Enrolment No. Seat No.: **GUJARAT TECHNOLOGICAL UNIVERSITY** M. E. - SEMESTER - II • EXAMINATION - SUMMER • 2014 Subject code: 1720107 Date: 23-06-2014 **Subject Name: Embedded System** Time: 02:30 pm - 05:00 pm **Total Marks: 70 Instructions:** 1. Attempt all questions. 2. Make suitable assumptions wherever necessary. 3. Figures to the right indicate full marks. Q.1 (a) Explain principle of stepper motor controllers 07 (b) Discuss the advantages and disadvantages of using memory mapped I/O versus standard 07 I/O. 07 Q.2 Discuss functional specification of a digital camera **(a)** Compose 1K x 8 ROMs into a 2K x 16 ROM 07 (b) OR Discuss microcontroller and ccdpp/fixed point dct 07 (b) Q.3 Design a 3-bit counter that counts the sequence 1,2,3,4,5,7,1,2, etc. This counter has an 14 output -oddø whose value is 1 when the current count value is odd. Use the sequential design. Start from a state diagram, draw the state table, minimize the logic and draw the final circuit. OR Q.3 Design a BCD counter which increments every one-second starting from 00 up to 99. 14 When it reaches 99 it should stop. Use timer in the interrupt mode to generate onesecond delay. Measure actual time elapsed. **O.4 (a)** Given a 120 óstep stepper motor with its own controller. Write a C function rotate 07 which given the desired rotation amount in degrees pulses a microcontrollerge output port the correct number of times to achieve the desired rotation. (b) Illustrate how to use a 1K x 8 ROM to implement a 512 x 6 ROM 07 OR (b) Explain ISA bus protocol for memory access 07 **Q.4** Q.5 (a) Explain in detail about UART single ópurpose processor as an FSMD 07 (b) Write a C program to count and show it on the LCD display. 07 0 to 9999 BCD counter OR (b) Write a C program to make a walking one segment from Segment 0 to segment 15. 07 ******