Roll No. .....

OLE-24004

B. Tech. 1st Semester
(Common for All Branches)
Examination – April, 2021

BASICS OF ELECTRONICS

Paper : ECE-101-F

Time : Three Hours] ***[Maximum Marks : 100***

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

Note : Attempt ***five*** questions in all, selecting ***one*** question from each Section. Question No. **1** is ***compulsory***. All questions carry equal marks.

1. (a) Explain the necessity of doping.

(b) Difference between Diffusion and Drift current.

(c) Explain conditions for oscillation.

(d) Difference between ON-line and OFF line UPS.

(e) Write down the characteristics of ideal OP-Amp.

(f) Why feedback is required ? And where +ve feedback is required.

(g) What is graticule ?

(h) Define datch and flip flop.

(i) Why is the efficiency of SMPS high ?

(j) Convert Hexa-decimal number $(DFCF)_{16}$ into Octal Number.With procedure. $2 \times 10 = 20$

SECTION – A

2. (a) What is a p-n junction ? Explain the formation of potential barrier in a p-n junction ? 10

(b) What is meant by biasing of a p-n junction diode ? Why is it necessary ? Also explain the V-I characteristics of junction diode. 10

3. (a) A multistage amplifier employs five stages each of which has a power gain of 30. (i) What is the total gain of the amplifier in db ? (ii) If a negative feedback of 10 db is employed, find the resultant gain. 10

(b) Explain transistor R-C coupled amplifier with special reference to frequency response, advantages, disadvantages and applications. 10

SECTION – B

4. (a) Explain the principle of Wein bridge Oscillator Circuit. Explain why negative feedback in addition to the usual positive feedback is employed in Wein bridge Oscillator. 10

(b) Describe the crystal oscillator. What is the advantage of a crystal oscillator over an LC oscillator. 10

5. (a) Describe working principle of inverter and its applications. 10

(b) What is UPS ? Explain in brief UPS ONLINE and OFF LINE mode. 10

SECTION – C

6. (a) Draw the basic block diagram of CRT and explain its working. 10

(b) Describe analog and digital multimeter and its importance and applications. 10

7. (a) What is SR flip-flop ? Give its truth table. Explain how a flip-flop can be obtained by using two single-input NAND gates. Name some other types of flip-flop. 10

(b) Convert the following : $2 \times 5 = 10$

(i) $(8AB4.01)_{16}$ into Octal.

(ii) $(754.32)_8$ into Decimal.

(iii) $(1094.45)_{10}$ into Hexadecimal.

(iv) $(101110011.00)_2$ into Decimal.

(v) $(0.625)_{10}$ into Binary.

SECTION – D

8. (a) Discuss with a neat diagram, a method of realising a 7 segment numeric display using LEDs. 10

(b) Draw a structure of a LED and explain its operation. What are the conditions to be satisfied by the device for emission of visible light ? 10

9. (a) Explain how numeric and alpha numeric characters are displayed using dot matrices. 10

(b) Differentiate between transmitting and refractive type LCD. Write advantages of LCD display. 10