

## **ELECTRONICS - II**

### **MECS – II Year**

#### **UNIT - I**

#### **RECTIFIERS AND POWER SUPPLIES:**

##### **Short Answer Questions:**

1. What is a rectifier? Give four advantages that a full wave rectifier has over a half wave rectifier?
2. Calculate the ripple factor of a full wave rectifier?
3. Explain the working of II-Section filter?
4. Explain the working of a L-section filter?
5. Explain how zener diode works as a voltage regulator?
6. Explain the working of a transistor series voltage regulator?
7. How do we get constant regulated voltage by transistor shunt voltage regulator?
8. Describe the application of a P-N diode as rectifier?

##### **Long Questions**

1. What is a rectifier? Draw the circuit of full wave rectifier and derive expressions for efficiency and ripple factor?
2. Explain for working of bridge rectifier with a neat circuit. Derive an expression for its efficiency?
3. Draw the circuit diagram of L-section filter and discuss its working. Derive an expression for its ripple factor?
4. Draw the circuit diagram of a half wave rectifier with resistive load and explain its working obtain expression for its efficiency and ripple factor.
5. What are three terminal regulators? Give a basic circuit for using them.?
6. What is switch mode power supply? Give its principle and theory of operation?

**UNIT – II**  
**AMPLIFIERS**

**Long Questions**

1. Draw the circuit diagram of an RC coupled amplifier and obtain the expressions for voltage gain at low, middle and high audio frequencies?
2. Explain feedback. Explain effect of negative feedback on:
  - i) Gain
  - ii) Noise
  - iii) Bandwidth
  - iv) Input and output impedances.
  - v) Band width of negative feedback amplifier.
3. Draw and explain the working of an emitter follower mention its uses.

**Short Questions**

1. Explain the concept of feedback and their classification?
2. Write basic principles of feedback amplifier and explain the advantages of negative feedback.
3. What is Barkhausen criteria for sustained oscillations?
4. Give the characteristics of an ideal op-amp?
5. Define CMRR.
6. Define the term slew rate, input offset voltage and input bias current of op-amp?

**Long Questions:**

1. Draw the circuit for inverting amplifier and explain its operation. How do the input and feedback resistors determine the gain of the amplifier?
2. Explain the concept of a non-inverting op-Amp?
3. Draw the circuit diagrams of inverting and non-inverting amplifiers and explain their operations. Derive expressions for their voltage gain?

## UNIT – III

### APPLICATIONS OF OP-AMP

#### Short Questions

1. Describe the working of op-amp voltage regulator?
2. Draw the block diagram of 1C-555 timer?
3. Explain how op-amp acts as low, high and band pass filters?

#### Long Questions

1. Explain the working of op-amp as:
  - a. Comparator and zero cross detector
  - b. Explain differentiator
  - c. Explain Integrator
2. What is a multivibrator? Describe the operation of monostable and astable multivibrators using timer 1C-555.
3. Draw the circuit of astable multivibrator using timer 1C-555 and describe its operation?
4. Explain how op-amp can be used as:
  - a. Summing amplifier
  - b. Comporator and
  - c. Bond pass filter
5. Describe an analog computation circuit using op-amp to solve simple second order differential equation. Explain its working with a suitable example?
6. Explain squarewave generator?
7. Op-amp as a voltage regulator? Explain it?

## UNIT – IV

#### Long Questions

1. What is modulation? Explain need for modulation? Explain different degrees of modulation?
2. Explain the working of simple amplitude modulator (or) amplitude modulator and obtain the expression for it (or) transistorized a modulator?

3. Explain amplitude modulation technique. Discuss analysis of AN wave & spectrum of AM wave?
4. Explain the action of linear diode detector in the reception of the AN wave with the help of neat circuit diagram?
5. Explain the theory & working of AM detector (or) AM demodulator (or) diode detector?
6. Explain the working of simple frequency modulator?
7. Explain the generation of FM by varactor diode?
8. Explain frequency components of FM wave. Discuss reaction modulator?
9. Explain how FM waves are detected. Describe the principle and working of discriminator.
10. Explain the working of ratio detector?
11. Explain radio broadcasting transistor?
12. Draw the block diagram of super heterodyne receiver and explain its working?
13. Explain FM receiver?

### **Short Questions**

1. Define rectification. Compare halfwave & fullwave rectifier?
2. Compare fullwave & bridge wave rectifier?
3. Transister series voltage regulator?
4. Three terminal dance 78Xx, 79XX.
5. Simple regulated power supply?
6. Concept of feedback. Different types of feedback?
7. Ideal characteristics of op-amp?
8. CMRR – concept & problem?
9. Slew rate – concept & problem?
10. Block diagram of IC-op-AMP?
11. TIMER – IC-555 pin diagram?
12. Low pass & high pass filter?
13. Voltage follower (Ac & DC).
14. Types of modulation <AM, FM, PM – definations>
15. Modulation factor & modulation index percent modulation in AM wave?

16. Frequency deviation & carrier swing?
17. Straight forward receiver?
18. Microwaves & Radiowaves?
19. Advantages of FM over AM?
20. Short notes on deflection of FM waves?