



**JAF-003-0493002**

Seat No. \_\_\_\_\_

**B. Sc. / M. Sc. (Applied Physics) (Sem. III) (CBCS)  
Examination**

November - 2019

**X - Applied Electronics  
(New Course)**

**Faculty Code : 003**

**Subject Code : 0493002**

Time :  $2\frac{1}{2}$  Hours]

[Total Marks : 70

- Instructions :** (1) All questions are compulsory.  
(2) Figures on the right side indicate marks.

- 1** Attempt any **seven** short questions : (two marks each) **14**
- (1) State the De Morgan's Law.
  - (2) Draw the four terminal symbol of n channel E-MOSFET.
  - (3) Draw the truth table of XOR gate.
  - (4) Give the difference between BJT and FET.
  - (5) Write inverse law.
  - (6) Give the principle of Schottky diode.
  - (7) Convert  $(111011)_2$  into decimal.
  - (8) What is the difference between Photodiode and Photoconductive cell ?
  - (9) What is Boolean Algebra ?
  - (10) What are the features of CRO ?
- 2** (a) Write answers of any **two** : **10**
- (1) What are Logic Gates? Explain all the type of Gates with neat diagram and truth table.
  - (2) Write truth table of BCD to Seven Segment display with suitable diagram.
  - (3) Write short note on SR and JK flip-flop.
  - (4) Write a short note on Sequential Circuit with suitable example.
- (b) Write answer of any **one** : **4**
- (1) Solve it using K-Map :  $Y = AB + A(B+C) + B(B+C)$
  - (2) Convert the below number...
    - (i)  $(49)_{10} - (?)_2 = (?)_8 = (?)_{16}$
    - (ii)  $(1110111)_2 = (?)_{10} = (?)_8 = (?)_{16}$

- 3 (a) Write answers of any **two** : 10
- (1) Discuss the transfer characteristics of JFET.
  - (2) Describe basic construction of Enhancement type MOSFET.
  - (3) Describe the construction and characteristic of depletion type MOSFET.
  - (4) Explain voltage divider biasing in depletion type MOSFET.
- (b) Write answer of any **one** : 4
- (1) Explain feedback-biasing arrangement in E-MOSFET.
  - (2) Write the characteristics of Enhancement type MOSFET with neat diagram.
- 4 (a) Write answers of any **two** : 10
- (1) Describe principle and working of the thermistor. Give its application.
  - (2) Write the application of IR emitter, Photodiode and Solar cell.
  - (3) Explain the Varacter Diode with suitable schematic diagram.
  - (4) What is hot carrier diode? Explain the construction and Working.
- (b) Write answer of any **one** : 4
- (1) Write short note on LCD.
  - (2) Write short note on photoconductive cell.
- 5 (a) Write answers of any **two** : 10
- (1) Describe the basic construction of CRO display.
  - (2) Explain the shunt voltage regulation.
  - (3) What are VMOS and CMOS? Explain with neat diagram.
  - (4) Explain the Series voltage regulation circuits.
- (b) Write answers of any **one** : 4
- (1) Write short note on voltage swiipe operation and triggering in CRO.
  - (2) Write short note on IC as Voltage regulator.