

**Sample Test Paper-I**

**Course Name : Electronics Engineering Group**

**Course Code : DE/ED/EI/EJ/EN/ET/EV/EX/IC/IE/IS/IU/MU**

**Semester : Second**

**Subject Title : Elements of Electronics**

**Marks : 25**

**17215**

**Time:1 Hrs.**

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**Instructions:**

1. All questions are compulsory.
2. Illustrate your answers with neat sketches wherever necessary.
3. Figures to the right indicate full marks.
4. Assume suitable data if necessary.
5. Preferably, write the answers in sequential order.

**Q.1 Attempt any THREE**

**09 Marks**

- a) Write the formula for capacitive reactance. State the effect of frequency on the capacitive reactance.
- b) Draw the circuit diagram of half wave rectifier. Describe the operation with input and output wave form.
- c) Draw the symbol and list the applications of PIN diode and Schottky diode.
- d) List specifications and applications of linear and non linear potentiometers

**Q.2 Attempt any TWO**

**08 Marks**

- a) Compare air core and ferrite core inductor on the basis of constructional diagram and applications.
- b) Draw the constructional details of LED. Describe the operating principle.
- c) Draw the symbol of PN junction diode .Describe its working principle and list two applications of the same.

**Q3. Attempt any TWO**

**08 Marks**

- a) Compare LDR and TDR on the basis of working principle, material used for construction, characteristics curves and applications.
- b) **Draw** the characteristics of Zener diode. List four applications of zener diode
- c) **Compare** center tapped rectifier with bridge rectifier on the basis of following parameter
  - i) Number of diode used ii) PIV iii) TUF iv) Efficiency

Sample Test Paper-II

Course Name : Electronics Engineering Group

Course Code : DE/ED/EI/EJ/EN/ET/EV/EX/IC/IE/IS/IU/MU

Semester : Second

Subject Title : Elements of Electronics

Marks : 25

17215

Time :1 Hrs.

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**Instructions:**

1. All questions are compulsory.
2. Illustrate your answers with neat sketches wherever necessary.
3. Figures to the right indicate full marks.
4. Assume suitable data if necessary.
5. Preferably, write the answers in sequential order.

**Q.1 Attempt any THREE**

**09 Marks**

- a) Draw the circuit diagram of RC integrator. Sketch the output wave form for square wave input. Describe the operation of the circuit.
- b) State the Kirchoff's Current Law(KCL) with suitable example
- c) Compare linear and nonlinear wave shaping circuits
- d) Draw the circuit diagram of half wave rectifier with shunt capacitor filter. Describe the operation of circuit with input output wave forms.

**Q.2 Attempt any TWO**

**08 Marks**

- a) Draw the circuit diagram of bridge rectifier with series inductor filter. Describe the operation of circuit with input output wave forms.
- b) Draw the circuit diagram of positive clamper using diode. Describe the operation of circuit with input output waveforms.
- c) Three resistances each of  $12\Omega$  are connected in star. Convert it into equivalent delta connection

**Q.3 Attempt any TWO**

**08 Marks**

- a) Draw the circuit diagram of positive clipper .Describe the operation circuit with input output wave forms.
- b) By using Maxwell's loop current method calculate current in  $3\Omega$  resistance for the network shown in figure 1

