

IG Valley, Madurai Main Road, Manikandam, Tiruchirappalli - 620012

NAAC DOCUMENTS

QUALITY INDICATOR FRAME WORK

CRITERION – 1

CURRICULAR ASPECTS

SUBMITTED BY

IQAC INTERNAL QUALITY ASSURANCE CELL INDRA GANESAN COLLEGE OF ENGINEERING



DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

ACADEMIC YEAR 2019-2020 / ODD SEMESTER

1.2 Academic Flexibility (30)

1.2.1 Number of Certificate/Value added courses offered and online courses of MOOCs, SWAYAM, NPTEL etc. (where the students of the institution have enrolled and successfully completed during the last five years)

AND

1.2.2 Percentage of students enrolled in Certificate/ Value added courses and also completed online courses of MOOCs, SWAYAM, NPTEL etc. as against the total number of students during the last five years

VAC Title	PIC N	C MICROCONTROLLER AND ARM PROCESSOR								
Resource Person:Mr.Senthil Murugan, Mr.K.Manokar, Trainer, Pantech Solutions Trichy										
Date of con	nduct fro	m:	02.12.2019	02.12.2019 To: 06.12.2019		06.12.2019		Duration:	30 Hours	
Organized Department:			ELECTRONICS AND COMMUNICATION ENGINEERING							
Participan	t Year:	ECF	E IV, III, II	IV, III, II Semester:		ODD	No. of Students Registered:		72	
Venue:	DSP Lab, IGCE									

Table of Content

S. No	Document	Page No
1.	VAC Circular	3-3
2.	VAC Schedule	4-4
3.	List of the Students Participation	5-6
4.	VAC Report	7-8
5.	VAC Test Paper	9-11
6.	VAC Answer Key	12-12
7.	VAC Test Answer Sheet- Sample	13-18
8.	Attendance Of Students	19-22
9.	VAC Mark Statement	23-26
10.	Course Completion Certificates	27-45



Department of Electronics and Communication Engineering

Academic Year 2019-2020-ODD Semester

22.11.2019

DEPARTMENT CIRCULAR

Department of Electronics and Communication Engineering and IQAC of IGCE in association with Pantech Solution, Trichy, is going to organize Value Added Course for all Second, Third and Final year students on "PIC Micro controller and ARM processor" from 02.12.2019 to 06.12.2019. Certificates will be issued to the eligible participants at the end of the Course. This training is to be provided in our campus.

	1. Mr.M.Senthil Murugan,
	Trainer,
	Pantech Solutions
Resource Persons	Trichy
	2. Mr.K.Manokar,
	Trainer,
	Pantech Solutions
	Trichy
Venue	DSP lab, IGCE

HOD/ECE

Ce:

- Principal office
- IQAC Co-Ordinator
- Class In charges II, III & IV-Year
- II, III & IV-Year ECE Students
- Office File
- Notice Board

Dr. G. Balakrishnan, M.E., Ph.D., Principal Indra Ganesan College of Engineering IG Valley, Madurai Main Road Manikandam, Trichy-620 012.





Value Added Course

"PIC Microcontroller and ARM processor"

SYLLABUS

S.NO	TOPIC COVERED	DURATION (in hours)	DATE
1	PIC- Introduction, Architecture, Serial port interfacing devices	3	02.12.2019
2	I/O Programming Arithmetic	3	02.12.2019
3	Peripheral Interfacing of Pic MC- USART, Asynchronous Transmission, BAUD RATEGenerator	3	03.12.2019
4	Timer programming in Assembly and C	3	03.12.2019
5	ARM Architecture, Register Interrupts ,Software Interrupt	3	04.12.2019
6	ARM assembly Language programming	3	04.12.2019
7	Implementation using Keil: Arithmetic and logical operations	3	05.12.2019
8	ARM Development Tools,KEIL IDE Simple Project Creation,Simulation hardware interface	3	05.12.2019
9	Temperature sensor	3	06.12.2019
10	Accessing on chip ADC and to display the value in PC serial terminal	3	06.12.2019
1	Exam	1	06.12.2019
	Total Hours (Excluding Exam)	30	

R. Dithy

HOD/ECE

Dr. G. Balakrishnan, M.E., Ph.D., Principal Indra Ganesan College of Engineering IG Valley, Madurai Main Road Manikandam, Trichy-620 012.





