



SKIT	Teaching Process	Rev No.: 1.0
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Note : Remove “Table of Content” before including in CP Book

Each Course Plan shall be printed and made into a book with cover page

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Blooms Level in all sections match with A.2, only if you plan to teach / learn at higher levels

17EC563 : 8051 Microcontroller

A. COURSE INFORMATION

1. Course Overview

Degree:	BE	Program:	EC
Year / Semester :	V	Academic Year:	2019-20
Course Title:	8051 Microcontroller	Course Code:	17EC563
Credit / L-T-P:	3-0-0	SEE Duration:	180 Minutes
Total Contact Hours:	40	SEE Marks:	100 Marks
CIA Marks:	40	Assignment	1 / Module
Course Plan Author:	Mrs.SYEDA N	Sign	Dt:
Checked By:		Sign	Dt:

2. Course Content

Module	Module Content	Teaching Hours	Module Concepts	Blooms Level
1	8051 Microcontroller	8	Architecture	L1, L2
2	8051 Instruction Set	8	Instructions	L1, L2
3	8051 Stack, I/O Port Interfacing and Programming:	8	Interfacing	L2, L3
4	8051 Timers and Serial Port	8	Serial communication	L2, L3
5	8051 Interrupts and Interfacing Applications	8	Interrupts	L3, L4

3. Course Material

Module	Details	Available
	Text books	
1	“The 8051 Microcontroller and Embedded Systems – using assembly and C”, Muhammad Ali Mazidi and Janice Gillespie Mazidi and Rollin D. McKinlay; PHI, 2006 / Pearson, 2006.	In Lib
2	“The 8051 Microcontroller”, Thomson/Cengage Learning. Kenneth J.	In Lib

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	Ayala, 3 rd Edition,	
	Reference books	
1	“The 8051 Microcontroller Based Embedded Systems”, Manish K Patel, McGraw Hill, 2014, ISBN: 978-93-329-0125-4	In dept
2	“Microcontrollers: Architecture, Programming, Interfacing and System Design”, Raj Kamal, Pearson Education, 2005	In Lib
3	Others (Web, Video, Simulation, Notes etc.)	

4. Course Prerequisites

SNo	Course Code	Course Name	Module / Topic / Description	Sem	Remarks	Blooms Level
1	17EC563	8051 Micrcontroller	1. Knowledge on programming	4	studied	L2
	-		2.Knowledge of Architecture of microcontroller	-	Plan Gap Course	

Note: If prerequisites are not taught earlier, GAP in curriculum needs to be addressed. Include in Remarks and implement in B.5.

B. OBE PARAMETERS

1. Course Outcomes

#	COs	Teach. Hours	Concept	Instr Method	Assessment Method	Blooms' Level
CO1	Understanding 8051 architecture	04	architecture	Lecture	Slip Test	L2 Understand
CO2	Analyze Internal Memory organization	04	memory	Lecture	Assignment	L2 Understand
CO3	Understanding 8051 Instruction Set	04	Instructions	Lecture	Assignment and Slip Test	L3 Analyze
CO4	Apply Instructions for programming	04	programming	Lecture	Assignment	L3 Apply

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CO5	Use Subroutine instructions	04	Subroutine	Lecture	Slip test	L3 Understand
CO6	Apply programs on subroutine and involving loops	04	Dynamic Programming	Lecture and Tutorial	Assignment	L3 Apply
CO7	Understanding 8051 Timers and Counters - Operation	04	operations	Lecture	Assignment and Slip Test	L3 Evaluate
CO8	Apply timers and counters for Serial Data Communication	04	communication	Lecture	Assignment	L2 Apply
CO9	Able to understand Interrupts and Interfacing Applications	04	Interrupts	Lecture	Assignment	L3 Analyze
CO10	Apply Assembly language interfacing programming	04	Interfacing	Lecture and Tutorial	Assignment and Slip Test	L3 Create
-	Total	40	-	-	-	-

Note: Identify a max of 2 Concepts per Module. Write 1 CO per concept.

2. Course Applications

SNo	Application Area	CO	Level
1	Embedded Systems toys etc	CO1,2	L2
2	Embedded Systems printers, modems etc	CO3,4	L2
3	The data memory of the 8051 is used to store data temporarily for RAM memory	CO5,6	L3
4	Timer has so many applications such as measure time generating delays, they can also be used for generating baud rates.	CO7,8	L3
5	microcontroller is interfaced with devices such as ADC, keypad, LCD display and so on	CO9,10	L2

Note: Write 1 or 2 applications per CO.

3. Articulation Matrix

(CO - PO MAPPING)

#	Course Outcomes COs	Program Outcomes												Level
		PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	
-														

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			1	2	3	4	5	6	7	8	9	10	11	12	
17EC563P C.1	Understanding architecture	8051	3		3	3									L2
17EC563P C.2	Analyze Internal Memory organization		3		3	3									L2
17EC563P C.3	Understanding Instruction Set	8051	3	3	3	1									L2
17EC563P C.4	Apply Instructions for programming		3	3	3	1									L3
17EC563P C.5	Use Subroutine instructions		3		3	1	2								L2
17EC563P C.6	Apply programs on subroutine and involving loops		3		3	1	2								L2
17EC563P C.7	Understanding 8051 Timers and Counters - Operation		3	2	3	3									L3
17EC563P C.8	Apply timers and counters for Serial Data Communication		3	2	3	3									L2
17EC563P C.9	Able to understand Interrupts and Interfacing Applications		3		3	3									L2
17EC563P C.	Apply Assembly language interfacing programming		3		3	3									L3

Note: Mention the mapping strength as 1, 2, or 3

4. Mapping Justification

Mapping		Justification	Mapping Level
CO	PO	-	-
CO1	PO1	Knowledge required to build microcontroller based systems such as personal computers , home appliances	3
CO1	PO3	To analyze the problems in microcontroller based system knowledge is required	1
CO1	PO4	Microcontrollers used in design of automobiles ,heavy traffic control devices,	1
CO2	PO1	Assembly language programs are used to build system programs, device drivers .	3
CO2	PO3	Knowledge is required to analyze the embedded programming	2
CO2	PO4	Students learn interfacing microprocessor with I/O devices such as keyboard, motors ,lcd and other external devices	3
CO3	PO1	Understanding the details will help in analyzing and interpreting various components in mother board	1
CO3	PO2	Microcontrollers used in mobile phones and computer hard drives.	3

