

Hall Ticket Number:

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Code No. : 16637

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS), HYDERABAD*Accredited by NAAC with A++ Grade***B.E. (I.T.) VI-Semester Main & Backlog Examinations, June-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	PO
1.	Mention any four differences between microprocessor and microcontroller.	2	1	1	1
2.	Mention the advantages of assembly language.	2	1	1	1
3.	Compare and contrast ARM and Thumb states?	2	1	2	1
4.	List the important characteristics of ARM7 processor core.	2	1	2	1
5.	Compare and contrast Soft RTOS and Hard RTOS?	2	1	3	1
6.	List the important characteristics of RTOS.	2	1	3	1
7.	List the features of CAN bus?	2	1	4	1
8.	Define IOT and list the important characteristics of an IOT system.	2	1	4	1
9.	Define M2M and write the advantages of M2M.	2	2	5	1
10.	Draw the building blocks of an IOT device?	2	2	5	1
Part-B (5 × 8 = 40 Marks)					
11. a)	Draw and explain flag register of 8051?	4	2	1	1
b)	Draw and explain TMOD, SCON, IE and TCON registers of 8051?	4	2	1	3
12. a)	Write an embedded C program to interface a stepper motor to 8051 and rotate it in clockwise direction continuously.	4	3	2	3
b)	Draw and explain briefly ARM architecture?	4	2	2	1
13. a)	What are semaphores? Explain different types of semaphores and where these are used?	4	2	3	1
b)	Explain briefly the rules to be followed by interrupt routines in an RTOS environment?	4	2	3	1
14. a)	Compare and contrast I ² C bus and CAN bus?	4	3	4	1
b)	Briefly explain the different architectures of multiprocessor system on chip.	4	2	4	1

Contd... 2

tos-y

:: 2 ::

Code No. : 16637

15. a)	Mention the differences between IOT and M2M?	4	2	5	1
b)	Briefly discuss the onboard components of Raspberry pi?	4	3	5	1
16. a)	Draw and explain external memory interfacing of 8KB RAM, 4KB ROM, 16KB program ROM with 8051?	4	4	1	3
b)	Explain in detail the different modes of operation of ARM processor and when they are entered.	4	3	2	1
17.	Answer any <i>two</i> of the following:				
a)	Compare and contrast μ COS and Vxworks?	4	4	3	1
b)	Explain the characteristics of IOT?	4	3	4	1
c)	Illustrate in detail the case study of using Raspberry pi for smart parking applications?	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%
