



CMR Institute of Technology, Bangalore

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

III - INTERNAL ASSESSMENT

Semester: 4-CBCS 2018 , A,B,C, D

Date: 02 Aug 2021

Subject: MICROCONTROLLER AND EMBEDDED SYSTEMS (18CS44)

Faculty: Dr.. Imtiyaz Ahmed and Prof. Preethi A

Time: 09:00 AM - 10:30 AM

Max Marks: 50

Solution

Marks CO BT/CL

1. Which of the following is not the core of the embedded system

- 1.PLD
- 2.ASIC
- 3.COTS
- 4.IC

Ans: IC

[1.0] 3 [2]

2. For Audio video signal processing, telecommunication and multimedia applications, which cores is employed

- 1.MC
- 2.ASIC
- 3.ASIP
- 4.DSP

Ans: DSP

[1.0] 3 [2]

3. Limited no. of general purpose registers and Greater no. of Instructions are the characteristics of

- 1.Harvard architecture
- 2.RISC architecture
- 3.CISC architecture
- 4.Von neuman architecture

Ans: CISC Architecture

4. CPLD offer the highest amount of logic density, the most features, and the highest performance [1.0] 3 [2]

- 1.True
- 2.False

Ans: False

5. EPROM stores the bit information by using _____ component [1.0] 3 [2]

- 1.FET
- 2.BJT
- 3.UJT
- 4.All

Ans: FET

6. Which type of memory allows erasing in the form of blocks [1.0] 3 [2]

- 1.PROM
- 2.EPROM
- 3.EEPROM
- 4.Flash

Ans: Flash

7. DRAM needs refreshing circuitry because of use of MOSFET for storage [1.0] 3 [2]

- 1.True
- 2.False

Ans: False

8. NV RAM will be volatile in case of no battery backup [1.0] 3 [2]

- 1.True
- 2.False

Ans: True

9. IO Subsystem comprises of _____ and _____ elements of typical embedded system [1.0] 3 [2]

- 1.Core
- 2.Sensors
- 3.Actuators
- 4.Memory

Ans: Semsors and Actuators

10. Common Cathode type of seven segment display need logic _____ to be glow a segment [2.0] 3 [2]

- 1.'1'
- 2.'0'
- 3.both
- 4.None

Ans: '1'

11. For Synchronous communication need of clock is not mandatory [1.0] 3 [2]

- 1.True
- 2.False

Ans: False

12. In Inter Integrated Circuit Bus (I2C) _____ bit indicates slave is ready [1.0] 3 [2]

- 1.Start
- 2.Stop
- 3.Read/Write
- 4.Acknowledgement

Ans: Acknowledgement

13. Inter Integrated Circuit Bus (I2C) is supports single master only

[1.0] 3 [2]

- 1.True
- 2.False

Ans: False

14. SPI is half duplex because of two pins MISO and MOSI

[1.0] 3 [2]

- 1.True
- 2.False

Ans: False

15. Slave select (SS') signal is common connection for slaves in SPI protocol

[1.0] 3 [2]

- 1.True
- 2.False

Ans: False

16. UART protocol send MSB bit of the data first followed by start bit

[1.0] 3 [2]

- 1.True
- 2.False

Ans: False

17. UART uses parity bit for error correction

[1.0] 3 [2]

- 1.True
- 2.False

Ans: False

18. _____ signal is activated in RS232 when it is ready to accept data

[1.0] 3 [2]

- 1.DTR

- 2.DCD
- 3.DTE
- 4.CTS

Ans: DTR

19. In USB number of address bits for devices is _____ [1.0] 3 [2]

- 1.7
- 2.8
- 3.9
- 4.10

Ans: 7

20. _____ protocol is referred as HPSB [1.0] 3 [2]

- 1.USB
- 2.Ir DA
- 3.Fire wire
- 4.Wi-Fi

Ans: Firewire

21. _____ is an example for Line of Sight communication [1.0] 3 [2]

- 1.Ir DA
- 2.Zigbee
- 3.Wi-Fi
- 4.Bluetooth

Ans:IrDA

22. Wi-Fi networks does not provide security mechanisms for authentication [1.0] 3 [2]

- 1.True
- 2.False

Ans: False

23. _____ protocol is used for RFID application [1.0] 3 [2]

- 1.USB
- 2.Zigbee
- 3.Wi-Fi
- 4.Bluetooth

Ans: Zigbee

[1.0] 3 [2]

24. _____ is a communication technique for transferring data over a mobile communication network

- 1.USB
- 2.GPRS
- 3.Wi-Fi
- 4.Bluetooth

Ans:GPRS

[1.0] 3 [2]

25. _____ type of oscillator is used in design of Embedded System

- 1.Hartley
- 2.Colpits
- 3.Crystal
- 4.All

Ans: Crystal

[1.0] 3 [2]

26. Choose the characteristics of an embedded system

- 1.Reactive and Real Time
- 2.Distributed
- 3.Application or Domain Specific
- 4.Throughput

Ans: Reactive and Real Time, Distributed, Application and Domain specific

[1.0] 4 [2]

