

Total No. of Questions : 5]

SEAT No. :

PA-998

[Total No. of Pages : 2

[5902]-15

F.Y. B.Sc. (Computer Science)

ELECTRONICS

ELC-111 : Semiconductor Devices and Basic Electronic Systems

(2019 Pattern) (Semester - I) (CBCS)

Time : 2 Hours]

[Max. Marks : 35

Instructions to the candidates:

- 1) Question 1 is Compulsory.
- 2) Solve any three questions from Q.2 to Q.5.
- 3) Figures to the right indicate full marks.
- 4) Draw neat diagrams wherever necessary.
- 5) Question 2 to 5 carry equal marks.

Q1) Solve any five of the following.

[5×1=5]

- a) Draw circuit symbol of photodiode.
- b) What is full form of MOSFET.
- c) For transistor $\alpha = 0.98$, find the value of β .
- d) List any two application of solar cell.
- e) State any two types of MOSFET.
- f) State two conditions of Barkhausen criteria.

Q2) A) Attempt any two of the following.

[2×3=6]

- a) Explain the working principle of LED in detailed.
- b) Compare half wave and full wave Rectifier.
- c) With neat diagram, Explain working of n-channel DEMOSFET.

B) Define α and β . Derive the relation of α interms of β .

[1×4=4]

P.T.O.

- Q3) A) Attempt any two of the following. [2×3=6]**
- a) Compare CB, CE and CC Configuration of transistor. (any three points)
 - b) Explain working Principle of Astable multivibrator.
 - c) With the help of diagram, explain 2-bit flash ADC.
- B) Draw the block diagram of Regulated power supply and explain each block in detail. [1×4=4]**

- Q4) A) Attempt any two of the following. [2×3=6]**
- a) Draw and explain I-V characteristics of forward bias PN-Junction diode.
 - b) Write a short note a SMPS.
 - c) Define the following parameter of DAC
 - i) Accuracy
 - ii) Resolution
 - iii) Linearity
- B) Explain the working of N-P-N transistor in detail. [1×4=4]**

- Q5) Attempt any four of the following. [4×2.5=10]**
- a) Explain the working principle of optocoupler.
 - b) Draw the diagram for drain characteristic of n-channel E-MOSFET
 - c) Define the terms w.r.t. power supply.
 - i) Ripple Factor.
 - ii) Peak Inverse voltage.
 - iii) Load Regulation.
 - d) In Wien bridge Oscillator $R = 2k\Omega$ $C = 0.52 \mu f$ calculate the frequency of oscillator.
 - e) Calculate the analog output for 4 bit R - 2R ladder DAC for input Assume logic 0 = 0v Logic 1 = 1v
 - i) 1001
 - ii) 1101
 - f) State the applications of ADC.

