

Anjuman Islam Janjira Degree College of Science Murud-Janjira, Raigad-402401 Affiliated to University of Mumbai	
Class: -F.Y.B.Sc. (C.S)	Subject: - : Digital Systems & Architecture
Semester:- I	Vertical:- Major(MJ1)
Exam Event:- (SH) Winter 2025	Marks: - 30
Date: - 06/11/2025	Duration: - 01:00 Hours

- N.B. –**
- 1 – All questions are compulsory.**
 - 2 – All questions have internal choice.**
 - 3 – Figures to the right indicate full marks.**



Q1. Answer the following question. (Any 2 out of 4)

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- 1) Create a circuit diagram for the expression $Y=(A+B).(A+C).(B+C')$.
- 2) Difference between synchronous and asynchronous counter.
- 3) Draw basic logic gates and give their algebraic function along with truth table.
- 4) Explain the concept of half adder and subtractor.

Q2. Answer the following question. (Any 2 out of 4)

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- 1) Use the LRU and Optimal page replacement algorithm and find page hit and miss for the following reference string: 2,3,3,1,5,2,4,5,3,2,5,2 (consider 3 frames).
- 2) Describe any three addressing modes.
- 3) Difference between SRAM and DRAM.
- 4) What are the applications of microprogramming?

Q3. Answer the following question. (Any 2 out of 4)

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- 1) Write a note on input unit and output unit in brief.
- 2) Define full adder along with truth table and circuit diagram.
- 3) Create basic instruction cycle and describe its working.
- 4) What is flash memory?