30. a. Design the three phase PWM pulse generation based controlled three phase inverter. 10 2 5 2

(OR)

b. Describe the working of a typical washing machine based on embedded system application with neat diagram. 10 2 6 2

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Reg. No.														

B.Tech. DEGREE EXAMINATION, MAY 2022

Seventh Semester

18EEE420T – EMBEDDED SYSTEM

(For the candidates admitted from the academic year 2018-2019 to 2019-2020)

Note:

(i) **Part - A** should be answered in OMR sheet within first 40 minutes and OMR sheet should be handed over to hall invigilator at the end of 40th minute.

(ii) **Part - B** should be answered in answer booklet.

Time: 2½ Hours Max. Marks: 75

	Marks	BL	CO	PO
PART – A (25 × 1 = 25 Marks)				
Answer **ALL** Questions				
1. Which type of microcontroller is to design small scale embedded system? (A) 4-bit microcontroller (B) 8-bit microcontroller (C) 16-bit microcontroller (D) 32-bit microcontroller	1	1	1	1
2. What is the process of rate at which the system can process the input in embedded system? (A) Throughput (B) Response (C) Firmware (D) Reliability	1	1	1	1
3. Which of the following concept is reducing the energy consumption of the embedded system? (A) Emulator (B) Debuggee (C) Simulator (D) Compilers	1	1	1	1
4. The embedded system performs specific works within a specific time is called as _____ (A) Real time embedded system (B) Reactive embedded system (C) Standalone embedded system (D) Network embedded system	1	2	1	1
5. In embedded system design which of the following register provides the information about device operation? (A) Memory register (B) CPU register (C) Data register (D) Status register	1	1	1	1
6. Which of the following memory device that replaces the ROM in the target embedded system? (A) PROM (B) ROM emulators (C) In-circuit emulator (D) Flash	1	1	2	1
7. What is the type of round-robin scheduling? (A) Preemptive (B) Non Preemptive (C) Linear data scheduling (D) Non-linear data scheduling	1	1	2	1
8. Which of the following schedulers takes decisions at run time? (A) Static (B) Dynamic (C) Preemptive (D) Non-preemptive	1	1	2	2

9. The embedded system loader program performs the task of _____the codes after finding the physical memory address precently available. 1 1 2 1
(A) Reallocating (B) Scheduling
(C) Compiling (D) Testing

10. Which of the following is not a software power management? 1 1 2 1
(A) Dynamic voltage scaling (B) Dynamic frequency scaling
(C) Peripheral power-down scaling (D) Dynamic power management

11. What is the total number of arbitration bit in CAN bus? 1 1 3 1
(A) 12 (B) 15
(C) 16 (D) 32

12. What is the maximum range of communication covered by the RS 232? 1 1 3 1
(A) 10 feet (B) 50 feet
(C) 500 feet (D) 1000 feet

13. How many number of wires required for inter-integrated circuit protocol? 1 1 3 1
(A) 2 (B) 3
(C) 4 (D) 5

14. What is the IEEE standard used to operate zigbee? 1 1 3 1
(A) IEEE 802.15.1 (B) IEEE 802.15.10
(C) IEEE 802.15.11 (D) IEEE 802.15.4

15. The serial peripheral interface protocol is a _____ communication. 1 1 3 1
(A) Half duplex synchronous (B) Full duplex synchronous
(C) Half duplex asynchronous (D) Full duplex asynchronous

16. The embedded system pipe is a _____device. 1 1 3 1
(A) Unidirectional (B) Bidirectional
(C) Synchronous (D) Interfacing

17. Which of the scheduling, assigns the task priorities in accordance with the rate of occurrence of need of their services? 1 1 3 1
(A) Rate monotonic (B) Pre-emptive
(C) Co-operative (D) Cyclic round-robin

18. The semaphore is an _____to solve the critical section problem. 1 1 3 1
(A) Hardware for a system (B) Special program for a system
(C) Inter variable (D) Inter task

19. The message in queue sending messages in _____order. 1 1 3 1
(A) Only FIFO (B) Only LIFO
(C) Both FIFO or LIFO (D) System file

20. An interrupt breaks the execution of instructions and diverts its execution to _____ 1 1 3 1
(A) Execution unit (B) Control unit
(C) Interrupt service routine (D) Counter word register

21. Which system software is used to convert a 'C' language program into another language of the process? 1 1 4 1
(A) Cross linker (B) Cross compiler
(C) Linker (D) Loader

22. Which of the following interface is the simplest interface? 1 1 4 2
(A) I^2C (B) Serial port
(C) Parallel port (D) SPI

23. The GPIB allows parallel and multidrop connections of upto_____number of devices to the bus. 1 1 4 1
(A) 2 (B) 3
(C) 4 (D) 5

24. Which type of wireless network technology used in Bluetooth technology? 1 1 4 1
(A) Metropolitan area network (B) Wide area network
(C) Local area network (D) Personal area network

25. What types of bus system is used when extend the connectivity? 1 1 4 1
(A) SCSI bus (B) PCI bus
(C) Control bus (D) Multiple bus

PART – B (5 × 10 = 50 Marks) Marks BL CO PO
Answer **ALL** Questions

26. a. Explain the steps in the embedded system design process. 10 1 1 1

(OR)

b. Explain the challenges in embedded system design. 10 1 1 1

27. a. Explain in detail, the various types of memory system used in embedded system. 10 1 2 1

(OR)

b. Draw and explain the embedded software round robin architecture. 10 1 2 1

28. a. With suitable diagram explain the RS 232 communication. 10 1 3 1

(OR)

b. Explain the working of GPIB(IEEE-488) communication and analysis various handshaking signal. 10 1 3 1

29. a. With suitable examples, explain the pipe and time function. 10 1 4 1

(OR)

b. Explain the concept of task and task priority scheduler of embedded system. 10 1 4 1