Progressive Education Society's
Modern College of Arts, Science & Commerce Ganeshkhind, Pune – 16
End Semester Examination: Jan.2022
Faculty: Science and Technology

Program:B.Sc. **Semester: I** **SET: A**
Program (Specific):B.Sc(Computer Science) **Course Type: CC**
Class: FYBSc(Computer Science) **Max.Marks: 35**
Name of the Course:Semiconductor Devices and Basic Electronic Systems
Course Code:22-ELC-111 **Time: 2Hr**
Paper: I

Instructions to the candidate:

1) *There are 4 sections in the question paper. Write each section on separate page.*
2) *All Sections are compulsory.*
3) *Figures to the right indicate full marks.*
4) *Draw a well labelled diagram wherever necessary.*

SECTION: A

Q.1) Define or Explain **[5 Marks]**

I. Intrinsic Semiconductor
II. Barrier Potential
III. α of BJT
IV. Rectification
V. Resolution of DAC

Q2) Answer the following (Attempt any 4 out of 6) **[4 Marks]**

I. Draw the symbol of NPN and PNP transistor
II. What is the role of filter circuit in Power Supply ?
III. What is an opto-coupler?
IV. Which type of ADC is the fastest ADC?
V. List different configurations of BJT.
VI. For a BJT , α =0.96 , I_E =4mA .Calculate I_C

SECTION: B

Q3) Answer in brief (Attempt any 2 out of 3) [8 Marks]

I. Illustrate the working of Bridge rectifier with neat diagram.
II. What do you mean by UPS? Describe the working of On-Line UPS.
III. Summarize the working of successive approximation ADC with its block diagram.

SECTION: C

Q4) Answer in brief (Attempt any 2 out of 3) [8 Marks]

I. Draw the block diagram of regulated power supply and explain the role of each block in it.
II. Summarize the working of reverse biased PN junction diode along with its I-V characteristics
III. Explain the working of Wein Bridge Oscillator.

SECTION: D

Q5) Answer in details (Attempt any 2 out of 4) [10 Marks]

I. What are voltage regulators? State different types of voltage regulators.
II. What is multivibrator ? Explain the working of astable multivibrator using IC 555.
III. For a 4 bit R-2R ladder DAC ,determine the following
   a) The weight assigned to LSB
   b) The change in the output voltage due to change in LSB.
   c) Analog output voltage for digital input of 1100 (Assume Logic '0' = 0V and Logic '1' =10 V)
IV. Compare BJT and MOSFET .