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CO3	PO3	Knowledge is required to build digital tvs, mass storage controllers, smart sensors	2
CO3	PO4	Knowledge of Microcontrollers ALP programming is required to develop software of embedded devices	2
CO4	PO1	Knowledge is required to analyze the system programs for embedded devices	2
CO4	PO2	Microcontrollers programming are used in the design of embedded devices	2
CO4	PO3	Microcontrollers programming is used in development of tools for embedded devices design	2
CO4	PO4	Students learn interfacing microprocessor with I/O devices such as keyboard, motors ,lcd and other external devices	3
CO5	PO1	Understanding the details will help in analyzing and interpreting various components in mother board	1
CO5	PO2	Microcontrollers used in mobile phones and computer hard drives.	3
CO5	PO4	Students learn interfacing microprocessor with I/O devices such as keyboard, motors ,lcd and other external devices	3
CO5	PO5	Knowledge is required to build digital tvs, mass storage controllers, smart sensors	2 3
CO6	PO1	Assembly language programs are used to build system programs, device drivers .	3
CO6	PO3	Knowledge is required to analyze the embedded programming	2
CO6	PO4	Students learn interfacing microprocessor with I/O devices such as keyboard, motors ,lcd and other external devices	3
CO7	PO1	Understanding the details will help in analyzing and interpreting various components in mother board	1
CO7	PO3	Microcontrollers used in mobile phones and computer hard drives.	3
CO7	PO4	Students learn interfacing microprocessor with I/O devices such as keyboard, motors ,lcd and other external devices	3
CO8	PO1	Understanding the details will help in analyzing and interpreting various components in mother board	1
CO8	PO2	Microcontrollers used in mobile phones and computer hard drives.	3
CO8	PO3	Microcontrollers programming is used in development of tools for embedded devices design	2
CO8	PO4	Students learn interfacing microprocessor with I/O devices such as keyboard, motors ,lcd and other external devices	3
CO9	PO1		1
CO9	PO2	Microcontrollers used in mobile phones and computer hard drives.	3
CO9	PO3	Understanding the details will help in analyzing and interpreting various components in mother board	2
CO10	PO1	Understanding the details will help in analyzing and interpreting	1

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		various components in mother board	
CO10	PO2	Microcontrollers used in mobile phones and computer hard drives.	3
CO10	PO3	Knowledge is required to build digital tvs, mass storage controllers, smart sensors	2

Note: Write justification for each CO-PO mapping.

5. Curricular Gap and Content

SNo	Gap Topic	Actions Planned	Schedule Planned	Resources Person	PO Mapping
1					
2					
3					
4					
5					

Note: Write Gap topics from A.4 and add others also.

6. Content Beyond Syllabus

SNo	Gap Topic	Actions Planned	Schedule Planned	Resources Person	PO Mapping
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					

Note: Anything not covered above is included here.

C. COURSE ASSESSMENT

1. Course Coverage

Module	Title	Teaching Hours	No. of question in Exam					CO	Levels
			CIA-	CIA-	CIA-	Asg	Extra		

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#			1	2	3		Asg			
1	8051 Microcontroller	8	2	-	-	1	1	2	CO1, CO2	L1, L2
2	8051 Instruction Set	8	2	-	-	1	1	2	CO3, CO4	L2, L3
3	8051 Stack, I/O Port Interfacing and Programming	8	-	2	-	1	1	2	CO5, CO6	L3, L4
4	8051 Timers and Serial Port	8	-	2	-	1	1	2	CO7, CO8	L2, L3
5	8051 Interrupts and Interfacing Applications	8	-	-	4	1	1	2	CO9, CO10	L4, L5
-	Total	40	4	4	4	5	5	10	-	-

Note: Distinct assignment for each student. 1 Assignment per chapter per student. 1 seminar per test per student.

2. Continuous Internal Assessment (CIA)

Evaluation	Weightage in Marks	CO	Levels
CIA Exam - 1	30	CO1, CO2, CO3, CO4	L2, L3, L4, L5
CIA Exam - 2	30	CO5, CO6, CO7, CO8	L1, L2, L3, L4
CIA Exam - 3	30	CO9, CO10	L3, L4
Assignment - 1	05	CO1, CO2, CO3, CO4	L2, L3, L4, L5
Assignment - 2	05	CO5, CO6, CO7, CO8	L1, L2, L3, L4
Assignment - 3	05	CO9, CO10	L3, L4
Seminar - 1	05	CO1, CO2, CO3, CO4	L2, L3, L4, L5
Seminar - 2	05	CO5, CO6, CO7, CO8	L1, L2, L3, L4
Seminar - 3	05	CO9, CO10	L3, L4
Other Activities - define - Slip test		CO1 to CO9	L2, L3, L4 . . .
Final CIA Marks	20	-	-

Note : Blooms Level in last column shall match with A.2 above.

D1. TEACHING PLAN - 1

Module - 1

Title:	Divide and Conquer	Appr Time:	8 Hrs
a	<i>Course Outcomes</i>	-	Blooms
-	The student should be able to:	-	Level

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1	Understanding 8051 architecture	CO1	L2
2	Analyze Internal Memory organization	CO2	L3
b	<i>Course Schedule</i>	-	-
Class No	Module Content Covered	CO	Level
1	Microprocessor Vs Microcontroller,	CO1	L2
2	Embedded Systems, Embedded Microcontrollers,		
3	8051 Architecture-		
4	Registers		
5	Pin diagram,		
6	I/O ports functions		
7	Internal Memory organization		
8	External Memory (ROM & RAM) interfacing		
c	Application Areas	CO	Level
1	Embedded Systems Toys etc	CO1	L3
2	Embedded Systems printers,modems etc	CO2	L4
d	Review Questions	-	-
1	What do you mean by the term embedded controllers ?	CO1	L1
2	Discuss the advantages of microcontrollers over microprocessors in control applications?	CO1	L3
3	List all the registers used in 8051 microcontroller in brief.	CO2	L2
4	What is microcontroller? List out the difference between CISC and RISC	CO2	L4
5	Explain the 8051 block diagram and its features	CO2	L2
6	Explain the PSW Register	CO2	L5
7	With the help of neat diagram, explain how to interface external 64Kbytes RAM memory with 8051	CO2	L2
e	Experiences	-	-
1	With the help of neat diagram, explain how to interface external 64Kbytes RAM memory with 8051	CO1	L2



