# F.Y.B.Sc. (Computer science)
## ELECTRONIC SCIENCE
### ELC - 111: Semiconductor Devices and Basic ElectronicSystems (Backlog)
### (CBCS) (2019 Pattern) (Semester - I) (Paper - I)

[Time: 2 Hours]                                                                                 [Max. Marks: 35]

**Instructions to the candidates:**
1) Q.1 is compulsory.
2) Solve any three questions from Q.2 to Q.5.3)
   Questions 2 to 5 carry equal marks.
4) Draw neat labeled diagrams wherever necessary.

**Q1)** Solve any five of the following:                                              [5 × 1 = 5]
   a) Draw symbols for :
      i) LED.
      ii) Zener diode.
   b) What is full form of MOSFET?
   c) What is ripple in rectifier?
   d) State two conditions of Barkhausen criteria.
   e) State the name of fastest ADC.
   f) "MOSFET is unipolar device" state true or false.

**Q.2)** **A) Attempt the following:**
   i) Compare half and full wave rectifier.                                              [3]

   ii) Explain working principle of astable multivibrator.                               [3]

   B) Explain construction and working principle of LED.                                [4]

*Q.3)* **A) Attempt the following:**

   i)   With neat diagram explain working of in n-channel the DEMOSFET. **[3]**

   ii)  Compare CB, CE and CC configuration of transistor (any three).    **[3]**

  **B)** Calculate the analog output for 4 bit R-2R ladder DAC for input assume logic 0= 0V, logic 1= 1V.

   (i) 1001      (ii) 0001      (iii) 1010      (iv) 1000      **[4]**

*Q.4)* **A) Attempt the following:**

   i)  Define the following terms with respect to power supply:

     (1) Ripple factor   (2) Peak inverse voltage   (3) Load regulation.    **[3]**

   ii)  An astable 555 multivibrator has $R_A$=9.6 k$\Omega$, $R_B$=7.2k$\Omega$ and

     C = 0.01$\mu$f what is the output frequency.    **[3]**

  **B)** Explain working of N-P-N transistor in detail.    **[4]**

*Q.5)* **Attempt any four of the following:**      **[4 × 2.5 = 10]**

   a)    Write a short note on solar cell.

   b)    Explain working of BJT as a switch.

   c)    Draw the diagram of drain characteristics of n-channel EMOSFET.

   d)    Write a short note on Zener diode as a voltage regulator.

   e)    In wein bridge oscillator R =2k$\Omega$, C=0.51$\mu$f calculate the frequency of oscillator.

   f)    State the application of ADC.

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