K19U 0274

Reg. No. : .....

Name : .....

II Semester B.Sc. Degree (CBCSS – Reg./Supple./Improv.) Examination, April 2019
(2014 Admission Onwards)
CORE COURSE IN PHYSICS
2B02 PHY : Electronics – I

Time : 3 Hours Max. Marks : 40

***Instruction** : Write answers in **English** only.*

SECTION – A

Answer **all** – Very short answer type – **Each** question carries **one** mark.

1. The parameter which controls the JFET is _____ voltage.
2. $(11001)_2$ = _____
3. The phase difference between the input and output voltages of a transistor connected in common emitter arrangement is _____
4. _____ is a universal gate.

SECTION – B

Answer **any seven** – Short answer type – **Each** question carries **two** marks.

5. What are the essentials of a transistor biasing circuit ?
6. What are the different types of biasing used in transistors ?
7. Derive the relation between α and β.
8. Compare BJT and JFET.

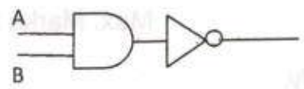
9. Explain the working of XOR gate with a circuit diagram.

10. Why a JFET has high input impedance ?

11. Convert the decimal number 133 into binary equivalent.

12. What is positional number system ?

13. What is the Boolean equation for the output of figure below ? What is the output if one of the inputs is high ?



14. Explain signed numbers.

SECTION – C

Answer **any four** – Short essay/problem type – **Each** question carries **three** marks.

15. 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 ?

16. What are the JFET parameters ? Obtain a relation between them.

17. A JFET has a drain current of 5 mA. If I_{DSS} = 10 Ma and V_{GS} (Off) = –6V, find the value of V_{GS} and V_P.

18. For a single stage transistor amplifier, the collector load R_C = 2KΩ and i/p resistance R_i = 1KΩ. If the current gain is 50, calculate the voltage gain of the amplifier.

19. Which are the basic logic gates ? Explain them with proper diagram and truth table.

20. Convert decimal 65535 to its hexadecimal and hexadecimal to binary equivalents.

SECTION – D

Answer **any two** – Long essay type – **Each** question carries **five** marks.

21. Explain the CE characteristics of a transistor. Draw input and output characteristics.

22. Explain the construction and working of a JFET.

23. Explain universal gates with proper diagram and truth table. Also prove de-Morgan's theorem.

24. Write short notes on :
    i) Binary numbers.
    ii) Hexadecimal numbers.
    iii) Octal numbers.