

Q19: Which feedback is best negative or positive?

Q20: Define stability in amplifiers.

Q21: What is the function of bypass capacitor in amplifiers ?

Q22: What is meant by frequency response of an amplifier?

Q23: What is operating point?

Q24: What is an amplifier?

Q25. Why do you cascade the amplifiers ?

Q26. What is bandwidth?

Section-B

Chapter I: Oscillator

Q.27 Calculate positive feedback gain.

Q.28 Draw colpitt oscillator diagram.

Q.29 What is the cut off frequency of Hartley oscillator.

Q.30 What is Sustained oscillation.

Q.31 Explain barkhausen criterion for sustained oscillation.

Q.32 what is Decibel.

Q.33 Explain the effects of coupling capacitor.

Q.34 What are the advantages of –ve feedback.

Q.35 What is meant by -3dB frequency.

Q.36 What is meant by midband range.

Chapter II: Op-Amp

Q.37 What is an Opamp?

Q.38 What is differential amplifier?

Q.39 What is CMRR and slew rate.

Q.40 What is a constant current source.

Q.41 What is voltage follower?

Q.42 Give the examples of linear circuits.

Q.43 What is an adder.

Q.44 what is UPS?

Q.45 What is SMPS?

Q.46 What is switching regulator.

Section-C

Chapter I: Digital Electronics

Q47. Convert the following (i) $(125.67)_8 = (?)_2$ (ii) $(010011.1101)_2 = (?)_{16}$

Q48. State De-Morgan's theorem.

Q49. Differentiate between combinational & sequential circuits.

Q50. Draw the truth table of nand and nor gate.

Chapter II: Electronic Instrument

Q51. What is the purpose of aquadag coating in CRT tube?

Q52. What is the use of function generator.

Section-D

Q53. Why LED's emit light of different color?

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