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Module – 2

Title:	Divide and Conquer	Appr Time:	8Hrs
a	Course Outcomes	-	Blooms Level
-	The student should be able to:	-	Level
1	Understanding 8051 Instruction Set	CO3	L4
2	Apply Instructions for programming	CO4	L3
b	Course Schedule	-	-
Class No	Module Content Covered	CO	Level
17	8051 Instruction Set		L3
18	Addressing Modes		L2
19	Data Transfer instructions		L2
20	Arithmetic instructions,		L3
21	Logical instructions		L3
22	Branch instructions		L3
23	Bit manipulation instructions		L2
24	Simple Assembly language program examples (without loops) to use these instructions.		L4
c	Application Areas	CO	Level
1	The data memory of the 8051 is used to store data temporarily for RAM memory	CO3	L3
d	Review Questions	-	-
12	Explain the following addressing modes with an examples. i) Indirect Addressing Mode ii) Indexed Addressing Mode iii) Direct Addressing Mode	CO3	L1
13	Explain PUSH and POP instruction with an example	CO4	L3
14	List out and explain different assembler directives used in an ALP.	CO3	L2
15	Explain the following instructions with an example i) SWAP A ii) RRC A iii) DIV AB iv) XCHD A,@Ri v) DAA	CO4	L4
16	Write an ALP to convert unpacked BCD to Packed BCD Number.	CO4	L2
17	Explain Checksum byte in ROM, with an example	CO3	L5
18	Name the addressing modes of the following instructions i) MOV F0H, #29H ii) ADD A, 30H iii) MOV 35H,@R0 iv) SUBB A, R1	CO3	L2

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	v) XRL A,@R1.		
e	Experiences	-	-
1			
2			
3			
4			
5			

E1. CIA EXAM – 1

a. Model Question Paper - 1

CIA -1	Sem / Div:	V/A &B	Course:	8051Microcontoller	Elective:	Y
#Dept: EC						
Date: 19/9/2018	Time:	2:00 – 3:15	C Code: 15EC563	Max Marks:	30	

Note: Answer all full questions. All questions carry 15 marks.

QNo	Questions	CO	Level	Marks	Module
1	a Describe the hardware features of 8051with internal block diagram.	CO1	L2	10	1
	b Explain the port pin configuration of 8051 with port pin diagrams.	CO1	L2	5	1
	OR				
2	a Explain the internal RAM and ROM architecture of along with SFR's.	CO1	L2	10	1
	b Explain the external interfacing of 8K of RAM and 4K of EEPROM to 8051	CO2	L3	5	1
3	a Explain the addressing modes of 8051	CO3	L2	10	2
	b Explain byte and bit logical AND,OR,XOR,NOT operations	CO4	L2	5	2
	OR				
4	a Explain external addressing modes of 8051 along with examples.	CO3	L2	10	2
	b Explain the following instructions: SWAP, XCHD, ADDC,POP, DIV	CO4	L2	5	2

b. Assignment -1

Note: A distinct assignment to be assigned to each student.

Model Assignment Questions

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Crs Code:	15EC563	Sem:	V	Marks:	5	Time:	90 - 120 minutes
Course:	8051 Microcontroller						

Note: Each student to answer 2-3 assignments. Each assignment carries equal mark.

SNo	USN	Assignment Description	Mark s	CO	Level
1	1KT16EC003	What do you mean by the term embedded controllers ?	5	CO1	L2
2	1KT16EC004	Discuss the advantages of microcontrollers over microprocessors in control applications?	5	CO1	L2
3	1KT16EC005	List all the registers used in 8051 microcontroller in brief.		CO1	L2
4	1KT16EC008	What is microcontroller? List out the difference between CISC and RISC	5	CO2	L3
5	1KT16EC011	Explain the 8051 block diagram and its features	5	CO3	L2
6	1KT16EC012	Explain the PSW Register	5	CO4	L2
7	1KT16EC015	With the help of neat diagram, explain how to interface external 64Kbytes RAM memory with 8051	5	CO3	L2
8	1KT16EC016	Explain the following addressing modes with an examples. i) Indirect Addressing Mode ii) Indexed Addressing Mode iii) Direct Addressing Mode	5	CO4	L2
9	1KT16EC018	Explain PUSH and POP instruction with an example	5	CO1	L2
10	1KT16EC020	List out and explain different assembler directives used in an ALP.	5	CO1	L2
11	1KT16EC022	Explain the following instructions with an example i) SWAP A ii) RRC A iii) DIV AB iv) XCHD A,@Ri v) DAA	5		
12	1KT16EC023	Explain the 8051 block diagram and its features	5	CO3	L2
13	1KT16EC024	Explain the PSW Register	5	CO4	L2
14	1KT16EC025	With the help of neat diagram, explain how to interface external 64Kbytes RAM memory with 8051	5	CO3	L2
15	1KT16EC026	Explain the following addressing modes with an examples. i) Indirect Addressing Mode ii) Indexed Addressing Mode iii) Direct Addressing Mode	5	CO4	L2
16	1KT16EC027	Explain PUSH and POP instruction with an example	5	CO1	L2
17	1KT16EC028	List out and explain different assembler directives used in an ALP.	5	CO1	L2
18	1KT16EC029	Explain the following instructions with an example i) SWAP A ii) RRC A iii) DIV AB iv) XCHD A,@Ri v) DAA	5		
19	1KT16EC032	What do you mean by the term embedded controllers ?	5	CO1	L2
20	1KT16EC033	Discuss the advantages of microcontrollers over microprocessors in control applications?	5	CO1	L2
21	1KT16EC035	List all the registers used in 8051 microcontroller in brief.		CO1	L2
22	1KT16EC407	What is microcontroller? List out the difference between CISC and RISC	5	CO2	L3
23	1KT16EC410	Explain the 8051 block diagram and its features	5	CO3	L2
24	1KT16EC413	Explain the PSW Register	5	CO4	L2

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25	1KT16EC417	With the help of neat diagram, explain how to interface external 64Kbytes RAM memory with 8051	5	CO3	L2
26	1KT16EC425	Explain the following addressing modes with an examples. i) Indirect Addressing Mode ii) Indexed Addressing Mode iii) Direct Addressing Mode	5	CO4	L2
27	1KT15EC016	Explain PUSH and POP instruction with an example	5	CO1	L2
28	1KT15EC027	List out and explain different assembler directives used in an ALP.	5	CO1	L2
29	1KT15EC066	Explain the following addressing modes with an examples. i) Indirect Addressing Mode ii) Indexed Addressing Mode iii) Direct Addressing Mode	5	CO4	L2
30	1KT16EC041	Explain PUSH and POP instruction with an example	5	CO1	L2
31	1KT16EC042	List out and explain different assembler directives used in an ALP.	5	CO1	L2
32	1KT16EC043	Explain the following instructions with an example i) SWAP A ii) RRC A iii) DIV AB iv) XCHD A,@Ri v) DAA	5		
33	1KT16EC044	What do you mean by the term embedded controllers ?	5	CO1	L2
34	1KT16EC045	Discuss the advantages of microcontrollers over microprocessors in control applications?	5	CO1	L2
35	1KT16EC047	List all the registers used in 8051 microcontroller in brief.		CO1	L2
36	1KT16EC048	What is microcontroller? List out the difference between CISC and RISC	5	CO2	L3
37	1KT16EC049	Explain the 8051 block diagram and its features	5	CO3	L2
38	1KT16EC050	Explain the PSW Register	5	CO4	L2
39	1KT16EC051	Explain the following addressing modes with an examples. i) Indirect Addressing Mode ii) Indexed Addressing Mode iii) Direct Addressing Mode	5	CO4	L2
40	1KT16EC052	Explain PUSH and POP instruction with an example	5	CO1	L2
41	1KT16EC053	List out and explain different assembler directives used in an ALP.	5	CO1	L2
42	1KT16EC057	Explain the following instructions with an example i) SWAP A ii) RRC A iii) DIV AB iv) XCHD A,@Ri v) DAA	5		
43	1KT16EC058	What do you mean by the term embedded controllers ?	5	CO1	L2
44	1KT16EC059	Discuss the advantages of microcontrollers over microprocessors in control applications?	5	CO1	L2
45	1KT16EC061	List all the registers used in 8051 microcontroller in brief.		CO1	L2
46	1KT16EC063	What is microcontroller? List out the difference between CISC and RISC	5	CO2	L3
47	1KT16EC064	Explain the 8051 block diagram and its features	5	CO3	L2
48	1KT16EC067	Explain the PSW Register	5	CO4	L2
49	1KT16EC068	Discuss the advantages of microcontrollers over microprocessors in control applications?	5	CO1	L2