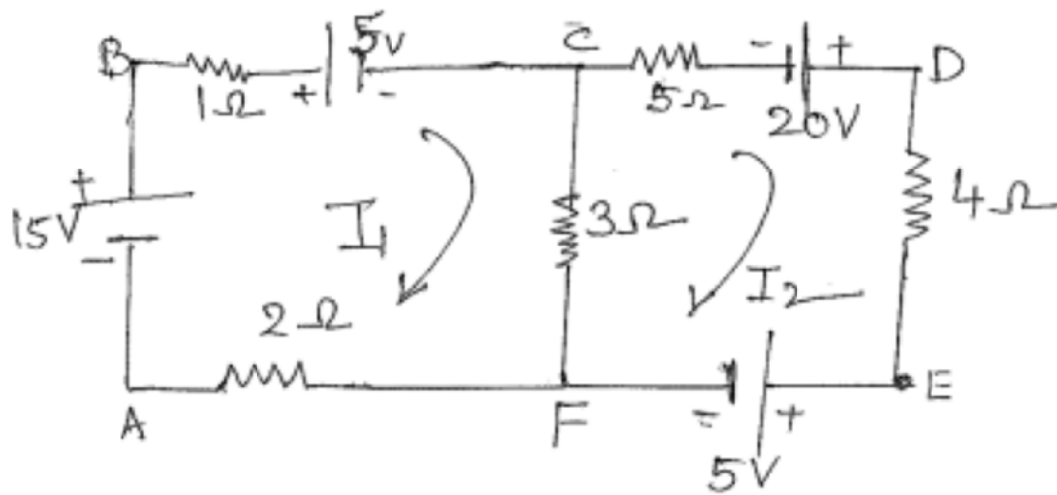


Figure 1

c) Obtain the Thevenin's equivalent circuit for the network shown in figure 2

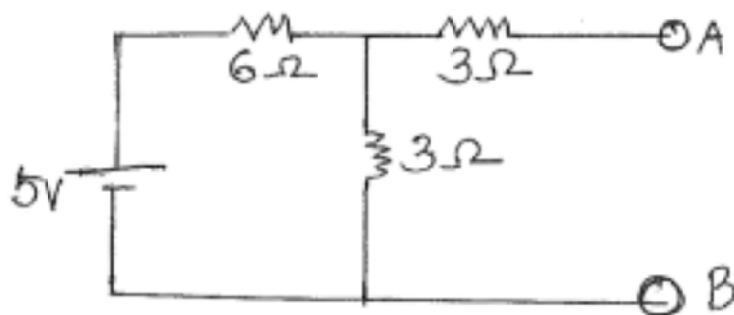


Figure 2

## Sample Question Paper

Course Name : Electronics Engineering Group

Course Code : DE/ED/EI/EJ/EN/ET/EV/EX/IC/IE/IS/IU/MU

Semester : Second

Subject Title : Elements of Electronics

Marks : 100

215

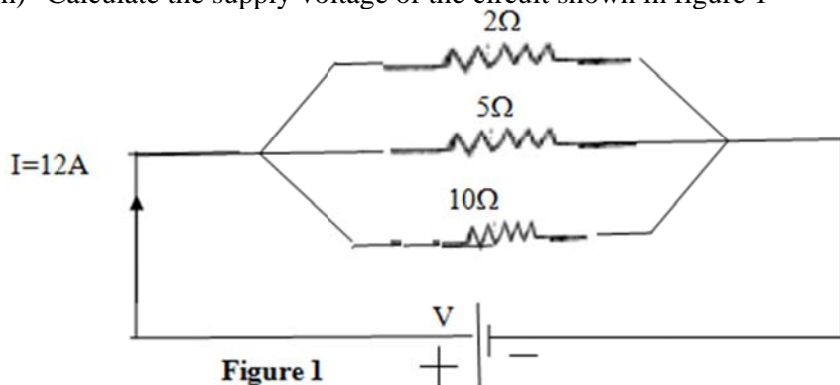
Time: 3 Hrs.

**Instructions:**

1. All questions are compulsory.
2. Illustrate your answers with neat sketches wherever necessary.
3. Figures to the right indicate full marks.
4. Assume suitable data if necessary.
5. Preferably, write the answers in sequential order.

**Q.1 Attempt any TEN****20 Marks**

- a) State the Faraday's laws of electromagnetic induction. Also write its formula.
- b) Draw the neat labeled sketch of slug tuned inductor. State two functions of it.
- c) Define the term "Effective Series Resistance" with reference to capacitor.
- d) Draw the circuit diagram of bridge rectifier and label it.
- e) Draw the circuit diagram of center tapped rectifier with  $\pi$  filter and label it.
- f) Draw the ideal current source and practical current source.
- g) State the Kirchoff's Voltage Law along with its formula.
- h) Calculate the supply voltage of the circuit shown in figure 1



- i) Write the four applications of zener diode.
- j) Explain with neat sketch construction of PIN diode.
- k) State the condition for integration with reference to RC integrator with neat circuit diagram.
- l) Draw the circuit diagram of shunt negative clipper with input and output waveform.

