19U510 (Pages: 2) Name: .....

Reg.No: .....

FIFTH SEMESTER B.Sc. DEGREE EXAMINATION, NOVEMBER 2021

(CBCSS - UG)

CC19U PHY5 B09 - ELECTRONICS (ANALOG AND DIGITAL)

(Physics - Core Course)

(2019 Admission - Regular)

Time : 2.00 Hours Maximum : 60 Marks

Credit : 3

Part A (Short answer questions)

Answer ***all*** questions. Each question carries 2 marks.

1. What are the advantages of a full wave rectifier?
2. Explain how the capacitor input filter removes ripple in the output of rectifier.
3. Explain the importance of operating point of a transistor.
4. What is stability factor?
5. Draw the ac equivalent circuit of a single stage transistor amplifier.
6. Why is transformer coupling used in the final stage of a multistage amplifier?
7. Why is an amplifier circuit necessary in an oscillator?
8. What are the advantages of a phase shift oscillator?
9. What are pairs, quads and octets in Karnaugh Map?
10. An op-amp can be used as a differentiator. Explain
11. What are the advantages of using 2's complement?
12. What is the function of half-adder? Mention its Truth Table.

(Ceiling: 20 Marks)

Part B (Short essay questions - Paragraph)

Answer ***all*** questions. Each question carries 5 marks.

13. Draw the circuit diagram of voltage doubler circuit, and expalin its working.

14. Derive expressions connecting three current amplification factors, α, β and γ

15. A two stage amplifier has first stage voltage gain 40 and second stage voltage gain 100. Find the total decibel gain.

16. When negative voltage feedback is applied to an amplifier of gain 100, the overall gain falls to 50. (i) Calculate the fraction of the output voltage feedback. (ii) if this fraction is maintained, calculate the value of the amplifier gain required if the overall stage gain is to be 75.

17. Convert (a) 72.16 into binary (b) 11101101 to hexadecimal.

18. State and prove De Morgans theorems.

19. Discuss the working of a JK flip-flop.

(Ceiling: 30 Marks)

Part C (Essay questions)

Answer any ***one*** question. The question carries 10 marks.

20. Explain, with neat diagram, the working of a two stage R-C coupled amplifier. Drew the frequency response curve.

21. What are universal gates? Explain how to construct all basic gates using universal gates.

(1 × 10 = 10 Marks)

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