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50	1KT16EC069	List all the registers used in 8051 microcontroller in brief.		CO1	L2
51	1KT16EC070	What is microcontroller? List out the difference between CISC and RISC	5	CO2	L3
52	1KT16EC073	Explain the 8051 block diagram and its features	5	CO3	L2
53	1KT16EC074	Explain the PSW Register	5	CO4	L2
54	1KT16EC077	List all the registers used in 8051 microcontroller in brief.		CO1	L2
55	1KT16EC078	What is microcontroller? List out the difference between CISC and RISC	5	CO2	L3
56	1KT16EC079	Explain the 8051 block diagram and its features	5	CO3	L2
57	1KT16EC080	Explain the PSW Register	5	CO4	L2
58	1KT17EC402	Explain the following addressing modes with an examples. i) Indirect Addressing Mode ii) Indexed Addressing Mode iii) Direct Addressing Mode	5	CO4	L2
59	1KT17EC403	Explain PUSH and POP instruction with an example	5	CO1	L2
60	1KT17EC406	List out and explain different assembler directives used in an ALP.	5	CO1	L2
61	1KT17EC408	Explain the following instructions with an example i) SWAP A ii) RRC A iii) DIV AB iv) XCHD A,@Ri v) DAA	5		
62	1KT16EC066	Explain PUSH and POP instruction with an example	5	CO1	L2

D2. TEACHING PLAN - 2

Module – 3

Title:	Divide and Conquer	Appr Time:	16 Hrs
a	Course Outcomes	-	Blooms Level
-	The student should be able to:	-	Level
1	Evaluate stack and subroutine performance	CO5	L2
2	Apply ALP on subroutines	CO6	L3
b	Course Schedule		
Class No	Module Content Covered	CO5	Level
1	8051 Stack	CO6	L3
2	I/O Port Interfacing and Programming	CO5	L4
3	8051 Stack, Stack and Subroutine instructions	CO6	L3
4	program examples on subroutine and involving loops Factorial of an 8 bit number (result maximum 8 bit)	CO5	L4
5	Block move without overlap.	CO5	L2

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6	Addition of N 8 bit numbers		L3
7	Picking smallest/largest of N 8 bit numbers.		L2
8	Interfacing simple switch and LED to I/O ports to switch on/off LED with respect to switch status		
		CO5	
c	Application Areas	CO6	Level
1	Timer has so many applications such as measure time generating delays, they can also be used for generating baud rates.	CO1	L3
2		CO2	L4
d	Review Questions	-	-
1	What is the difference between timer and counter? Explain the function of each bit in TMOD Register.	CO1	L1
2	write an ALP to generate square wave of 3KHZ frequency with 50% duty cycle on Pin P2.1 using timer 1 mode 1 operation, Assume XTAL=12MHZ and show the delay calculation.	CO1	L3
3	what is the advantage and disadvantages of MODE 2 operation of 8051 when compared to Mode 1 Operation.	CO2	L2
4	write the steps required for programming 8051 to transfer and receive data serially	CO7	L1
5	write an ALP to transfer letter "Y" serially at 9600 baud rate, continuously	CO7	L3
6	Explain the importance of TI and RI flag	CO8	L2
7	Define interrupt, and mention the difference between interrupt and polling method and also write the steps in executing interrupt	CO7	L4
8	what is the advantage and disadvantages of MODE 2 operation of 8051 when compared to Mode 1 Operation.	CO8	L2
e	Experiences	-	-
1		CO1	L2
2			
3			
4		CO3	L3
5			

Module – 4

Title:	Divide and Conquer	Appr Time:	16 Hrs
a	Course Outcomes	-	Blooms
-	The student should be able to:	-	Level

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1	Understand 8051 Timers and Counters - Operation	CO7	L2
2	Understand serial communication schemes	CO8	L3
b	Course Schedule		
Class No	Module Content Covered	CO	Level
1	8051 Timers and Serial Port		
2	8051 Timers and Counters - Operation		
3	Assembly language programming to generate a pulse using Mode-1 and a square wave using Mode-2 on a port pin		
4	Assembly language programming to generate a pulse using Mode-1 and a square wave using Mode-2 on a port pin		
5	8051 Serial Communication- Basics of Serial Data Communication		
6	RS-232 standard, 9 pin RS232 signals		
7	Simple Serial Port programming in Assembly and C to transmit a message and to receive data serially		
8	Simple Serial Port programming in Assembly and C to transmit a message and to receive data serially		
c	Application Areas	CO	Level
1	Timer has so many applications such as measure time generating delays, they can also be used for generating baud rates.	CO8	L3
2		CO7	L4
d	Review Questions	-	-
1	write the steps required for programming 8051 to transfer and receive data serially	CO7	L1
2	write an ALP to transfer letter "Y" serially at 9600 baud rate, continuously	CO7	L3
3	Explain the importance of TI and RI flag	CO8	L2
4	Define interrupt, and mention the difference between interrupt and polling method and also write the steps in executing interrupt	CO7	L4
5	what is the advantage and disadvantages of MODE 2 operation of 8051 when compared to Mode 1 Operation.	CO8	L2
6	write the steps required for programming 8051 to transfer and receive data serially	CO7	L1
7	write an ALP to transfer letter "Y" serially at 9600 baud rate, continuously	CO7	L3
8	Explain the importance of TI and RI flag	CO8	L2
9	Define interrupt, and mention the difference between interrupt and polling method and also write the steps in executing interrupt	CO7	L4

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10	what is the advantage and disadvantages of MODE 2 operation of 8051 when compared to Mode 1 Operation.	CO8	L2
11	write the steps required for programming 8051 to transfer and receive data serially	CO7	L1
e	Experiences	-	-
1		CO7	L2
2			
3			
4		CO8	L3
5			

E2. CIA EXAM – 2

a. Model Question Paper – 2

CIA	-2	Sem / Div:	V/A &B	Course:	8051Micro contoller	Elective:	Y
#Dept:	EC						
Date:	27/10/20 18	Time:	2:00 3:15	-C Code:	15EC563	Max Marks:	30

Note: Answer all full questions. All questions carry 15 marks.

