24803774

QP CODE: 24803774

Reg No : .....

Name : .....

INTEGRATED MSC DEGREE EXAMINATION, JUNE 2024

Second Semester

INTEGRATED MSC BASIC SCIENCE-PHYSICS

CORE - IPH2CR03 - DIGITAL ELECTRONICS AND COMMUNICATION

2021 Admission Onwards

9DCE4744

Time: 3 Hours Weightage: 30

Part A (Short Answer Questions)

*Answer any **eight** questions.*

*Weight **1** each.*

1. State Huntington postulates.
2. State the duality theorem.
3. What is the Boolean expression for a full adder?
4. What is a half subtractor circuit?
5. What is the working principle of encoder?
6. What are the application of counters?
7. Give two methods for the generation of FM wave.
8. Which is the active component used in the detection of AM wave?
9. What is the need of pre-emphasis and de-emphasis in a communication system?
10. What is meant by analog pulse modulation?

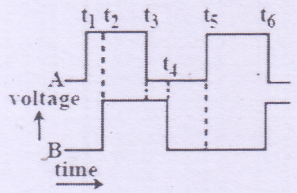
(8×1=8 weightage)

Part B (Short Essay/Problems)

*Answer any **six** questions.*

*Weight **2** each.*

11. The waveforms A and B given below are given as input to a NAND gate. Draw its output waveform.



12. Discuss the canonical forms of Boolean function.

13. Simplify the expression F=A'B'C'+A'B'C+A'C' and implement it using only NAND gates.

14. Draw and explain the block diagram of 2's complement adder/subtractor

15. Draw and explain the circuit diagram of 1 to 8 demultiplexer.

16. With neat sketches of logic diagram and timing diagrams, explain the operation of master-slave JK flip-flop.

17. Define amplitude modulation. Derive the expression for AM wave and modulation index.

18. With Circuit diagram explain AM generation.

(6×2=12 weightage)

Part C (Essay Type Questions)

*Answer any **two** questions.*

*Weight **5** each.*

19. Explain with equivalent circuit, definition, symbol and truth table of basic Gates.

20. Explain the principle of D/A converters. Explain D/A converter using R-2R ladder network. What are the applications of DAC?

21. Explore the future prospects and potential advancements in modulation and demodulation techniques, considering the evolving needs of communication technology and the increasing demand for faster and more reliable data transmission.

22. With necessary wave forms explain freqrency modulation. Discuss the modulation index.

(2×5=10 weightage)