27. As per embedded system terminology, the term reactive refers to

- 1.Deterministic time behavior
- 2.Produce changes in output in response to the changes in the input
- 3.Real time
- 4.Aggressive

Ans: Produce changes in output in response to the changes in the input

[1.0] 4 [2]

28. Throughput of an embedded system is a measure of

- 1.The efficiency of the system
- 2.The output over a stated period of time
- 3.Both
- 4.None

Ans:Both

[1.0] 4 [2]

29. Which of the following are the three measures of information security in embedded systems?

- 1.Confidentiality, secrecy, integrity
- 2.Confidentiality, integrity, availability
- 3.Confidentiality, transparency, availability
- 4.Integrity, transparency, availability

Ans: Confidentiality, integrity, availability

[1.0] 4 [2]

30. Protection of data and application from unauthorized modification is

- 1.Integrity
- 2.Availability
- 3.Safety
- 4.Confidentiality

Ans: Integrity

[1.0] 4 [2]

31. The ease with which the embedded product can be modified to take advantage of new firmware or hardware technologies refers to

- 1.Evolvability
- 2.Portability
- 3.Debuggability

Ans: Evolvability

[1.0] 4 [2]

32. For a commercial embedded product the sales volume is high during

1. 1. 1.Launching phase Maturity Phase Growth Phase Retirement phase

Ans: Growth Phase

[1.0] 4 [2]

33. Example for a distributed Embedded System

1. Automotive ECU
2. ATM
3. Electric Stove ES
4. Smart Phone

Ans: Automotive ECU, ATM, Smart Phone

[1.0] 4 [2]

34. Which of the following serial bus is (are) used for communication in Automotive Embedded Applications?

1. RS232
2. CAN
3. LIN
4. MOST

Ans: CAN, LIN, MOST

[1.0] 4 [2]

35. ECU deployed for mirror control in automotive

1. MECU
2. LECU
3. HECU
4. CECU

Ans: LECU

[1.0] 4 [2]

36. Selecting a model is a fundamental issue in hardware software co-design

1. True
2. False

Ans: TRUE

[1.0] 4 [2]

37. Reactive or event driven embedded systems can be modelled by

- 1.State Machine
- 2.Data flow graph
- 3.Controlled Data flow graph
- 4.UML

Ans:State Machine

[1.0] 4 [2]

38. The Mean Time Between Failure (MTBF) of an embedded product is 6 months and the Mean Time To Repair (MTTR) of the product is 3 weeks. What is the availability of the product?

- 1.100%
- 2.50%
- 3.11%
- 4.89%

Ans:89%

[2.0] 4 [3]

39. Super loop based design approach

- 1.Requires OS
- 2.Does not require OS
- 3.Supports real time application requirements

Ans: Does Not require OS

[1.0] 4 [2]

40. The tool used to convert embedded 'C' program to machine code corresponding to a processor which is different from the processor of the PC used for with the tool

- 1.Linker
- 2.Compiler
- 3.Cross-Compiler
- 4.Assembler

Ans:Cross-Compiler

[1.0] 4 [2]

41. Low level, system related, programming is carried out using

- 1.Assembly Language

- 2.High level language
- 3.System language

Ans:Assembly Language

[1.0] 4 [2]

42. Linker and Locator is a software utility responsible for

- 1.Assigning absolute address to each module
- 2.linking the various object modules
- 3.Translating from assembly to machine code
- 4.None of these

Ans: Assigning absolute address to each module, linking the various object modules

[1.0] 1 [2]

43. Advantages of Assembly Language Based Development

- 1.Memory Optimization
- 2.High Performance
- 3.Low Level Hardware Access
- 4.No device dependence

Ans:Memory Optimization, High Performance, Low level Hardware access

[1.0] 4 [2]

44. Advantages of High Level Language Based Development is

- 1.Portability
- 2.Memory optimization
- 3.Hardware access
- 4.Device independence

Ans: portability, Device Independence

[1.0] 4 [2]

45. Embedded 'C'

- 1.Subset of C
- 2.incorporates a few target processor specific functions/instructions
- 3.Requires cross compiler
- 4.All of these

Ans:All of these

[1.0] 4 [2]

46. A bank has developed a customer online banking system. The online banking access is through 2 factor authentication. The bank has administrative privileges and those are known to the customer. In addition the bank has put in some means to detect any changes in data that might occur as a result of non-human-caused events such as an electromagnetic pulse (EMP) or server crash. The organization rigorously maintains the hardware, uses proprietary software, has secondary back up, an interrupted connection to servers etc . Identify the steps taken by the Bank in terms of Integrity, Availability and Confidentiality. (Use the data for 46-48)

The online banking access is through 2 factor authentication. This is an example of

Ans: Confidentiality

[1.0] 4 [3]

47. The bank has put in some means to detect any changes in data that might occur as a result of non-human-caused events such as an electromagnetic pulse (EMP) or server crash. This is an example of

Ans: Integrity

[1.0] 4 [3]

48. The organization rigorously maintains the hardware, uses proprietary software, has secondary back up, an interrupted connection to servers etc. This is an example of

Ans: Availability

[1.0] 4 [3]