QNo	Questions	CO	Level	Marks	Module
1	a What are subroutines. Describe the two instructions used to call subroutines with their ranges and write the significance of stacks with respect to all instructions.	CO5	L3	10	3
	b Write a ALP to find factorial of a 8-bit number N!.	CO5	L4	5	3
	OR				
2	a Write a ALP to store 10 8-bit numbers in RAM location 40H onwards and to store smallest in 50H and largest in 60H.	CO6	L4	10	3
	b Write a ALP to read switch status, if switch is closed LED is ON and if switch is open LED is OFF.(Switch to P1.1 and LED to P1.2)	CO6	L4	5	3
3	a Explain the TCON and TMOD registers of 8051	CO7	L2	10	4
	b Write a ALP to add N 8-bit numbers and store result in B register.	CO6	L3	5	3
	OR				
4	a With an example show how time delay is determined for a subroutine program having system frequency as 11.0592Mhz.	CO8	L4	10	4
	b Write programming steps of mode 2.	CO8	L4	5	4

With an example show how time delay is determined for a

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subroutine program having system frequency as 11.0592Mhz.
Write programming steps of mode 2.

b. Assignment – 2

Note: A distinct assignment to be assigned to each student.

Model Assignment Questions							
Crs Code:	15EC563	Sem:	V	Marks:	5	Time:	90 – 120 minutes
Course:	8051Microcontoller						
Note: Each student to answer 2–3 assignments. Each assignment carries equal mark.							
SNo	USN	Assignment Description			Marks	CO	Level
1	1KT16EC003	What is the difference between timer and counter? Explain the function of each bit in TMOD Register.			5	CO5	L3
2	1KT16EC004	write an ALP to generate square wave of 3KHZ frequency with 50% duty cycle on Pin P2.1 using timer 1 mode 1 operation, Assume XTAL=12MHZ and show the delay calculation.			5	CO5	L4
3	1KT16EC005	What is the difference between timer and counter? Explain the function of each bit in TMOD Register.			5	CO6	L4
4	1KT16EC008	write an ALP to generate square wave of 3KHZ frequency with 50% duty cycle on Pin P2.1 using timer 1 mode 1 operation, Assume XTAL=12MHZ and show the delay calculation.			5	CO6	L4
5	1KT16EC011	what is the advantage and disadvantages of MODE 2 operation of 8051 when compared to Mode 1 Operation.			5	CO7	L2
6	1KT16EC012	write the steps required for programming 8051 to transfer and receive data serially			5	CO6	L3
7	1KT16EC015	write an ALP to transfer letter “Y” serially at 9600 baud rate, continuously			5	CO7	L2
8	1KT16EC016	Explain the importance of TI and RI flag			5	CO6	L3
9	1KT16EC018	Define interrupt, and mention the difference between interrupt and polling method and also write the steps in executing interrupt			5	CO7	L4
10	1KT16EC020	what is the advantage and disadvantages of MODE 2 operation of 8051 when compared to Mode 1 Operation.			5	CO8	L4
11	1KT16EC022	Explain the importance of TI and RI flag			5	CO8	L4
12	1KT16EC023	Define interrupt, and mention the difference between interrupt and polling method and also write the steps in executing interrupt			5	CO5	L3
13	1KT16EC024	what is the advantage and disadvantages of MODE 2 operation of 8051 when compared to Mode 1 Operation.			5	CO5	L4
14	1KT16EC025	write the steps required for programming 8051 to transfer and receive data serially			5	CO6	L4
15	1KT16EC026	write an ALP to transfer letter “Y” serially at 9600 baud rate, continuously			5	CO6	L4
16	1KT16EC027	Explain the importance of TI and RI flag			5	CO7	L2
17	1KT16EC028	Define interrupt, and mention the difference between interrupt and polling method and also write the steps in executing interrupt			5	CO6	L3

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18	1KT16EC029	what is the advantage and disadvantages of MODE 2 operation of 8051 when compared to Mode 1 Operation.	5	CO5	L4
19	1KT16EC032	write the steps required for programming 8051 to transfer and receive data serially	5	CO6	L4
20	1KT16EC033	What are subroutines. Describe the two instructions used to call subroutines with their ranges and write the significance of stacks with respect to all instructions.	5	CO6	L4
21	1KT16EC035	Write a ALP to find factorial of a 8-bit number N!.	5	CO7	L2
22	1KT16EC407	Write a ALP to store 10 8-bit numbers in RAM location 40H onwards and to store smallest in 50H and largest in 60H.	5	CO6	L3
23	1KT16EC410	Write a ALP to read switch status, if switch is closed LED is ON and if switch is open LED is OFF.(Switch to P1.1 and LED to P1.2)	5	CO7	L2
24	1KT16EC413	Explain the TCON and TMOD registers of 8051	5	CO6	L3
25	1KT16EC417	Write a ALP to add N 8-bit numbers and store result in B register.	5	CO8	L4
26	1KT16EC425	With an example show how time delay is determined for a subroutine program having system frequency as 11.0592Mhz.	5	CO8	L4
27	1KT15EC016	Write programming steps of mode 2.	5	CO8	L4
28	1KT15EC027	write an ALP to generate square wave of 3KHZ frequency with 50% duty cycle on Pin P2.1 using timer 1 mode 1 operation, Assume XTAL=12MHZ and show the delay calculation.	5	CO5	L4
29	1KT15EC066	What is the difference between timer and counter? Explain the function of each bit in TMOD Register.	5	CO6	L4
30	1KT16EC041	write an ALP to generate square wave of 3KHZ frequency with 50% duty cycle on Pin P2.1 using timer 1 mode 1 operation, Assume XTAL=12MHZ and show the delay calculation.	5	CO6	L4
31	1KT16EC042	what is the advantage and disadvantages of MODE 2 operation of 8051 when compared to Mode 1 Operation.	5	CO7	L2
32	1KT16EC043	write the steps required for programming 8051 to transfer and receive data serially	5	CO6	L3
33	1KT16EC044	write an ALP to transfer letter "Y" serially at 9600 baud rate, continuously	5	CO7	L2
34	1KT16EC045	Explain the importance of TI and RI flag	5	CO6	L3
35	1KT16EC047	Define interrupt, and mention the difference between interrupt and polling method and also write the steps in executing interrupt	5	CO7	L4
36	1KT16EC048	what is the advantage and disadvantages of MODE 2 operation of 8051 when compared to Mode 1 Operation.	5	CO8	L4
37	1KT16EC049	Explain the importance of TI and RI flag	5	CO8	L4
38	1KT16EC050	Define interrupt, and mention the difference between interrupt and polling method and also write the steps in executing interrupt	5	CO5	L3
39	1KT16EC051	what is the advantage and disadvantages of MODE 2 operation of 8051 when compared to Mode 1 Operation.	5	CO5	L4
40	1KT16EC052	write the steps required for programming 8051 to transfer and receive data serially	5	CO6	L4

