



25802165

QP CODE: 25802165

Reg No :

Name :

INTEGRATED MSC DEGREE EXAMINATION, APRIL 2025

Second Semester

INTEGRATED MSC BASIC SCIENCE-PHYSICS

CORE - IPH2CR03 - DIGITAL ELECTRONICS AND COMMUNICATION

2021 Admission Onwards

29F77133

Time: 3 Hours

Weightage: 30

Part A (Short Answer Questions)

Answer any *eight* questions.

Weight *1* each.

1. Define minterm and maxterm.
2. Give an example of a Boolean function in Non standard form .
3. What is a full subtractor circuit?
4. What are the applications of Multiplexer?
5. What is JK flip flop?
6. What is a register?
7. What is modulation?
8. Why AM detector is called envelope detector?
9. What is PPM?
10. What is the value of intermediate frequency for AM wave?

(8×1=8 weightage)

Part B (Short Essay/Problems)

Answer any *six* questions.

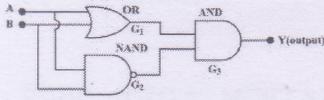
Weight *2* each.

11. What are main logic gates? How many types are they? Draw their symbols and Truth Table.





12. The following logic diagram shows a equivalent circuit diagram of a logic gate, its input signal (A, B) and the output signal(Y). Identify the gate, write its truth table and draw its logic symbol.



13. State First De-Morgan's theorem and implement the logic circuit for the same. Find the complement of the function $Y=AB+CD$, $Y=AB+CD$, then show that $Y+Y'=1$
14. Explain 3 to 8 decoder circuit diagram.
15. Draw the logic circuit and truth table for a clocked T flip-flop. Explain its operation.
16. Why do you need to convert analog to digital? Explain any one of the ADC.
17. A 100MHz carrier is frequency modulated by 10 kHz wave. For a frequency deviation of 50 kHz, calculate the modulation index of the FM signal.
18. What is the need of pre and de emphasis circuits? Explain.

(6×2=12 weightage)

Part C (Essay Type Questions)

Answer any **two** questions.

Weight 5 each.

19. Simplify the following expressions using K-map $F=ABCD+AB'C'D'+AB'C+AB$ and realize the SOP using only NAND gate and POS using only NOR gate.
20. Draw and explain the binary full adder. Realize the implementation of full adder using a pair of half adders. Also draw the truth table.
21. What is amplitude modulation? Derive the expression for an AM signal.
22. Draw the circuit diagrams of slope detector and phase discriminator and compare their performances. Explain their demerits and how they are overcome.

(2×5=10 weightage)