Value Added Course

"PIC Microcontroller and ARM processor"

STUDENTS PARTICIPATION LIST

S.NO	REG NO	STUDENTS NAME	YEAR/ BRANCH	
1	811216106001	ABARNA T	IV/ECE	
2	811216106002	AMSAVALLI S	IV/ECE	
3	811216106003	ANUSHYA S	IV/ECE	
4	811216106004	AROCKIA NIVETHA S	IV/ECE	
5	811216106005	ASHEFA N	IV/ECE	
6	811216106006	DHANALAKSHMI T	IV/ECE	
7	811216106008	FEMINA BEGUM A	IV/ECE	
8	811216106009	GAYATHRI J	IV/ECE	
9	and a second state of the	KI:ERTHANA P	IV/ECE	
10		KUERTHANA S	IV/ECE	
11	811216106013	KFERTHIKA D	IV/ECE	
12		ATHASRI S	IV/ECE	
13	whether managements are seen	MENAKA R	IV/ECE	
14	811216106016	MITHRA P	IV/ECE	
15	811216106017 N	MOHAN RAJ S	IV/ECE	
16	811216106018	ILAVAR NISHA F	IV/ECE	
17	811216106019 P	AVITHRA P	IV/ECE	
	an analyzer a substitution of the second of the	AVITHRA V	IV/ECE	
		RABHU A	IV/ECE	
	811216106022 P	REETHA M	IV/ECE	
~		REMA S	IV/ECE	
		AAHUL BN	IV/ECE	
	~ *********	AMYA S	IV/ECE	
24 8	811216106027 RI	UBAN RAJ S	IV/ECE	
		ARANYA M	IV/ECE	
26 8	311216106030 SA	RAVANAN S	IV/ECE	
27 8	11216106031 SF	IANAKYA P	IV/ECE	
28 8	11216106032 SC	DRNA J	IV/ECE	
marrie apresentation	And a second	DHARSAN K	IV/ECE	
8 0	311216106034 SU	VATHI R	IV/ECE	
wormen -	the second se	ATHI S	IV/ECE	
2 8	11216106036 LID	AYA RANI K	IV/ECE	
3 8	11216106037 VE	TTAI P	IV/ECE	
4 8	11217106001 AIS	SHWARIYA S	III / ECE	

Dr. G. Balakrishnan, M.E., Ph.D., Principal

Indra Ganesan College of Engineering IG Valley, Madurai Main Road Manikandam, Trichy-620 012.





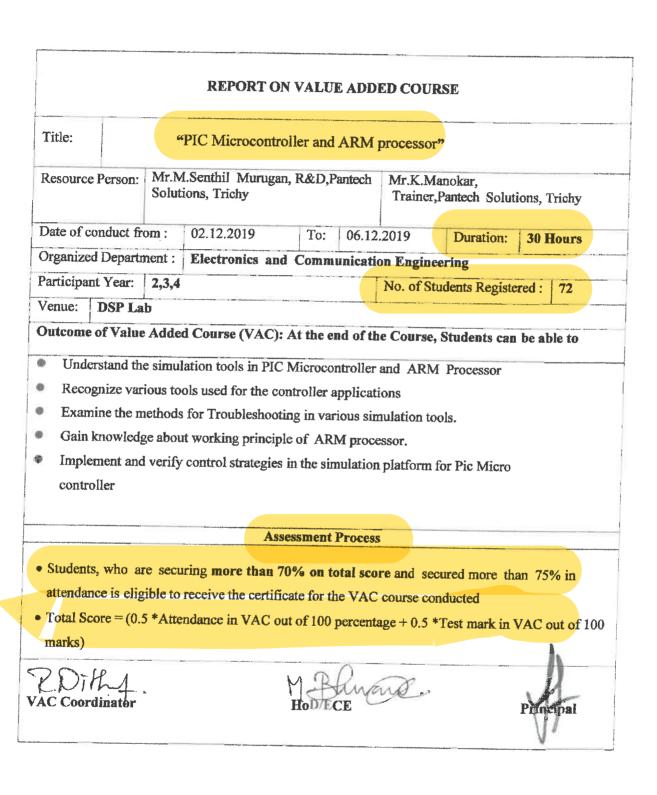
S.N	O REG NO	STUDENTS NAME	YEAR/ BRANCH	
35	811217106002	ANEESHA A	III / ECE	
36	811217106003	DEEPIKA B	III / ECE	
37	811217106004	DURGA D	III / ECE	
38	811217106005	GANGADEVI M	III / ECE	
39	811217106006	JANANI C	III / ECE	
40	811217106009		III / ECE	
41	811217106010	KOSIANANTH R	III / ECE	
42	811217106011	LAKSHMI M	III / ECE	
43	811217106012	MANIKANDAN M	III / ECE	****
44	811217106013	MEKALA DEVI S	III / ECE	
45	811217106014	PANDIMEENA R	III / ECE	
46	811217106016	PREETHI V	III / ECE	
47	811217106017	RAASHITHA	III / ECE	
main sum		JANNATH A		
48	811217106018	RANJITHA T	III / ECE	
49	811217106019	RIYAS MOHAMMED K	III / ECE	
50	811217106020	SAIMOULIN	III / ECE	
51	811217106021	SARUMATHI A	III / ECE	
52	811217106022	SHALINI M	III / ECE	
53	811217106023	SIVA SANKARI M	III / ECE	-
54	811218106001	ABINAYA R	II / ECE	-
55	811218106002	AKILA K	II / ECE	~
56	811218106004	ARTHI M	II / ECE	-
57	811218106005	AZHAGU MEENA M	II / ECE	-
58	811218106006	DEVI K	II / ECE	
59	811218106007	DHANALAKSHMI S	II / ECE	
60	811218106008	HARI KRISHNAN S	II / ECE	
61	811218106009	JANANI V	II / ECE	
62	811218106010	JENIFER C	II / ECE	
63	811218106011	JENIFER S	II / ECE	
64	811218106012	KESAVAMURTHIM	II / ECE	
55	811218106013	KIRUTHIKA S	II / ECE	
56	811218106015	MARIA FRANCIS D	II / ECE	(A.
57	811218106016	RAGAVIA		r. G. Balakrishnan, M.E., Ph.D.
58	811218106017	RUTHRAMOORTHY M	II / ECE	Principal
morrow and a	011010105010	SABARINATHAN K	II / ECE	dra Ganesan College of Engineering
	011010107070	SARMILA M	II / ECE	IG Valley, Madurai Main Road
	011010105000	SUMATHI S		Manikandam, Trichy-620 012.
	· ····································	HIVYA PRIYA R	II / ECE	