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41	1KT16EC053	write an ALP to transfer letter "Y" serially at 9600 baud rate, continuously	5	CO6	L4
42	1KT16EC057	Write a ALP to store 10 8-bit numbers in RAM location 40H onwards and to store smallest in 50H and largest in 60H.	5	CO6	L3
43	1KT16EC058	Write a ALP to read switch status, if switch is closed LED is ON and if switch is open LED is OFF.(Switch to P1.1 and LED to P1.2)	5	CO7	L2
44	1KT16EC059	Explain the TCON and TMOD registers of 8051	5	CO6	L3
45	1KT16EC061	Write a ALP to add N 8-bit numbers and store result in B register.	5	CO8	L4
46	1KT16EC063	With an example show how time delay is determined for a subroutine program having system frequency as 11.0592Mhz.	5	CO8	L4
47	1KT16EC064	Write programming steps of mode 2.	5	CO8	L4
48	1KT16EC067	write an ALP to generate square wave of 3KHZ frequency with 50% duty cycle on Pin P2.1 using timer 1 mode 1 operation, Assume XTAL=12MHZ and show the delay calculation.	5	CO5	L4
49	1KT16EC068	What is the difference between timer and counter? Explain the function of each bit in TMOD Register.	5	CO6	L4
50	1KT16EC069	write an ALP to generate square wave of 3KHZ frequency with 50% duty cycle on Pin P2.1 using timer 1 mode 1 operation, Assume XTAL=12MHZ and show the delay calculation.	5	CO6	L4
51	1KT16EC070	what is the advantage and disadvantages of MODE 2 operation of 8051 when compared to Mode 1 Operation.	5	CO7	L2
52	1KT16EC073	write the steps required for programming 8051 to transfer and receive data serially	5	CO6	L3
53	1KT16EC074	write an ALP to transfer letter "Y" serially at 9600 baud rate, continuously	5	CO7	L2
54	1KT16EC077	Explain the importance of TI and RI flag	5	CO6	L3
55	1KT16EC078	what is the advantage and disadvantages of MODE 2 operation of 8051 when compared to Mode 1 Operation.	5	CO7	L2
56	1KT16EC079	write the steps required for programming 8051 to transfer and receive data serially	5	CO6	L3
57	1KT16EC080	write an ALP to transfer letter "Y" serially at 9600 baud rate, continuously	5	CO7	L2
58	1KT17EC402	Explain the importance of TI and RI flag	5	CO6	L3
59	1KT17EC403	Define interrupt, and mention the difference between interrupt and polling method and also write the steps in executing interrupt	5	CO7	L4
60	1KT17EC406	what is the advantage and disadvantages of MODE 2 operation of 8051 when compared to Mode 1 Operation.	5	CO8	L4
61	1KT17EC408	Explain the importance of TI and RI flag	5	CO8	L4
62	1KT16EC066	Define interrupt, and mention the difference between interrupt and polling method and also write the steps in executing interrupt	5	CO5	L3



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D3. TEACHING PLAN - 3

Module – 5

Title:	Divide and Conquer	Appr Time:	16 Hrs
a	Course Outcomes	-	Blooms Level
-	The student should be able to:	-	Level
1	Understand different interrupt schemes	CO9	L2
2	Apply interrupts for interfacing adc,dac etc	CO10	L3
b	Course Schedule		
Class No	Module Content Covered	CO	Level
1	8051 Interrupts and Interfacing Applications:.	CO10	L3
2	8051 Interrupts	CO9	L4
3	8051 Assembly language programming to generate an external interrupt using a 72switch,	CO10	L3
4	8051 Assembly language programming to generate an external interrupt using a 72switch,	CO9	L4
5	8051 C programming to generate a square waveform on a port pin using a Timer interrupt.	CO10	L3
6	8051 C programming to generate a square waveform on a port pin using a Timer interrupt.	CO9	L4
7	Interfacing 8051 to ADC-0804	CO10	L3
8	LCD and Stepper motor and their 8051 Assembly language interfacing programming	CO9	L4
9	LCD and Stepper motor and their 8051 Assembly language interfacing programming	CO10	L3
c	Application Areas	CO	Level
1	microcontroller is interfaced with devices such as ADC, keypad, LCD display and so on	CO10	L3
d	Review Questions	-	-
1	Explain DAC interface with diagram and also write a C program to generate staircase waveform	CO10	L1
2	Show the interfacing circuit and functional pins of LCD	CO10	L3
3	Draw the pin diagram of 8255 and briefly explain the signals	CO9	L2
4	Explain about stepper motor interface with diagram, and also write a c program if motor takes 90 steps to complete one revolution and show the calculation (Clockwise Direction)	CO9	L4

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5	Explain the software interrupts of 8051.	CO9	L2
6	Interface ADC 0804 to 8051 and write a ALP to convert analog input to digital value.	CO10	L5
7	Explain IE and IP register.	CO9	L2
8	A switch is connected to pin P2.7 and stepper motor to P1. Write a ALP program to show status of switch.	CO10	L5
e	Experiences	-	-
1		CO10	L2
2			
3			
4		CO9	L3
5			

E3. CIA EXAM – 3

a. Model Question Paper - 3

CIA	-3	Sem / Div:	V/A & B	Course:	8051Microcontoll	Elective:	Y
#Dept:	EC				er		
Date:	24/11/2018	Time:	2:00 – 3:15	C Code:	15EC563	Max Marks:	30

Note: Answer all full questions. All questions carry 15 marks.

