Course Code: ECCDLO-7035   **Course Name: Embedded system**
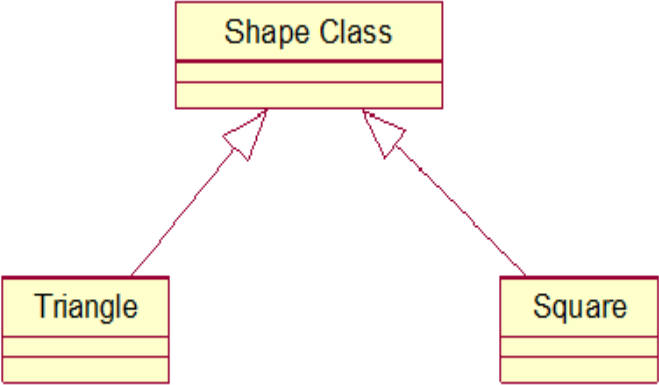
Time: 1-hour   Max. Marks: 80

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Q.1 MCQ

Q1.	High resolution Digital camera design,
Option A:	Sigle purpose processor with high clock speed is used
Option B:	General Purpose Processor with high clock speed is used
Option C:	Ethernet, USB Communication Protocol
Option D:	I2C, Firewire, USB Communication Protocol
Q2.	Which of the following communication technique is used in High speed elevators for heavy load?
Option A:	SPI
Option B:	FireWire
Option C:	MODBUS
Option D:	CAN Bus
Q3.	In Adaptive Cruise control system, while designing a processor data path component which is not a part of design.
Option A:	Finite state machine
Option B:	Registers
Option C:	ALU design
Option D:	Controlling signals

Q4.	What type of relationship is represented by Shape class and triangle?
Option A:	Realization
Option B:	Generalization
Option C:	Aggregation
Option D:	Dependency
Q5.	RISC architecture uses
Option A:	Load and store Instructions
Option B:	opcode instruction
Option C:	memory instruction
Option D:	bus instruction
Q6.	Which are the two lines used in the I2C?
Option A:	SDA and SPDR
Option B:	SPDR and SCL
Option C:	SDA and SCL
Option D:	SCL and status line
Q7.	Which one is True about CAN bus? (more than one answer correct)

Option A:	Time driven protocol for communication
Option B:	event driven protocol for communication
Option C:	Wireless Protocol
Option D:	Used in Automotive
Q8.	In Distributed safety-critical embedded systems – Adaptive Cruise control following are system specification: Select the not suitable option.
Option A:	RADAR System for Inter distance measurement
Option B:	Fast Inter process communication
Option C:	RTOS may/may not be required
Option D:	Robin round Task scheduling
Q9.	In real time operating system
Option A:	all processes have the same priority
Option B:	a task must be serviced by its deadline period
Option C:	process scheduling can be done only once
Option D:	kernel is not required
Q10.	Which of the following is true for Zigbee Coordinator (ZC)?
Option A:	It contains just enough functionality to talk to the parent node, and it cannot rely data from other devices.
Option B:	This allows the node to be asleep a significant amount of the time thereby enhancing battery life
Option C:	Capable of running applications, as well as relaying information between nodes connected to it.

Option D:	Memory requirements and cost of ZEDs are quite high, compared to ZR or ZC.
Q11.	In wireless sensor network at remote place if network fails to operate properly. Select a suitable action
Option A:	Manual Reset
Option B:	Reset using watchdog Timer which is an internal timer.
Option C:	Reset using watchdog Timer which is an external timer
Option D:	a and b both.
Q12.	Features of RISC (more than one answer is correct) a) Fixed size instructions b) Variable size instructions c) Supports pipelining d) Limited number of registers Select a suitable option
Option A:	a and c
Option B:	a and d
Option C:	b and c
Option D:	b and d
Q13.	Which microcontrollers are adopted for designing medium scale embedded systems? a. b. c. d.
Option A:	8-bit
Option B:	16-bit to 32-bit

Option C:	32-bit
Option D:	64-bit
Q14.	What happens if the input is high in FSM model?
Option A:	Change of state
Option B:	No transition in state
Option C:	Invalid state
Option D:	Remains in a single state
Q15.	Throughput of an embedded system is a measure of _____ .
Option A:	The efficiency of the system
Option B:	Quickness of the system
Option C:	Effectiveness of the system
Option D:	How fast the system track change in input
Q16.	Round Robin (RR) scheduling commonly uses which one of the following policies sorting the ready queue?
Option A:	Priority Scheduling
Option B:	First come first served (FIFO)
Option C:	Last come first served (LIFO)
Option D:	Shortest remaining time scheduling
Q17.	Round Robin (RR) scheduling commonly uses which one of the following policies sorting the ready queue?
Option A:	Priority Scheduling
Option B:	First come first served (FIFO)

Option C:	Last come first served (LIFO)
Option D:	Shortest remaining time scheduling
Q18.	Where are the device drivers located in RTOSs with a microkernel?
Option A:	In the kernel space
Option B:	In the user space
Option C:	In separately allocated space which is neither kernel space nor user space.
Option D:	Either in the kernel space or user space
Q19.	In a system 23 high speed devices need to be communicated to Host using Bluetooth, which of technique can be used _____.
Option A:	Piconet
Option B:	Scatternet
Option C:	Piconet and Scatternet
Option D:	Piconet or Scatternet
Q20.	Which of the following condition is required for a deadlock to be possible?
Option A:	mutual exclusion
Option B:	a process may hold allocated resources while awaiting assignment of other resources
Option C:	no resource can be forcibly removed from a process holding it
Option D:	A and B

Q.2 Attempt Any Two questions.

Q.2 (A)	Three Process with process IDs P1, P2, P3 with estimated completion time 10,5,7 millisecond respectively enters the ready queue together. A new process with estimated completion time 2ms enters ready queue after 2ms. Calculate average waiting time and average Turn Around Time (TAT) in Preemptive SJF scheduling and

	Non – Preemptive scheduling algorithm. Compare timing and justify which scheduling algorithm is better.
Q.2 (B)	Explain CAN bus protocol and its format.
Q.2 (C)	Explain Adaptive cruise control system using class diagram.

Q.3 Attempt Any Two questions.

Q.3 (A)	Explain significance and different methods of Task communication.
Q.3 (B)	Draw and explain FSM for Automatic chocolate vending Machine.
Q.3 (C)	Explain and compare Priority Inversion, Priority Inheritance and Priority ceiling.