K20U 0319

Reg. No. : .....

Name : .....

II Semester B.Sc. Degree (CBCSS – Supplementary/Improvement) Examination, April 2020
CORE COURSE IN PHYSICS
2B02 PHY : Electronics – I
(2014-2018 Admissions)

Time : 3 Hours

Max. Marks : 40

SECTION – A

All questions are to be answered – Very short answer type – **Each** question carries **1** mark.

1. The base of a transistor is _____ doped.
2. A JFET is a _____ driven device.
3. Convert 4265_8 into binary.
4. With a NAND latch a low R and a low S produce a _____ condition.

SECTION – B

7 questions are to be answered. Short answer questions – **Each** question carries **2** marks.

5. What is faithful amplification ? What are the basic conditions in order to obtain the same ?
6. State De Morgan's theorem.
7. What do you mean by overflow and underflow ?
8. What is the need of biasing a transistor ?
9. What is the difference between JFET and bipolar transistor ?
10. Why NAND gate is called a universal gate ?

P.T.O.

11. What is pinch off voltage in JFET ?

12. Explain AND gate with 2 input terminals.

13. What is the decimal number for 1111.01 ?

14. What do you mean by operating point ?

SECTION – C

Four questions are to be answered – Short essay/problem type – **Each** question carries **3** marks.

15. What is meant by dc load line of a transistor circuit ? Explain saturation region, cutoff region and active region of a transistor characteristics.

16. Explain the function of XOR gate with the help of a diagram. Draw the truth table for a 3-input XOR gate.

17. What is meant by odd parity and even parity ?

18. The device parameters for n-channel JFET are : Maximum current I_{DSS} = 10 mA, pinch off voltage $V_p = -4V$. Calculate the drain current for V_{GS} = 0, –10 V, –4V.

19. In a transistor circuit, collector load is 4 kΩ where as the zero signal collector current is 1 mA. Calculate (a) the operating point if V_{CC} = 10 V (b) What will be the operating point if R_{CC} = 5 kΩ.

20. The collector leakage current in a transistor is 250 μA in CE arrangement. If the transistor is connected in CB arrangement, what will be the leakage current ? Given β = 100.

SECTION – D

Two questions are to be answered – Long essay type – **Each** question carries **5** marks.

21. Explain the working and characteristics of CE amplifier.

22. Explain construction and working of a JFET.

23. Describe positional number system. What is the general form of a positional number system ? Explain binary, decimal and hexadecimal number system.

24. Explain the working of half adder and full adder using logic gates.