QNo	Questions	CO	Level	Marks	Module
1	a Explain Serial communication and RS232 standards.	CO8	L2	10	4
	b Write ALP to create a pluse width of 50ms on P2.3 using Timer 0 operating in mode 1.At frequency 11.0592 MHz	CO7	L5	5	4
	OR				
2	a Assuming that XTAL=22Mhz write a program to generate a square wave of frequency 1Khz on pin P1.2 using timer 0 mode 2 .	CO7	L5	10	4
	b Discuss the steps of mode 2 programming.	CO7	L2	5	4
3	a Explain the software interrupts of 8051.	CO9	L2	10	5
	b Interface ADC 0804 to 8051 and write a ALP to convert analog input to digital value.	CO10	L5	5	5
	OR				
4	a Explain IE and IP register.	CO9	L2	10	5
	b A switch is connected to pin P2.7 and stepper motor to P1. Write a ALP program to show status of switch.	CO10	L5	5	5

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b. Assignment – 3

Note: A distinct assignment to be assigned to each student.

Model Assignment Questions							
Crs Code:	15EC563	Sem:	V	Marks:	5	Time:	90 – 120 minutes
Course:	8051 Microcontoller						
Note: Each student to answer 2-3 assignments. Each assignment carries equal mark.							
SNo	USN	Assignment Description			Mark s	CO	Level
1	1KT16EC003	Explain DAC interface with diagram and also write a C program to generate staircase waveform			5	CO9	L2
2	1KT16EC004	Show the interfacing circuit and functional pins of LCD			5	CO9	L3
3	1KT16EC005	Draw the pin diagram of 8255 and briefly explain the signals.				CO10	L4
4	1KT16EC008	Explain about stepper motor interface with diagram, and also write a c program if motor takes 90 steps to complete one revolution and show the calculation (Clockwise Direction)			5	CO10	L3
5	1KT16EC011	Explain DAC interface with diagram and also write a C program to generate staircase waveform			5	CO10	L1
6	1KT16EC012	Show the interfacing circuit and functional pins of LCD			5	CO10	L3
7	1KT16EC015	Draw the pin diagram of 8255 and briefly explain the signals			5	CO9	L2
8	1KT16EC016	Explain about stepper motor interface with diagram, and also write a c program if motor takes 90 steps to complete one revolution and show the calculation (Clockwise Direction)			5	CO9	L4
9	1KT16EC018	Explain the software interrupts of 8051.			5	CO9	L2
10	1KT16EC020	Interface ADC 0804 to 8051 and write a ALP to convert analog input to digital value.			5	CO10	L5
11	1KT16EC022	Explain IE and IP register.			5	CO9	L2
12	1KT16EC023	A switch is coonected to pin P2.7 and stepper motor to P1. Write a ALP program to show status of switch.			5	CO10	L5
13	1KT16EC024	Explain the software interrupts of 8051.			5	CO9	L2
14	1KT16EC025	Interface ADC 0804 to 8051 and write a ALP to convert analog input to digital value.			5	CO10	L5
15	1KT16EC026	Explain IE and IP register.			5	CO9	L2
16	1KT16EC027	A switch is coonected to pin P2.7 and stepper motor to P1. Write a ALP program to show status of switch.			5	CO10	L5
17	1KT16EC028	Show the interfacing circuit and functional pins of LCD			5	CO9	L3
18	1KT16EC029	Draw the pin diagram of 8255 and briefly explain the signals.				CO10	L4
19	1KT16EC032	Explain about stepper motor interface with diagram, and also write a c program if motor takes 90 steps to complete one revolution and show the calculation (Clockwise Direction)			5	CO10	L3
20	1KT16EC033	Explain DAC interface with diagram and also write a C program to generate staircase waveform			5	CO10	L1
21	1KT16EC035	Show the interfacing circuit and functional pins of LCD			5	CO10	L3
22	1KT16EC407	Draw the pin diagram of 8255 and briefly explain the signals			5	CO9	L2
23	1KT16EC410	Explain about stepper motor interface with diagram, and also write a c program if motor takes 90 steps to complete one			5	CO9	L4

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		revolution and show the calculation (Clockwise Direction)			
24	1KT16EC413	Explain the software interrupts of 8051.	5	CO9	L2
25	1KT16EC417	Interface ADC 0804 to 8051 and write a ALP to convert analog input to digital value.	5	CO10	L5
26	1KT16EC425	Explain IE and IP register.	5	CO9	L2
27	1KT15EC016	A switch is coonected to pin P2.7 and stepper motor to P1. Write a ALP program to show status of switch.	5	CO10	L5
28	1KT15EC027	Explain the software interrupts of 8051.	5	CO9	L2
29	1KT15EC066	Interface ADC 0804 to 8051 and write a ALP to convert analog input to digital value.	5	CO10	L5
30	1KT16EC041	Explain IE and IP register.	5	CO9	L2
31	1KT16EC042	A switch is coonected to pin P2.7 and stepper motor to P1. Write a ALP program to show status of switch.	5	CO10	L5
32	1KT16EC043	Explain the software interrupts of 8051.	5	CO9	L2
33	1KT16EC044	Interface ADC 0804 to 8051 and write a ALP to convert analog input to digital value.	5	CO10	L5
34	1KT16EC045	Explain IE and IP register.	5	CO9	L2
35	1KT16EC047	A switch is coonected to pin P2.7 and stepper motor to P1. Write a ALP program to show status of switch.	5	CO10	L5
36	1KT16EC048	Show the interfacing circuit and functional pins of LCD	5	CO9	L3
37	1KT16EC049	Draw the pin diagram of 8255 and briefly explain the signals.		CO10	L4
38	1KT16EC050	Explain about stepper motor interface with diagram, and also write a c program if motor takes 90 steps to complete one revolution and show the calculation (Clockwise Direction)	5	CO10	L3
39	1KT16EC051	Explain DAC interface with diagram and also write a C program to generate staircase waveform	5	CO10	L1
40	1KT16EC052	Show the interfacing circuit and functional pins of LCD	5	CO10	L3
41	1KT16EC053	Draw the pin diagram of 8255 and briefly explain the signals	5	CO9	L2
42	1KT16EC057	Explain about stepper motor interface with diagram, and also write a c program if motor takes 90 steps to complete one revolution and show the calculation (Clockwise Direction)	5	CO9	L4
43	1KT16EC058	Explain the software interrupts of 8051.	5	CO9	L2
44	1KT16EC059	Explain about stepper motor interface with diagram, and also write a c program if motor takes 90 steps to complete one revolution and show the calculation (Clockwise Direction)	5	CO9	L4
45	1KT16EC061	Explain the software interrupts of 8051.	5	CO9	L2
46	1KT16EC063	Interface ADC 0804 to 8051 and write a ALP to convert analog input to digital value.	5	CO10	L5
47	1KT16EC064	Explain IE and IP register.	5	CO9	L2
48	1KT16EC067	A switch is coonected to pin P2.7 and stepper motor to P1. Write a ALP program to show status of switch.	5	CO10	L5
49	1KT16EC068	Explain the software interrupts of 8051.	5	CO9	L2
50	1KT16EC069	Interface ADC 0804 to 8051 and write a ALP to convert analog input to digital value.	5	CO10	L5

