

**ELECTRONIC DEVICES, CIRCUITS AND APPLICATIONS – I**  
**3K-CSN-07**

Time : 3 hrs.

M.M.: 100

**Note :—**

1. Part 'A' may be attempted in first 6 pages of Answer Sheet.  
भाग 'क' के सभी उत्तर, उत्तर-पुस्तिका के प्रथम छः पृष्ठों में ही करने हैं।
2. Part 'B' in rest of the Sheets of Answer Sheet.  
भाग 'ख' के उत्तर, उत्तर-पुस्तिका के अगले शेष पृष्ठों में लिखिये।
3. Answers may be given in English or Hindi.  
प्रश्नों के उत्तर अंग्रेजी अथवा हिन्दी में दीजिये।

**PART - 'A'****1. Attempt any ten questions : -****(10x2=20)**

- (a) Draw the circuit symbol of FET.
- (b) Draw the typical V-I characteristics of P-N junction diode?
- (c) What is meant by zener effect?
- (d) State the functions of UPS.
- (e) The series 78XX IC's are .....
- (f) Lissajous patterns are used to measure ..... and ..... with CRO.
- (g) What is a bleeder resistance ? Why it is used in L-C filter?
- (h) Why transistor is called current controlled device?
- (i) What is meant by a clamping circuit?
- (j) Define the term peak increase voltage and ripple factor.
- (k) State the advantages of fullwave rectifier over half-wave rectifier.
- (l) IC's are generally made of .....
- (m) What are the various coupling schemes used in cascaded amplifiers?
- (n) What is an amplifier?

**2. Attempt any five questions :****(5x4=20)**

- (a) Name the different types of distortions in amplifiers and their causes.
- (b) Explain the working principle of NPN junction transistor.
- (c) Discuss the principle of operation of GUNN diode along with V-I characteristics.
- (d) With neat circuit diagram, explain the principle of operation of zener voltage regulator.
- (e) Compare MOSFET and JFET.

- (f) Draw the circuit diagram of positive peak series clipper and explain its working.
- (g) What is the ohmic value and tolerance of a resistor with the red-violet-orange-silver colour bands.
- (h) Write short notes on electrostatic focusing.

**PART- B****(3x20=60)****Attempt any three questions.**

- 3. (a) Briefly explain the principle of operation of MOSFET in Enhancement mode.  
(b) Draw the circuit diagram and working principle a full-wave bridge rectifier. Why it is preferred over a full wave center-tapped rectifier?
- 4. (a) Sketch the V-I characteristics of TRIAC and explain? How does it differ from an SCR?  
(b) Compare the differences between LDR, photo Diode and solar cell.
- 5. Write short notes on
  - (a) Positive voltage regulator.
  - (b) Direct coupled amplifiers
  - (c) PI filter
  - (d) Three phase Rectifiers
- 6. (a) Draw the circuit of a series regulated power supply with overload protection. Explain its working.  
(b) Draw the block diagram of UPS and explain its basic concept.
- 7. (a) With the help of neat block diagram explain various parts of CRT. What extra components are needed to make it as a CRO?  
(b) With a circuit diagram, explain the operation of a simple common emitter amplifier. Also compare CB, CE and CC amplifiers with respect to input impedance and output impedance.