POSSESION OF MOBILES IN EXAM IS UFM PRACTICE.

Name _____ **Enrolment No.** 37

Jaypee Institute of Information Technology, Noida
T2 Examination, Even Semester 2024
B.Tech, IVth Semester

Course Title : Digital Systems **Maximum Time : 1 hr**
Course Code : 18B11EC213 **Maximum Marks: 20**

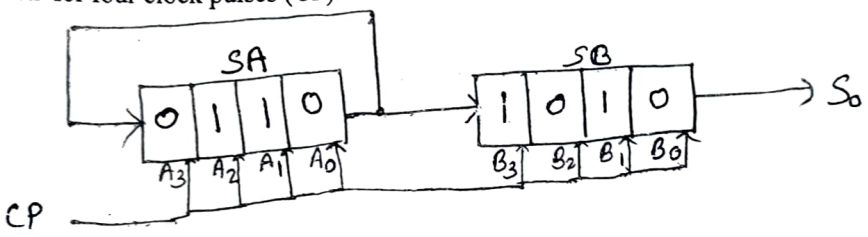
After pursuing the above-mentioned course, student will be able to:

CO1	Understand the fundamentals of number system, Boolean algebra and Boolean function minimization techniques.	Understanding Level (C2)
CO2	Applying the concepts of Boolean algebra to implement combinational circuits and flip flops using logic gates	Applying Level (C3)
CO3	Analyse state diagram and construct sequential logic circuits using flip flops. Also, classify the signals and systems and analyse the signals using Fourier transform.	Analysing Level (C4)
CO4	Understand various steps involved in digitization and transmission of a signals and evaluate their performance parameters	Evaluating Level (C5)

Note: Attempt all the questions.

Q1. Convert JK to SR flip flop. Show all conversion steps. **[CO2 (Applying), 5 Marks]**

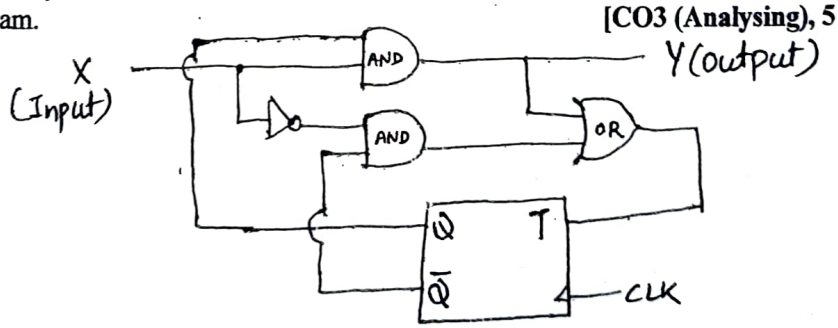
Q2. **(a)** For the given circuit, define the output (S_o) and state of the shift registers SA and SB for four clock pulses (CP).



(b) Design Mod-10 asynchronous up counter.

[CO3 (Analysing), 3+2 Marks]

Q3. Analyse the following synchronous sequential circuit using state table and state diagram. **[CO3 (Analysing), 5 Marks]**



Q4. **(a)** Determine whether the following signals are periodic or not. If periodic, then find out the fundamental time period: **[CO3 (Analysing), 3+2 Marks]**

(i) $4u(t) + 2\sin(\frac{3}{2}t)$ (ii) $1 + 10\sin 5t - 4\cos 9t$

(b) Determine energy and power of the following signal:

$x(t) = e^{-4t}u(t)$