

25900357

Reg.No :

Name :

MAHATMA GANDHI UNIVERSITY, KOTTAYAM
MGU-UGP (HONOURS) Regular EXAMINATION October 2025
Third SEMESTER
Discipline Specific Core Course (DSC) - MG3DSCECT204 - DIGITAL
FUNDAMENTALS
(2024 ADMISSION ONWARDS)

Duration: 1 Hour 30 Minutes

Maximum Marks: 50

*Remember(K), Understand(U), Apply(A), Analyse(An), Evaluate(E), Create(C), Skill(S), Interest(I)
and Appreciation(Ap)*

Students should attempt at least one question from each course outcome to enhance their overall outcome attainability.

Part A

Multiple Choice Questions

Answer all questions

Each question carries 1 marks

1. Convert $(A2)_{16}$ to decimal. [U] / [CO1]
a). 160 b). 161 c). 162 d). 163

2. A sequential circuit requires memory with no undefined state and minimal design complexity. Which flip-flop would you recommend? [U] / [CO2]
a). RS b). JK c). T d). D

3. State the role of a Programmable Interrupt Controller (PIC). [U] / [CO3]
a). To manage memory allocation
b). To handle interrupt requests and prioritize them
c). To execute system calls
d). To perform context switching

4. Identify the output of an XNOR gate when both inputs are the same. [U] / [CO1]
a). 1 b). 0

Answer any **4** questions

Each question carries **5** marks

11. Discuss the alternative method to find the 2's complement method with an example. [U] / [CO1]
12. A user saves a document in a computer, but when power is turned off, the data disappears. Apply the concept of memory types to identify which type of memory was used and suggest a suitable alternative. [U] / [CO2]
13. Identify and explain the two processor registers that is used to transfer data between memory and processor . [U] / [CO3]
14. Illustrate the working of a half adder circuit and truth table. [K] / [CO2]
15. Explain the working of PIPO shift register [U] / [CO2]
16. List the advantages of flash memory. [K] / [CO3]

[5x4 = 20]

Part C

Essay Questions

Answer any **2** questions

Each question carries **10** marks

17. Discuss advantages, disadvantages and applications of BCD representation in computers. [U] / [CO1]
18. Design a circuit to implement a 3 to 8 decoder considering active high logic. [U] / [CO2]
19. List the mapping techniques used in cache memory. [K] / [CO3]

[10x2 = 20]