

F.Y. Diploma : Sem. II
Elements of Electronics
Prelim Question Paper



[Marks : 100]

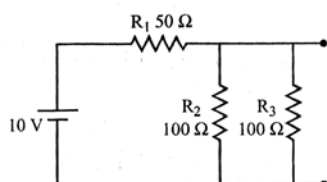
Time : 3 Hrs.]

- 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.

1. Attempt any TEN of the following :

[20]

- (a) Draw symbol of Ferrite core Inductors. Describe its construction and applications.
- (b) List the passive filters used in field of electronics.
- (c) State the Kirchoffs Voltage Law along with its formula.
- (d) State the condition for integration with reference to RC integrator with neat circuit diagram.
- (e) Explain with neat sketch construction of PIN diode.
- (f) Define ferromagnetic and ferrimagnetic material. Give on example of each.
- (g) State the necessity of rectifier and filter circuits.
- (h) Find current through resistor R_3 .



- (i) Draw circuit diagram of centre-tap full wave rectifier and label it.
- (j) State maximum power transfer theorem.
- (k) Define Clipper and Write its types
- (l) What is rectifier ? Write types of rectifier.

2. Attempt any FOUR of the following :

[16]

- (a) Draw the constructional diagram of Electrolytic Capacitor. Explain the working.
- (b) Describe the working of PN junction diode with neat sketch under forward biased condition.
- (c) Describe DISC CERAMIC CAPACITOR.
- (d) Write the working principle of zener diode.
- (e) Using four band colour code, find resistance value for :
 - (i) Brown Red Red Silver
 - (ii) Yellow Violet Orange Gold
- (f) Compare PTC and NTC thermistors w.r.t.
 - (i) Materials used
 - (ii) Characteristics
 - (iii) Temperature coefficient
 - (iv) Application

3. Attempt any FOUR of the following :

[16]

- (a) List different types of filters. Which filter is practically preferred to get pure DC output voltage? Why?
- (b) Describe the operating principle of Laser diode with neat sketch.
- (c) Draw and describe construction of LED.
- (d) Draw and describe V-I characteristics of P-N junction diode.
- (e) Define given parameters and state their values for bridge rectifier.
 - (i) Ripple factor
 - (ii) PIV of diode
- (f) Draw circuit and describe working of full wave rectifier using centre tapped transformer.

4. Attempt any **FOUR** of the following :

[16]

- (a) What is the need of wave shaping circuits?
- (b) Compare PN-junction diode and Zener diode. (Four points)
- (c) State the superposition theorem with suitable example.
- (d) Draw circuit of capacitor filter with bridge rectifier. Draw input and output waveforms.
- (e) State Operating principle of LED
- (f) Short note on tunnel diode.

5. Attempt any **FOUR** of the following :

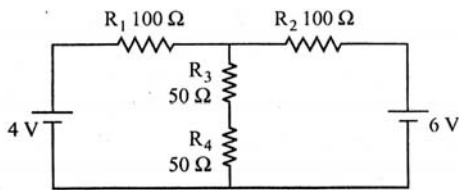
[16]

- (a) Draw and describe working of positive clamper.
- (b) How to read color bands on resistors?
- (c) Draw the circuit diagram of series inductor filter with half wave rectifier. Explain with input and output wave forms.
- (d) Compare LED and Photo diode. (Four points)
- (e) If three resistors of $10\ \Omega$ each are connected in delta connection. Convert it into star connection. Draw circuit diagram for both.
- (f) State : (i) Norton's theorem. (ii) Super-position theorem.

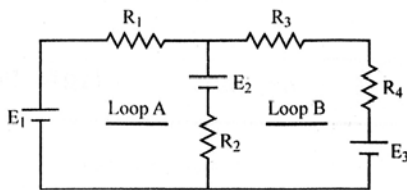
6. Attempt any **FOUR** of the following :

[16]

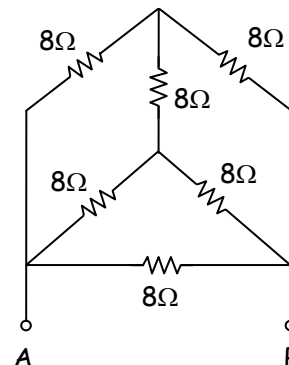
- (a) Explain the following terms :
 - (i) Active Network
 - (ii) Linear Network
 - (iii) Bilateral Network
 - (iv) Unilateral Network
- (b) Give the comparison between Diffused junction diode and Point contact diode.
- (c) Find current through resistance R_4 using super-position theorem.



- (d) Using Maxwell's loop current method, write equations for Loop-A and Loop-B.



- (e) Calculate equivalent resistance, R_{AB} between terminals A and B using delta-star transformation. (Refer Figure)



Paper Discussion Schedule for all Subject: F.Y. Diploma Sem.-II

Date	Day	Timing	Centre
9 April 2017	Sunday	9 a.m. to 11 a.m.	Dadar
9 April 2017	Sunday	12 p.m.to 2 p.m.	Thane
9 April 2017	Sunday	9 a.m. to 11 a.m.	Ghatkopar
9 April 2017	Sunday	12 p.m. to 2 p.m.	Borivali
9 April 2017	Sunday	12 p.m. to 2 p.m.	Nerul
9 April 2017	Sunday	3 pm to 5 pm	Kalyan

□ □ □ □ □