

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)
BSc DEGREE EXAMINATION DECEMBER 2019
(First Semester)

Branch - ELECTRONICS

SEMICONDUCTOR DEVICES

Time: Three Hours

Maximum: 75 Marks

SECTION-A go Marks)

Answer ALL questions

ALL questions carry EQUAL marks (10 x 1 = 10)

1 _____ materials have the resistance levels between a conductor and an insulator.

- (i) conductor (ii) insulator
(iii) semiconductor (iv) all of the above

2 The transfer of electrons from N side and holes on the P side in a junction produces a _____ voltage .

- (i) barrier (ii) junction
(iii) knee (iv) negative

3 An _____ diode acts like a perfect conductor when voltage is applied forward biased and like a perfect insulator when voltage is applied reverse biased.

- (i) PN (ii) ideal
(iii) avalanche (iv) schottky

4 Practical diode draws very low _____ when reverse biased.

- (i) current (ii) voltage
(iii) energy (iv) power

_____ is a semiconductor device that can both conduct and insulate.

- (i) amplifier (ii) transistor
(iii) inductor (iv) capacitor

FET is _____ terminal semiconductor device,

- (i) one (ii) two
(iii) three (iv) four

_____ effect is the transfer of energy from the light to an electron.

- (i) Photoluminescence (ii) Photo emissive
(iii) Photoconductive (iv) Photoelectric

_____ is made of two pieces of polarized glass.

- (i) OLD (ii) LDR
(iii) LED (iv) LCD

The varactor diode always works in _____ bias.

- (i) forward (ii) reverse
(iii) positive (iv) neutral

10 The UJT can be used as _____.

- (i) phase control (ii) triggering device
(iii) timing circuit (iv) all of the above

Cont...

SECTION - B (25 Marks)Answer **ALL** questions**ALL** questions carry **EQUAL** Marks

(5 x 5 = 25)

11 a Prepare an introduction for semiconductors.

OR

b Outline the effect of temperature on semiconductor.

12 a Bring out the basics of PN junction diode.

OR

b Show through circuit diagram that how zener diode acts as voltage regulator.

13 a Narrate important points on transistor is used as a switch.

OR

b Sketch a neat diagram that how FET acts as a voltage variable resistor and explain

14 a State photo emissive theory.

OR

b What is LDR and where it is used?

15 a Outline the basic theory of varactor diode.

OR

b Compare DIAC and TRIAC and tabulate the findings.

SECTION -C (40 Marks)Answer **ALL** questions**ALL** questions carry **EQUAL** Marks

(5 x 8 = 40)

16 a Discuss in detail about the energy band theory of semiconductors.

OR

b What is intrinsic semiconductor and explain its characteristics?

17 a Differentiate between static and dynamic resistance.

OR

b Explain in detail about the reverse recovery time.

18 a Classify the types of transistors and explain about the CB configuration in detail.

OR

b Elucidate about the depletion type MOSFET and its working.

19 a Enumerate the Characteristics of LED.

OR

b Highlight the basics of opto couplers.

20 a Explain the theory of schottky barrier diode.

OR

b What is MOV? Explain its construction and working.