



K24U 2762

Reg. No. :

Name :

**V Semester B.Sc. Degree (C.B.C.S.S. – O.B.E. – Regular/Supplementary/
Improvement) Examination, November 2024
(2019 to 2022 Admissions)
CORE COURSE IN PHYSICS
5B09PHY : Electronics – II**

Time : 3 Hours

Max. Marks : 40

PART – A

Short answer questions. Answer **all** questions. **Each** question carries **1** mark.

1. Define Slew rate of an OPAMP.
2. Write the expression for frequency of Wien bridge oscillators.
3. Write any important characteristics of Emitter Follower.
4. Sketch the logic circuit of the AB+ACD.
5. The inputs to an XOR gate is 1, and 0, the output will be
6. The purpose of a coupling capacitor in transistor amplifier is **(6×1=6)**

PART – B

Short essay questions. Answer **any 6** questions. **Each** question carries **2** marks.

7. Mention the essential conditions to be satisfied by an oscillator circuit.
8. Discuss the operation of an Op-amp differentiator.
9. Write down four characteristics of an ideal Op-amp.
10. Sketch the circuit two stage direct coupled CE amplifier.
11. Draw the logic symbol of Full-Adder and write its truth table.
12. Mention any three important characteristics of emitter current feedback.
13. What is Quad and Octet in KMAP ?
14. Sketch the h-parameter equivalent circuit of CE circuit. **(6×2=12)**

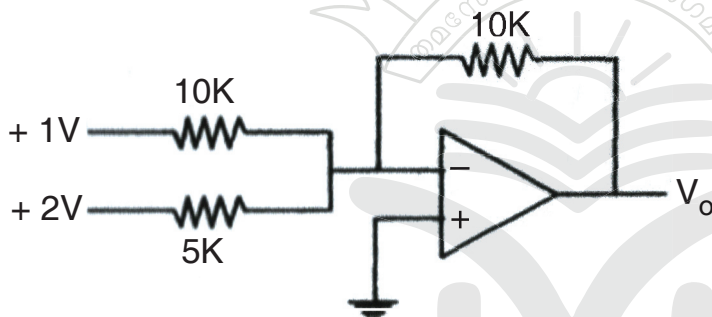
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PART – C

Problems. Answer **any 4** questions. **Each** question carries **3** marks.

15. Differentiate encoder and decoder. Design a 4-bit decoder.
16. An Op-amp Hartley oscillator has two inductors with $L_1 = 5 \text{ mH}$, $L_2 = 40 \text{ mH}$ and total inductance of $L_T = 50 \text{ mH}$. Determine the capacitance value to give $f = 2.25 \text{ kHz}$. Calculate the required amplifier voltage gain.
17. Explain frequency response curve of single stage CE amplifier.
18. What is the output voltage V_o of the figure ?



19. Develop a truth table for each of the following standard SOP expressions and convert corresponding POS expression $Y = AB'C + A'B'C + A'B'C' + AB'C'$.
20. Briefly explain with a neat circuit action of a transformer coupled class A amplifier. (4×3=12)

PART – D

Long essay questions. Answer **any 2** questions. **Each** question carries **5** marks.

21. Construct inverting and non-inverting amplifiers and summing amplifier using Op-amp. Obtain the gain.
22. Sketch the circuit of a two-stage capacitor coupled common emitter BJT amplifier. Explain its operation. What is overall gain of the amplifier ?
23. With a neat sketch illustrate the principle of series voltage negative feedback and briefly explain. Obtain the expression for voltage gain of an amplifier. Also comment on input impedance and output impedance and bandwidth of the amplifier.
24. Explain Karnaugh map. Explain how Karnaugh map is used for SOP minimization. Map the following functions using three variable K-Map and simplify it.
 $f(A, B, C) = A'B'C' + A'B'C + A'BC' + ABC' + ABC = \Sigma (0, 1, 2, 6, 7)$. (2×5=10)