VTU Connect

Get Inspired, Give Inspiration

Best VTU Student Companion App You Can Get

DOWNLOAD NOW AND GET

Instant VTU Updates, Notes, Question Papers, Previous Sem Results (CBCS), Class Rank, University Rank, Time Table, Students Community, Chat Room and Many More

CLICK BELOW TO DOWNLOAD VTU CONNECT APP IF YOU DON'T HAVE IT

* Visit https://vtuconnect.in for more info. For any queries or questions wrt our platform contact us at: support@vtuconnect.in

Download VTU Connect App Now from Google Play Store

CBCS SCHEME

USN | | | | | | | | | | |

18CS44

Fourth Semester B.E. Degree Examination, Jan./Feb. 2021
Microcontroller and Embedded Systems

Time: 3 hrs. Max. Marks: 100

Note: ***Answer any FIVE full questions, choosing ONE full question from each module.***

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.

Module-1

1 a. Differentiate between RISC and CISC processors. **(06 Marks)**
b. Explain ARM core data flow model, with neat diagram. **(08 Marks)**
c. Explain ARM registers used under various modes. **(06 Marks)**

OR

2 a. Explain the architecture of a typical embedded device based in ARM core, with a neat diagram. **(08 Marks)**
b. Explain the various fields in the current program status register. **(06 Marks)**
c. Discuss the following with diagram :
i) Von Neuman architecture with cache.
ii) Harvard architecture with TCM. **(06 Marks)**

Module-2

3 a. Explain the Barrel Shifter Operation in ARM processor, with neat diagram. **(06 Marks)**
b. Discuss the load store instruction with respect to :
i) Single Register Transfer ii) Multiple Register Transfer. **(08 Marks)**
c. Write the short notes on :
i) Register Allocation ii) Allocation variables to register numbers. **(06 Marks)**

OR

4 a. Write an ALP using ARM instruction to find the factorial of a given number. **(06 Marks)**
b. Explain Instruction scheduling with respect to ARM Processor. **(10 Marks)**
c. Show the post condition when MOVs instruction shifts register r1 left by one bit and result is stored in r0. Where r0 = 0 × 00000000 , r1 = 0 × 80000004 and CPSR = nzcvqiFt. **(04 Marks)**

Module-3

5 a. Differentiate between :
i) Microprocessor and Microcontroller.
ii) Little Endian and Big Endian architecture. **(08 Marks)**
b. With neat block diagram, explain the elements of embedded system. **(06 Marks)**
c. Mention the application of embedded system with example of each. **(06 Marks)**

OR

6 a. Explain the different On board communication interfaces in brief. **(08 Marks)**
b. Write a note on :
i) Reset circuit ii) Watch dog timer. **(06 Marks)**
c. Explain how program memory are classified. **(06 Marks)**

Download VTU Connect App Now from Google Play Store

Download VTU Connect App Now from Google Play Store

Module-4

7 a. Explain the Operational and non operational attributes of an embedded systems. **(10 Marks)**

b. Explain the different 'Embedded firmware design' approach in detail. **(10 Marks)**

OR

8 a. With a neat block diagram, explain design and working of Washing Machine. **(10 Marks)**

b. With FSM model, explain the design and operation of automatic tea/coffee vending machine. **(06 Marks)**

c. Explain Super loop based approach of embedded firmware design. **(04 Marks)**

Module-5

9 a. Explain the concept of 'deadlock' with a neat diagram. Mention the different conditions which favour a dead lock situation. **(10 Marks)**

b. Write a note on Message passing. **(10 Marks)**

OR

10 a. Explain Multiprocessing , Multitasking and Multi programming. **(10 Marks)**

b. Define Process. Explain in detail the structure , Memory organization and State transitions of the process. **(10 Marks)**

* * * * *

Download VTU Connect App Now from Google Play Store