

**S. M.B.S.T. College Sangamner , Dist. Ahmednagar**

**Department of Physics**

**Question Bank**

**Class: S.Y.B.Sc.**

**Subject: Physics –II Electronics**

**Sem- III**

**Prepared by : Mr. Jadhav M. V. (Assistant Professor)**

**Chapter 1 Network theorems.**

**Q.1 questions for 1 marks**

1. state Thevenin's theorem.
2. State Norton's theorem.
3. State Superposition theorem.
4. State maximum power transfer theorem.
5. State Ohms law.
6. State Kirchhoff's voltage Law.
7. State Kirchhoff's current Law.
8. what are the effects observed when the circuit is open?
9. what happens when a short is joined in the circuit?
10. Give the limitations of Thevenin's theorem.
11. Differentiate between constant- voltage source and constant- current source.

**Q.2 Question for 3 Marks**

1. state and explain Thevenin's theorem.
2. state and explain Norton's theorem.
4. state and explain superposition theorem.
5. Explain series voltage divider circuit.
6. Explain how current is divided in parallel circuit.

**Q.3 Question for 6 marks**

1. State and prove Maximum power transfer theorem.

## Chapter No. 2 –Study of transistor.

### Q.1 Questions for 1 marks

1. Draw symbol of UJT
2. Draw symbol of PNP and NPN transistor.
3. Draw input characteristics curve of common emitter amplifier.
4. Draw output characteristics curve of common emitter amplifier.
5. define  $\alpha$  and  $\beta$ .
6. What is load line?
7. state different methods of biasing of BJT.
8. what is meant by operating point (Q point) .
9. what is mean by faithful amplification.
10. what are the condition to get faithful biasing of transistor amplifier.
11. State the relationship  $\alpha$  and  $\beta$

### Q.2 question for 6 marks

1. what is transistor? With suitable diagram give the construction, symbol and operation of BJT.
2. define  $\alpha$  and  $\beta$ . derive the relation between  $\alpha$  and  $\beta$ .
3. describe the input and output characteristics in common emitter configuration of a transistor.
4. what are the different types of transistor biasing methods? Explain voltage divider bias method. Give its advantages.
5. Describe working of a transistor as an amplifier.
6. Explain with circuit diagram the use of transistor as a switch.
7. Explain the construction and working of UJT.
8. Describe the use of UJT as relaxation oscillator.
9. Draw the equivalent circuit of UJT and discuss its working from the circuit.
10. Draw the output characteristics curve of UJT and explain it.

## Chapter 3 Operational Amplifier

### Q. 1 Question for 1 Marks

1. Draw circuit diagram symbol of Op-Amp.
2. Draw pin diagram of IC-741.
3. Define open-loop gain of Op-Amp.
4. What is CMRR?
5. What is Slew rate?
6. What is virtual ground Concept?
7. What is negative feedback?
8. What is positive feedback?
9. List different types of feedback circuit.
10. What are types of oscillator?
11. What is Barkhausen criterion of oscillator?
12. Draw circuit diagram of voltage-series feedback .
13. Draw circuit diagram of voltage-shunt feedback.
14. Draw circuit diagram of current-series feedback.
15. Draw circuit diagram of current- shunt feedback.

### Q.2 Question for 3 marks

1. Give the properties of Ideal op-amp.
2. Give the properties is of practical op-amp.

### Q.3 Question for 6 Marks

1. Give the parameters of operational amplifier.
2. Discuss non-inverting operational amplifier.
3. Discuss inverting operational amplifier.
4. Explain with circuit diagram Op-amp as an adder.
5. Explain with circuit diagram Op-amp as an subtractor.
6. Discuss the gain of Op-amp with feedback.

7. Discuss the phase-shift oscillator with circuit diagram.

## Chapter 4 : Number systems and Logic Gates

### Q.1 Question for 1 Marks

1. List the number system used and the base of each number system.
2. Draw symbol of AND gate and give its Boolean equation and truth table.
3. Draw symbol of OR gate and give its Boolean equation and truth table.
4. Draw symbol of NOT gate and give its Boolean equation and truth table.
5. Draw symbol of NAND gate and give its Boolean equation and truth table.
6. Draw symbol of NOR gate and give its Boolean equation and truth table.
7. Draw symbol of EX-OR gate and give its Boolean equation and truth table.
8. Draw symbol of EX-NOR gate and give its Boolean equation and truth table.
9. Which gates are called universal gates. What are its advantages.
10. State De- Morgan's theorems.
11. Convert 10011 binary number into equivalent decimal number.
12. Convert 0.1101 binary number into equivalent decimal number.
13. Convert 11011.101 binary number into equivalent decimal number.
14. Convert 53 decimal number into equivalent binary number.
15. Convert 0.65 decimal number into equivalent binary number.
16. Convert 29.54 decimal number into equivalent binary number.
17. Convert 132.25 decimal number into hexadecimal number.
18. Convert 1011011011.01110110 binary number to hexadecimal number
19. Convert 3A9E.B0D hexadecimal number to binary number.
20. Convert 5C7.ABC hexadecimal number to decimal number.
21. What is BCD code.
22. What are the advantages and disadvantages of BCD code.
23. What is 1's complement.
24. What is 2's complement.

25. perform the operation using 2's complement

a) 48-23 b) 23-48

**Q.2 Question for 6 Marks**

1. State and prove De-Morgan's theorems.
2. Using Boolean algebra, simplify the equation ---
3. Give the truth table of the following logic circuit.