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51	1KT16EC070	Explain IE and IP register.	5	CO9	L2
52	1KT16EC073	A switch is connected to pin P2.7 and stepper motor to P1. Write a ALP program to show status of switch.	5	CO10	L5
53	1KT16EC074	Explain the software interrupts of 8051.	5	CO9	L2
54	1KT16EC077	Interface ADC 0804 to 8051 and write a ALP to convert analog input to digital value.	5	CO10	L5
55	1KT16EC078	Explain IE and IP register.	5	CO9	L2
56	1KT16EC079	A switch is connected to pin P2.7 and stepper motor to P1. Write a ALP program to show status of switch.	5	CO10	L5
57	1KT16EC080	Explain DAC interface with diagram and also write a C program to generate staircase waveform	5	CO9	L2
58	1KT17EC402	Show the interfacing circuit and functional pins of LCD	5	CO9	L3
59	1KT17EC403	Draw the pin diagram of 8255 and briefly explain the signals.		CO10	L4
60	1KT17EC406	Explain about stepper motor interface with diagram, and also write a c program if motor takes 90 steps to complete one revolution and show the calculation (Clockwise Direction)	5	CO10	L3
61	1KT17EC408	Explain DAC interface with diagram and also write a C program to generate staircase waveform	5	CO10	L1
62	1KT16EC066	Explain IE and IP register.	5	CO9	L2

F. EXAM PREPARATION

1. University Model Question Paper

Course:	8051 MICROCONTROLLER				Month / Year	May /2018	
Crs Code:	15EC563	Sem:	V	Marks:	80	Time: 180 minutes	
-	Note	Answer all FIVE full questions. All questions carry equal marks.			Mark s	CO	Leve l
1	a	Describe the hardware features of 8051 with internal block diagram.			10	CO1	L2
	b	Explain the port pin configuration of 8051 with port pin diagrams.			5	CO2	L2
		OR					
2	a	Explain the internal RAM and ROM architecture of along with SFR's.			7	CO1	L2
	b	Explain the external interfacing of 8K of RAM and 4K of EEPROM to 8051			8	CO2	L2
-	a						
3	a	Explain the addressing modes of 8051			10	CO3	L2
	b	Explain byte and bit logical AND,OR,XOR,NOT operations			5	CO4	L2
		OR					
4	a	Explain external addressing modes of 8051 along with examples.			8	CO4	L2
	b	Explain the following instructions: SWAP, XCHD, ADDC, POP, DIV			7	CO3	L2
5	a	What are subroutines. Describe the two instructions used to call subroutines with their ranges and write the significance of stacks			10	CO5	L2

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		with respect to all instructions.			
	b	Write a ALP to find factorial of a 8-bit number N!.	5	CO5	L4
		OR			
6	a	Write a ALP to store 10 8-bit numbers in RAM location 40H onwards and to store smallest in 50H and largest in 60H.	7	CO6	L5
	b	Write a ALP to read switch status, if switch is closed LED is ON and if switch is open LED is OFF.(Switch to P1.1 and LED to P1.2)	8	CO6	L5
7	a	Explain the TCON and TMOD registers of 8051	10	CO7	L2
	b	Write a ALP to add N 8-bit numbers and store result in B register.	5	CO7	L4
		OR			
8	a	With an example show how time delay is determined for a subroutine program having system frequency as 11.0592Mhz.	7	CO8	L5
	b	Write programming steps of mode 2.	8	CO7	L5
	d				
9	a	Explain Serial communication and RS232 standards.	7	CO9	L2
	b	Write ALP to create a pluse width of 50ms on P2.3 using Timer 0 operating in mode 1.At frequency 11.0592 MHz	8	CO9	L4
		OR			
10	a	Explain the software interrupts of 8051.	7	CO10	L2
	b	Interface ADC 0804 to 8051 and write a ALP to convert analog input to digital value.	8	CO10	L4

2. SEE Important Questions

Course:	8051 MICROCONTROLLER				Month / Year	May /2018		
Crs Code:	15EC563	Sem:	V	Crs Code:	15EC563	Sem:	V	
	Note	Answer all FIVE full questions. All questions carry equal marks.				-	-	
Mo dul e	Qno.	Important Question				Mark s	CO	Year
1	a	Describe the hardware features of 8051 with internal block diagram.				10	CO1	L2
	b	Explain the port pin configuration of 8051 with port pin diagrams.				5	CO2	L2
		OR						
2	a	Explain the internal RAM and ROM architecture of along with SFR's.				7	CO1	L2
	b	Explain the external interfacing of 8K of RAM and 4K of EEPROM to 8051				8	CO2	L2
-	a							
3	a	Explain the addressing modes of 8051				10	CO3	L2
	b	Explain byte and bit logical AND,OR,XOR,NOT operations				5	CO4	L2
		OR						
4	a	Explain external addressing modes of 8051 along with examples.				8	C04	L2

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	b	Explain the following instructions: SWAP, XCHD, ADDC, POP, DIV	7	CO3	L2
5	a	What are subroutines. Describe the two instructions used to call subroutines with their ranges and write the significance of stacks with respect to all instructions.	10	CO5	L2
	b	Write a ALP to find factorial of a 8-bit number N!.	5	CO5	L4
		OR			
6	a	Write a ALP to store 10 8-bit numbers in RAM location 40H onwards and to store smallest in 50H and largest in 60H.	7	CO6	L5
	b	Write a ALP to read switch status, if switch is closed LED is ON and if switch is open LED is OFF. (Switch to P1.1 and LED to P1.2)	8	CO6	L5
7	a	Explain the TCON and TMOD registers of 8051	10	CO7	L2
	b	Write a ALP to add N 8-bit numbers and store result in B register.	5	CO7	L4
		OR			
8	a	With an example show how time delay is determined for a subroutine program having system frequency as 11.0592Mhz.	7	CO8	L5
	b	Write programming steps of mode 2.	8	CO7	L5
	d				
9	a	Explain Serial communication and RS232 standards.	7	CO9	L2
	b	Write ALP to create a pulse width of 50ms on P2.3 using Timer 0 operating in mode 1. At frequency 11.0592 MHz	8	CO9	L4
		OR			
10	a	Explain the software interrupts of 8051.	7	CO10	L2
	b	Interface ADC 0804 to 8051 and write a ALP to convert analog input to digital value.	8	CO10	L4