

**DipIETE – ET/CS (Current & New Scheme)**

Time: 3 Hours

**June 2019**

Max. Marks: 100

*PLEASE WRITE YOUR ROLL NO. AT THE SPACE PROVIDED ON EACH PAGE IMMEDIATELY AFTER RECEIVING THE QUESTION PAPER.*

**NOTE: There are 9 Questions in all.**

- Question 1 is compulsory and carries 20 marks. Answer to Q.1 must be written in the space provided for it in the answer book supplied and nowhere else.
- The answer sheet for the Q.1 will be collected by the invigilator after 45 minutes of the commencement of the examination.
- Out of the remaining EIGHT Questions answer any FIVE Questions. Each question carries 16 marks.
- Any required data not explicitly given, may be suitably assumed and stated.

**Q.1 Choose the correct or the best alternative in the following: (10×2)**

- a. The time between the task's execution and the end is called as  
(A) Throughput (B) Latency  
(C) Performance (D) Concurrency
- b. Multiplexer in Combinational components is also called as  
(A) Register (B) Selector  
(C) Decoder (D) Adder
- c. Which of the following steps is not involved in execution of instruction  
(A) Cache Hit (B) Decoding  
(C) Storing (D) None of these
- d. To achieve 75% duty cycle to run a DC motor at 6900 RPM we need to load into the cycle\_high of PWM  
(A) 7FH (B) BFH  
(C) CCH (D) 89H
- e. In EDO DRAM, EDO stands for  
(A) Enhanced Data out (B) Extra Data Out  
(C) Extended Data out (D) None of these
- f. To obtain a duration of 3 microsecond from a clock cycle of 10 nano second, the number of clock cycles required are  
(A) 333 (B) 303  
(C) 300 (D) 330
- g. Priority Arbiters typically uses which of the common scheme to determine priority among peripherals?  
(A) Fixed priority (B) Rotating priority  
(C) Both (A) and (B) (D) None of these

- h. IEEE 1394 has given the specification of following protocol  
 (A) Firewire (B) I<sup>2</sup>C  
 (C) IrDA (D) Bluetooth
- i. Which of the following layer provides IPC in Camera system?  
 (A) Application (B) System  
 (C) Control (D) Base
- j. Which of the following defines the set of instructions loaded into the memory?  
 (A) Process (B) Task  
 (C) Thread (D) System hardware

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**Answer any FIVE Questions out of EIGHT Questions.**

**Each question carries 16 marks.**

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- Q.2** a. State and explain common design metrics of an embedded system. (8)  
 b. Explain the different characteristics of an Embedded system. (8)
- Q.3** a. Explain Scheduler with example. (4)  
 b. Enlist and explain three methods of protecting shared data w.r.t semaphore. (4)  
 c. Explain RTOS semaphore. (4)  
 d. Explain Semaphore as a signaling device. (4)
- Q.4** a. Design a Combinational logic design for a half subtractor. (8)  
 b. Distinguish between Sequential and combinational circuit. (4)  
 c. Explain the purpose of datapath of controller. (4)
- Q.5** a. Explain the concept of pipelining. List the factors of selecting a microprocessor. (8)  
 b. Draw and explain architecture of a simple microprocessor. (8)
- Q.6** a. Explain ATM timeout using a watchdog timer. (6)  
 b. Explain Controlling a DC motor using PWM. (6)  
 c. Explain Stepper motor controlling using a driver. (4)
- Q.7** a. State and explain different cache memory mapping techniques. (8)  
 b. Classify memory. Explain Flash memory in detail. (8)
- Q.8** a. Discuss memory mapped I/O method for communication. (4)  
 b. Describe the following in detail.  
 (i) IrDA (ii) PCI Bus (iii) I2C (4X3)
- Q.9** a. Draw the software architecture of automatic chocolate vending machine (AVCM) (8)  
 b. Explain different software layers in software architecture of a camera. (8)