

**Question Bank**

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**TOPIC-01- PASSIVE COMPONENTS:**

- 1) Define active and passive components. Give example of each one.
- 2) List four non-linear resistors. State type of non linear resistor.
- 3) List at list four specifications of resistors. Explain two of them.
- 4) Draw the constructional details of wire- wound resistor and explain in brief.
- 5) Draw the constructional details of carbon film resistor and explain in brief.
- 6) Give constructional details of LDR. State its applications.
- 7) Define NTC and PTC with reference to Thermistor.
- 8) Define Temperature Dependent Resistor (TDR) and Light Dependent Resistor(LDR).
- 9) Draw and explain rheostats
- 10) Classify the capacitors.
- 11) Name any 4 specifications of capacitor and explain 2 of them.
- 12) Draw and explain electrolytic capacitor.
- 13) Explain air ganged capacitor with constructional details.
- 14) Define the terms with respect to magnetism:
  - (i) Magnetic field (E)
  - (ii) Magnetic flux ( $\phi$ )
  - (iii) Permeability ( $\mu$ )
  - (iv) Magnetic flux density (B)
  - (v) Magnetic field strength (H)
  - (vi) Reluctivity
- 15) State Faraday's (i) First law and (ii) Second law of electromagnetic induction.
- 16) Define the term self inductance and mutual inductance.
- 17) Define the reactance of inductor and capacitor with its formula.
- 18) Draw the constructional details of air core inductor and explain it.
- 19) Draw the constructional details of iron core inductor and explain it.
- 20) Draw the constructional details of slug tuned inductor and explain it.

**TOPIC-02- SEMICONDUCTOR DIODES:**

- 1) Define depletion region. How PN junction diode is formed?
- 2) Draw and explain the constructional details of PN junction diode.
- 3) Draw and explain the V-I characteristics of PN junction diode.
- 4) Why do not diodes conduct in reverse biased? Define forward voltage.
- 5) Define avalanche break down and zener break down in PN junction.
- 6) Draw the symbols for:
  - (i) PN junction diode
  - (ii) PIN diode
  - (iii) Photodiode
  - (iv) Zener diode
  - (v) Tunnel diode
  - (vi) LED
  - (vii) Schottky diode
  - (viii) varacter diode.
- 7) Give the applications of:
  - (i) PN junction diode
  - (ii) LASER diode
  - (iii) Photodiode
  - (iv) Zener diode
  - (v) PIN diode
  - (vi) LED
  - (vii) Tunnel diode
- 8) Show the constructional details of schottky diodes.
- 9) Draw the constructional details of LED and explain it.
- 10) State the materials used for LED. Explain its working principle.
- 11) Compare PN junction and LED.
- 12) Draw and explain V-I characteristics of photodiode.
- 13) Describe construction and working principle of LASER diode.
- 14) Draw the constructional details of photodiode.

**TOPIC-03- RECTIFIERS AND FILTERS:**

- 1) Define the following terms:
  - (i) Ripple factor (RF)
  - (ii) PIV
  - (iii) Rectification efficiency ( $\eta$ )
  - (iv) TUF
- 2) Draw the neat circuit diagram of full wave centre tapped rectifier. And explain its operation.
- 3) Draw the neat circuit diagram of full wave bridge rectifier and explain its operation.
- 4) What is rectification? Explain the need of rectifiers.
- 5) Give the applications of bridge rectifier and half wave rectifier.

- 6) Compare 'Half wave', 'Full wave centre tapped' and 'Bridge rectifier'.
- 7) State the types of filter. Explain which filter is best amongst them?
- 8) Draw the circuit diagram for FWR with shunt capacitor filter. Explain its operation.
- 9) Draw the circuit diagram for series inductor filter (Choke input filter). Explain its operation.
- 10) Draw the waveforms for L- type , Capacitor input filter, LC filter and  $\pi$ - type filter. Also explain their applications.

#### **TOPIC-04- WAVE SHAPING CIRCUIT:**

- 1) What is the necessity of wave shaping circuit?
- 2) Draw circuit diagram of RC integrator circuit and write its output expression.
- 3) Draw input and output waveforms of RC integrator.
- 4) Draw circuit diagram of RC differentiator circuit and write its output expression.
- 5) Draw input and output waveforms of RC differentiator.
- 6) State the advantages and applications of RC integrator and differentiator.
- 7) State the type of clipper circuit. Explain series negative clipper.
- 8) Draw and explain series positive clipper with its waveforms. Give its applications.
- 9) With the help of neat circuit diagram and input output waveforms explain the operation of unbiased positive clipper.
- 10) Draw circuit diagram, input and output waveforms and explain operation of negative biased clipper.
- 11) Draw and explain positive biased clipper circuit.
- 12) What is positive clamper? Draw the circuit of positive clamper.
- 13) Explain negative clamper with waveforms.
- 14) Compare clipper and clamper.