

AR - 490

First Semester B. Sc. (Part - I) Examination

IS : ELECTRONICS

(Basics of Electronics)

P. Pages : 5

Time : Three Hours]

[Max. Marks : 80

- Note :** (1) Question No. 1 is compulsory.
(2) Draw neat diagrams wherever necessary.

1. (a) Fill in the blanks :—

- (i) An ideal current source has _____ internal resistance.
- (ii) UJT stands for _____.
- (iii) The unit of inductance is _____.
- (iv) The LED stand for _____. 2

(b) Choose the correct alternative :

- (i) In case of transistor $I_E =$ _____.
- (a) $I_C + I_B$ (b) $I_B - I_C$
- (c) $I_C - I_B$ (d) βI_B
- (ii) A JFET has three terminals namely—
_____.
- (a) Cathode, anode and gate.

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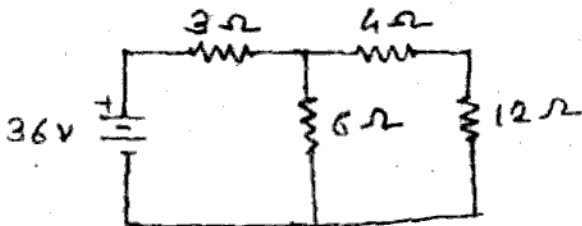
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- (b) Source, gate and drain.
 - (c) Emitter, base and collector.
 - (d) Source emitter and gate.
- (iii) In monolithic IC, all components are fabricated by _____ the process.
- (a) Evaporation. (b) Sputtering
 - (c) Diffusion (d) Oxidation.
- (iv) The MOSFET is a _____ device.
- (a) Unipolar (b) Bipolar
 - (c) Tripolar (d) None of these 2
- (c) Answer the following in one sentence :
- (i) What is ammeter ?
 - (ii) What is rectifier ?
 - (iii) What is diode ?
 - (iv) What is amplifier ? 4

EITHER

2. (a) State and prove Thevenin's theorem. 7

- (b) Find the current flowing through $12\ \Omega$ resistance using Thevenin's theorem for the network shown below :



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OR

- (P) What is capacitor ? Explain how physical factors control capacitance. 4
- (q) State and prove Norton's theorem. 8

EITHER

3. (a) Draw block diagram of CRO and explain the function of each block. 8
- (b) Explain measurement of frequency and phase using CRO. 4

OR

- (P) Explain the construction and working of multirange dc ammeter. 6
- (q) Explain construction and working of shunt type ohmmeter. 6

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EITHER

4. (a) Explain the construction and working of bridge rectifier. 6
- (b) Explain the action of diode in forward bias mode with characteristics. 6

OR

- (p) Draw block diagram of regulated power supply and explain the function of each block. 6
- (q) Explain the working and characteristics of diode under reverse bias mode. 6

EITHER

5. (a) Explain the working of NPN transistor. 6
- (b) Draw diagram for biasing of transistor in CB-mode, CE-mode and CC-mode. 6

OR

- (p) What is transistor biasing ? Explain. 4
- (q) Explain input and output characteristics of transistor in CE mode. 6
- (r) What is Operating Point ? Explain. 2

EITHER

6. (a) Explain construction, working and characteristics of MOSFET. 8
(b) Explain the characteristics of FET. 4

OR

- (p) Explain construction and working of photodiode. 6
(q) Explain construction and working of LDR. 6

EITHER

7. (a) Explain any two steps in the fabrication of monolithic IC. 8
(b) Explain thin film and thick film ICs. 4

OR

- (p) Give the classification of ICs. 4
(q) Explain fabrication of resistor and diode in monolithic IC. 8



