
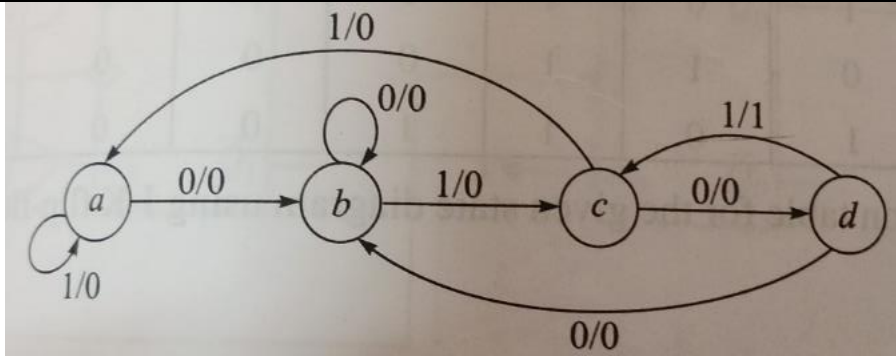


Name:			
Enrolment No:			
<b>UNIVERSITY OF PETROLEUM AND ENERGY STUDIES</b> <b>End Semester Examination, December 2022</b>			
<b>Course: Digital System Design</b> <b>Program: B.Tech Electronics and Communication</b> <b>Course Code: ECEG2037</b>		<b>Semester: III</b> <b>Time : 03 hrs.</b> <b>Max. Marks: 100</b>	
<b>Instructions:</b>			
<b>SECTION A</b> <b>(5Qx4M=20Marks)</b>			
S. No.		Marks	CO
Q 1	A transmitter uses a single error-correcting code for the message using even parity. The message received at the receiving end is 1110101. Check and correct the error	4	CO1
2	Minimize the following logic function using K-Map $Y(A,B,C,D)=\sum m(0,1,2,3,5,7,8,9,11,14)$	4	CO2
3	Implement the following expression using a single 8:1 multiplexer $Y(A,B,C,D)=\sum m(0,2,3,6,8,9,12,14)$	4	CO3
4	Draw the logic circuit of J-K flipflop using D flipflop.	4	CO2/CO 4
5	Explain a bidirectional shift register	4	CO2/CO 4
<b>SECTION B</b> <b>(4Qx10M= 40 Marks)</b>			
Q 6	Simplify the following Boolean function : $Y(A,B,C,D,E)=\sum m(0,1,2,3,16,17,18,19)$	10	CO2
7	Design a MOD-12 synchronous counter using T flipflop	10	CO2/CO 4
8	a)Design a two-input TTL NAND gate totemple output with capacitive load b)Explain active and passive pull up	10	CO5
9	a)Design CMOS three input NAND and NOR gate. b)What are the characteristics of CMOS? Define Fan in and Fan out.	10	CO5
<b>SECTION-C</b> <b>(2Qx20M=40 Marks)</b>			
Q 10	a)What do you understand by Moore and Mealy circuit?Design a sequential circuit using J-K flipflops for the state diagram shown below:	20	CO3/CO 4



b) Design a mod 9 ripple counter using T flipflop

Q11	a) Design a circuit to generate the sequence 0-2-5-4-7 avoiding the lock out condition by using J-K flipflop b) Design a sequence generator to generate the sequence 11001011	<b>20</b>	<b>CO3/CO 4</b>
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