

Hall Ticket Number:

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Code No. : 16637 AS

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS), HYDERABAD

Accredited by NAAC with A++ Grade

B.E. (I.T.) VI-Semester Advanced Supplementary Examinations, August-2022

Embedded Systems and IoT

Time: 3 hours

Max. Marks: 60

Note: Answer all questions from Part-A and any FIVE from Part-B

Part-A (10 × 2 = 20 Marks)

Q. No.	Stem of the question	M	L	CO	P●
1.	Mention the advantages of assembly language.	2	1	1	1
2.	List the features of 8051 microcontroller.	2	1	1	1
3.	List the registers of ARM7?	2	1	2	1
4.	Write an assembly language program to find the number of 1's in a given byte for 8051.	2	2	2	1
5.	Compare and contrast general purpose OS and Real time OS?	2	2	3	1
6.	Define Task and explain the different task states.	2	1	3	1
7.	List the advantages and disadvantages of I ² C bus.	2	1	4	2
8.	List the important features of Wi-Fi and WIMAX.	2	1	4	1
9.	List the various communication interface buses present on Raspberry Pi.	2	1	5	2
10.	Mention the features of Raspberry Pi board?	2	1	5	1
Part-B (5 × 8 = 40 Marks)					
11. a)	Draw and explain Embedded System design process?	4	2	1	1
b)	Define assembler directive? Explain various assembler directives available in 8051?	4	2	1	1
12. a)	Interface 8051 with stepper motor. Write an ALP to rotate 360° in clockwise direction?	4	3	2	2
b)	Discuss ARM register set in detail?	4	2	2	1
13. a)	Compare and contrast Message Queues and mailbox?	4	2	3	2
b)	Briefly explain some of the Vx work RTOS functions.	4	2	3	1
14. a)	Explain physical design of IoT in detail?	4	2	4	1
b)	Discuss various IoT application layer protocols?	4	3	4	1

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15. a)	Explain IoT design methodology?	4	2	5	1
b)	Discuss on board IoT communication model and IoT communication API's?	4	3	5	1
16. a)	In a given byte addressable computer, memory location 10000H to 9FFFFH are available for user program. The first location is 10000H and the last location is 9FFFFH. Calculate the total number of bytes available, number of address lines and data lines required?	4	3	1	2
b)	Write an ALP for 8051 to transfer "MFH" serially at 9600 baud, 8 bit data, 1 stop bit, do this continuously.	4	3	2	2
17.	Answer any <i>two</i> of the following:				
a)	Explain the different types of semaphores and their role inn RTOS.	4	3	3	1
b)	Discuss various IoT levels and deployment templates?	4	3	4	1
c)	Discuss in detail case study of using Raspberry Pi for structural health monitoring application?	4	3	5	3

M : Marks; L: Bloom's Taxonomy Level; CO; Course Outcome; PO: Programme Outcome

i)	Blooms Taxonomy Level – 1	20%
ii)	Blooms Taxonomy Level – 2	40%
iii)	Blooms Taxonomy Level – 3 & 4	40%
