

Roll No.

Total No. of Pages : 02

Total No. of Questions : 09

**B.Tech. (Agriculture Engg.) (Sem.-6)**  
**ANALOG ELECTRONICS AND INSTRUMENTATION**

Subject Code : BTAG-602-19

M.Code : 91600

Date of Examination : 05-07-22

Time : 3 Hrs.

Max. Marks : 60

**INSTRUCTIONS TO CANDIDATES :**

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

**SECTION-A**

**1. Write briefly :**

- a) Explain the need of a biasing circuit.
- b) What do you mean by ripple factor? Discuss.
- c) Write down the ideal characteristics of an Op-Amp.
- d) What do you mean by combinational circuit? Explain.
- e) Discuss the principle of LVDT.
- f) Write down the basic requirements for the oscillation to occur.
- g) How Boolean algebra is different from ordinary algebra? Explain.
- h) Draw the logic symbol and truth table of AND gate.
- i) What is the need of A/D converter? Explain.
- j) Write down the advantages of CE amplifier.

## SECTION-B

2. Draw the circuit diagram and explain the working of full wave rectifier using bridge connections. Explain why a bridge rectifier is preferred over center- tap rectifier.
3. Discuss the working of an operational amplifier as integrator and subtractor.
4. Reduce  $F(d, c, b, a) = \sum m(1, 2, 5, 6, 7, 8, 9, 10, 12)$  to the simplest possible form using K-Map method.
5. What is instrumentation? With the help of block diagram, explain the different components of a generalized measurement system.
6. Draw the circuit diagram and explain the working of binary ladder D/A converter.

## SECTION-C

7. Draw the circuit diagram and explain in detail about differential and instrumentation amplifiers.
8.
  - a) Explain the principle and working of zener diode. Also, discuss how it can work as a voltage regulator.
  - b) What is the need of an oscillator? Discuss phase shift oscillator in detail.
9. Explain the following :
  - a) Clipping and Clamping Circuits.
  - b) Strain gauge for the measurement of pressure.

**NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.**