QPC: RN18001222 AR - 18 Reg. No. | | | | | | | | | | |

GIET MAIN CAMPUS AUTONOMOUS GUNUPUR – 765022

B. Tech Degree Examinations, November – 2021

(Seventh Semester)

BEIPE7030 / BECPE7031 - EMBEDDED SYSTEMS

(AEIE & ECE)

Time: 3 hrs Maximum; 100 Marks

Answer ALL Questions

The figures in the right hand margin indicate marks.

PART – A: (Multiple Choice Questions) **(2 x 10 = 20 Marks)**

Q.1. Answer ***ALL*** questions [CO#] [PO#]

a. Which of the following is not true about embedded systems? CO1 PO2
(i) Built around specialized hardware (ii) Always contain an operating system
(iii) Execution behaviour may be deterministic (iv) None of these

b. Which of the following is the most known simple interface? CO1 PO3
(i) I2C (ii) Serial port
(iii) Parallel port (iv) SPI

c. Which of the following performs the START signal? CO2 PO1
(i) master (ii) slave
(iii) CPU (iv) memory

d. Consideration of storage, input and output devices are considered as requirement of CO3 PO2
(i) hardware requirement (ii) communication requirement
(iii) software requirement (iv) process requirement

e. What is the basic use of EDA tools? CO4 PO4
(i) Communication of Electronic devices (ii) Fabrication of Electronics hardware
(iii) Electronic circuits simulation and synthesis (iv) Industrial automation

f. Which of the following can generate an interrupt? CO2 PO2
(i) timer (ii) trigger
(iii) delay (iv) counter

g. The core of the operating system is called CO3 PO3
(i) Shell (ii) RTOS
(iii) Kernel (iv) All of these

h. Which scheduling policy is most suitable for a time-shared operating system CO4 PO1
(i) Shortest-job First (ii) Elevator
(iii) Round-Robin (iv) First-Come-First-Serve

i. Which of the following is a processor understandable language? CO3 PO3
(i) Machine language (ii) Assembly Language
(iii) High level language (iv) Intermediate language

j. ASIC stands for: CO1 PO3
(i) advanced standard integrated circuit. (ii) application speedy integrated circuit.
(iii) application specific integrated circuit. (iv) advanced speed integrated circuit.

PART – B: (Short Answer Questions) **(2 x 10 = 20 Marks)**

Q.2. Answer ***ALL*** questions	[CO#]	[PO#]
a. What are operational and non-operational quality attribute?	CO2	PO2
b. What is inter-task communication?	CO3	PO1
c. Differentiate between compilers and cross-compiler?	CO1	PO2
d. What is hardware software co-design?	CO1	PO3
e. What is task scheduling in OS context?	CO4	PO1
f. What is kernel?	CO2	PO3
g. What is the role of programming languages in system design?	CO4	PO3
h. What is MTBF in a embedded product?	CO3	PO1
i. Why Embedded System is called as Real-Time?	CO2	PO2
j. What is NVRAM?	CO3	PO3

PART – C: (Long Answer Questions) **(15 x 4 = 60 Marks)**

Answer ***ALL*** questions	Marks	[CO#]	[PO#]
3. a. Explain about the classification of Embedded Systems with their examples.	8	CO1	PO3
b. Explain the difference between sensor and actuator with suitable examples.	7	CO2	PO1
(OR)			
c. Explain the difference between RISC and CISC.	7	CO1	PO1
d. Explain time-to market and time –to-prototype?	8	CO1	PO2
4. a. What do you mean by hardware software co design? What is the typical embedded product design and development approach?	8	CO3	PO3
b. What is EDA tool? Explain the role of EDA tools in embedded system design.	7	CO2	PO1
(OR)			
c. Explain the Difference between DFG and CDFG with suitable diagram?	8	CO1	PO4
d. Explain the important hardware software trade-offs in hardware software Partitioning?	7	CO4	PO2
5. a. Three processes with process IDs P1, P2, P3 with estimated completion time 8, 5, 3 milliseconds respectively enters the ready queue together in the order P1, P2, P3. Calculate the waiting time and Turn Around Time (TAT) for each process and the Average waiting time and Turn Around Time (Assuming there is no I/O waiting for the processes).	7	CO2	PO3
b. Explain the Process of Task communication and Task Synchronization?	8	CO3	PO1
(OR)			
c. Explain how threads and processes are related?	8	CO4	PO4
d. Explain the kernel service of VxWorks?	7	CO3	PO1
6. a. Differentiate between firmware, software and hardware.	7	CO2	PO4
b. Explain the advantages and disadvantages of assembly language programming.?	8	CO3	PO1
(OR)			
c. How the Embedded Systems used in Automobiles? Explain in details.	8	CO4	PO1
d. Write short notes on IDE ?	7	CO3	PO2

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