M walnus

HOD/ECE





Main Road (NH-45B)

Approved by AICTE, NewDelhi & Affillated to Anna University, Ch

Dr. G. Balakrishnan, M.E., Ph.D., Principal Indra Ganesan College of Engineering IG Valley, Madurai Main Road Manikandam, Trichy-620 012.





Title:		PIC Microcontrol			processo	r"			
Resource Person:	Resource Mr.M.Senthil Murugan, R&D,Pantech			antech				s, Trichy	
Date of condu		02.12.2019	To:	06.12.		Duration:	30 1	Iours	
Organized De	partment :	Electronics and	Comm	unicatio	n Engin	eering	i.	• With Statistics at	
Participant Ye	ar: 2,3,4	ан тайнаан на Малланан на	89 m ale		No. of Si	tudents Registe	red :	72	
			•				/		
			8				/		
Google		Manikandam, Tamil I VRP+2XG, Manikand; at 10.741398° ong 72.637846° 12/12/19 10:19 AM GM	am, Pan	iappur, T	amil Nadu		Б Мар С	Camera	
Google		URP+2XG, Manikandi at 10.741398° ong 78.637846°	am, Pan	iappur, T	amil Nadu		6 Map C	Samera	





<u>Value Added Course</u> "PIC Microcontroller and ARM processor"

Name of the Student:

Year/ Sem:

AU Register Number:

MULTIPLE CHOICE QUESTIONS (25X1 = 25 Marks)

1. Which of the fo	llowing should a	microcontr	oller at-least should consist of ?				
a)CPU, R(OM, I/O ports, and	timers	b) RAM, ROM, I/O ports, and timers				
			d) CPU, RAM, ROM, I/O ports, and timers				
	-		, , , , , , , , , , , , , , , , , , ,				
2. Which of the fo	llowing buses are	present in a	a microcontroller for transferring data from one place to another?				
a) data bus	only		b) data bus, address bus				
c) address	bus only		d) address bus, data bus, control bus				
3. Which of the fo	llowing file extens	ion that is l	oaded in a micro controller for executing any instruction?				
a). c	b).txt	c) .hex	d).doc				
			,				
4. Which of the fol	llowing architectu	re is follow	ed by general-purpose microprocessors?				
a) Von Neu	nann architecture		b) Harvard architecture				
c) None of th	e mentioned		d) All of the mentioned				
& Which of the fel	Y						
3. which of the 101 a) $\Delta RM7 = 1$	on Neumann	roller does	n't match with its architecture below?				
c) ARM9 H			b) Microchip PIC - Harvard				
			d) MSP430 Harvard				
6. When the micro	controller execu	les samo ari	ithmetic operations, then the flag bits of which of the				
following regis	ter are affected?	tes some all	united operations, then the hag bits of which of the				
a) DPTR	b) PSW		15 1990				
a j Di TK	U) ESW	c) PC	d) SP				
7. Which of the foll	owing steps have	to be follow	ed for interfacing a sensor to a microcontroller 8051?				
a) interface s	ensor with ADC a	nd ADC with	8051				
b) interface s	ensor with the MA	X232, send	now to micro controller, analyse the results controller,				
ADC conv	ersion, analyse the	results	to make volutioner, analyse me results controller,				
c) make the	appropriate conne	ctions with t	he micro controller				
A) C.A							

d) none of the mentioned

Dr. G. Balakrishnan, M.E., Ph.D., Principal Indra Ganesan College of Engineering IG Valley, Madurai Main Road Manikandam, Trichy-620 012.