**Q.2 Attempt any FOUR****16 Marks**

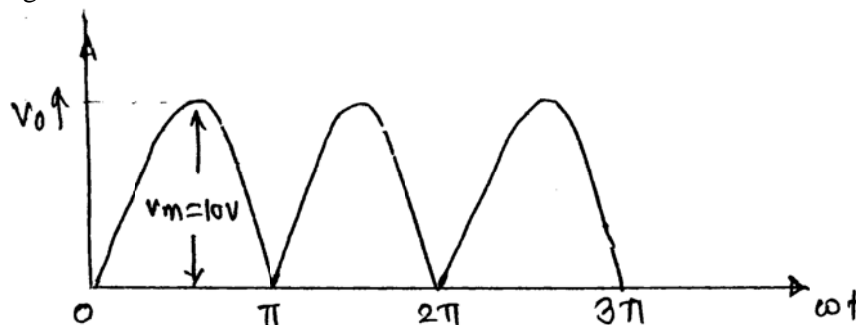
- a) Describe the working of LDR with neat sketch. State their four applications.
- b) Draw the characteristics of Linear and Logarithmic potentiometers. Write four specifications of Potentiometers.
- c) Draw the constructional diagram of Electrolytic Capacitor. Explain the working
- d) List the two specifications of capacitors and two dielectric materials used in capacitors.
- e) Draw the constructional diagram iron core inductor and ferrite core inductor.
- f) Describe the working of PN junction diode with neat sketch under forward biased condition.

**Q.3 Attempt any FOUR****16 Marks**

- a) Enlist four specifications of zener diode.
- b) Describe construction of tunnel diode with neat sketch. List two applications.
- c) Describe the operating principle of Laser diode with neat sketch.
- d) Draw the symbol of Schottky diode. With neat sketch explain working principle of Schottky diode.
- e) List different types of filters. Which filter is practically preferred to get pure DC output voltage? Why?
- f) State the values of following parameters with reference to half wave rectifier
  - i) Ripple Factor ii) Efficiency iii) TUF iv) Average value of DC output voltage

**Q4. Attempt any FOUR****16 Marks**

- a) Draw the circuit diagram of full wave bridge rectifier with LC filter. Explain with input and output wave form.
- b) Using colour code ,write the colour codes for following resistors
  - i)  $560K \pm 5\%$  ii)  $23.4K \pm 10\%$
- c) Draw the circuit diagram of series inductor filter with half wave rectifier. Explain with input and output wave forms.
- d) In FWR  $V_M = 10V$ ,  $R_L = 10 K\Omega$ . Calculate  $V_{DC}$ ,  $I_{DC}$  and ripple factor. Refer following Figure 2s

**Figure No. 2**

- e) Compare PN-junction diode & Zener diode. (Four points)
- a) Compare LED and Photo diode..(Four points)

**Q.5 Attempt any FOUR**

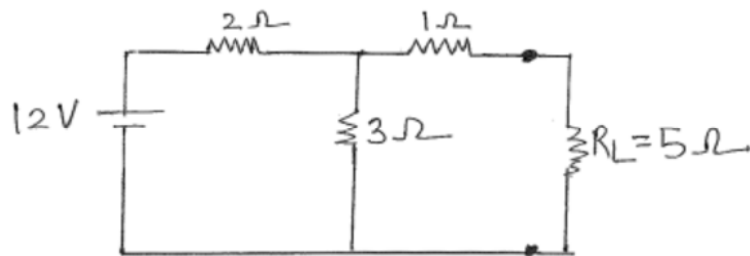
**16 Marks**

- a) What do you mean by the term wave shaping circuit? Explain why it is needed in practical applications?
- b) Describe the working principle of RC differentiator with neat sketch. State the condition for differentiator.
- c) Describe the working of Positive shunt clipper with neat circuit diagram and input/output wave forms.
- d) Draw the circuit diagram of RC integrator. Draw the input and output waveforms of RC integrator for square wave and triangular as input.
- e) State the superposition theorem with suitable example.
- f) State the Thevenin's theorem with suitable example.

**Q.6 Attempt any FOUR**

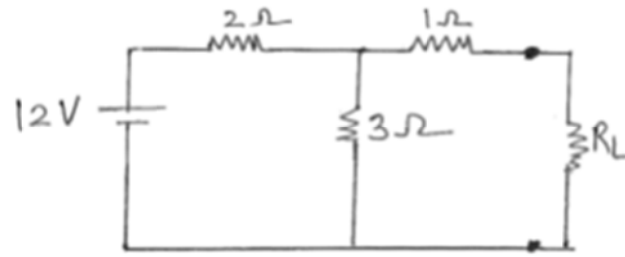
**16 Marks**

- a) Draw circuit diagrams for negative and positive voltage clamping circuits.  
Show the input and output waveform.
- b) Compare clipper and clamper. (Four points)
- c) Explain the following terms
  - i) Active Network                      ii) Linear Network
  - iii) Bilateral Network                iv) Unilateral Network
- d) Calculate the value of current in  $5\Omega$  resistance using Norton's theorem for the network shown in figure no.3



**Figure No. 3**

- e) Calculate the value of  $R_L$ , so that power transferred is maximum in the circuit shown in figure no. 4



**Figure No. 4**

- f) Write the meaning term open circuit and short circuit with neat diagram.