8. Which of the following devices are specifically being used for converting serial to parallel and from parallel to serial respectively?

a) Micro o	controller	b) timers	c) counters		d) registers
9. Which of t	he following	nine of a mice			
	are romowing	pins of a micr	o controner are di	rectly con	nected with 8255?
a)WR	b) D0-D7	c) RD	d) A	Ul of the r	mentioned
10. Why are	solid-state r	elavs advanta	geous over electro	mechani	ralaus?
a) they nee	ed less voltage	e to be energize	d b) they n	leed zero	voltage circuit
c) they nee	ed less current	to be energized	d d) none d	of the mer	tioned
11. The tota	l space for th	e data memor	y available in the A	AVR-base	ed microcontroller is?
a) FFFH	b) FH	c) FF	FFH	d) FFFFF	FFH
a) it is use b) it is use	d to jump to to d to check the f to compare t	te given menti zero flag wo registers	out BRNE instruc oned label when the	tion in av e zero flag	r micro controller ? gaccounts to ()
	d to compare t	wo values			
13. AVR, w	hich of the fo	llowing regist	ers are there for th	ie I/O pro	gramming of ports?
a) PIN	b) DDR	c) F	ORT		of the mentioned
any other a) the inten b) both the c) the interr d) the interr	interrupt? upt that is mo interrupts wil upt having low upt which is b	re priority in the handled si w priority in the bing done first	he interrupt vector t	able will l ble will b 1 frame si	e served first
16. What is th	e internal Vr	of of an Atma	ma 37 mania - P		
a) 3.3V	b) 2.56V	c) 5		d) all	of the mentioned
17. The 8255 is a) Digital to		b) Input/ Outp	ut c) Analog to	Digital	d) None of the mentioned
18. Which of the	he following j	oins of a micro	controller are dire	ectly con	rected with \$255?
a)WR	b) D0-	D7 c)	RD	i) All of th	he mentioned
		Dr. G	. Balakrishnan	, M.E., Ph	n.D.,
		Indra	Principal Ganesan College of	Engineer	ing

Indra Ganesan College of Engineerin IG Valley, Madurai Main Road Manikandam, Trichy-620 012.



19. Does 8255 have handshaking capability?

a) depends on the conditions b) cant be said c) yes d) no

20. Why are ULN2803 normally used between the micro controllers and the relays?

- a) for increasing the voltage capability required by a relay
- b) for switching purposes
- c) for increasing the current capability required by a relay
- d) all of the mentioned

21 .Why are opto isolators normally used between the micro controllers and the LN2803?

a) to reduce the back emf b) to increase the current c) to increase the voltage d) to optimize the current

22. Which of the following bit/s of the status register that allows the microcontroller to operate in its low power mode?

a) CPU off	b) Z
c) N	d) Reserved

23. To improve the efficiency of an MSP430 based microcontroller, for one register

- a) there are two values for each addressing mode
- b) there is only one value for all addressing modes
- c) there are 4 values for four addressing modes
- d) there are 2 values for four addressing modes

24. Which of the following is the basic functions of a timer?

- a) it can control the compare, capture mode
- b) it provided a time delay
- c) it can act as a counter
- d) all of the mentioned

25. Which of the following is correct about WDTCTL?

- a) it is guided against accidental writes that require a password
- b) a rese will occur if a value with an incorrect password is written to WDTCTL
- c) it is a 16 bit register
- d) all of the mentioned

Dr. G. Balakrishnan, M.E., Ph.D., Principal Indra Ganesan College of Engineering

ndra Ganesan College of Engineering IG Valley, Madurai Main Road Manikandam, Trichy-620 012.



Value Added Course

"PIC Microcontroller and ARM processor"

ANSWER KEY

1	d	6	b	11	с	16	b	21	a
2	ď	7	a	12	a	17	b	22	a
3	С	8	d	13	d	18	d	23	С
4	a	9	d	14	a	19	с	24	d
5	d	10	с	15	d	20	с	25	d

AC Coordinate

1.

Dr. G. Balakrishnan, M.E., Ph.D., Principal Indra Ganesan College of Engineering IG Valley, Madurai Main Road Manikandam, Trichy-620 012.





Value Added Course "PIC Microcontroller and ARM processor"

Name of the Student: pavillyroi. V

Year/Sem: W VI

AU Register Number: 8112106020

MULTIPLE CHOICE QUESTIONS (25X1 = 25 Marks)

1	Which of the following should	a miana santua	Bon of Jonet else all second de	° 0	
1.	. Which of the following should a)CPU, ROM, I/O ports, an				
	c) CPU, RAM, I/O ports, and		b) RAM, ROM, I/O ports, an		
		iu unicis	OCPU, RAM, ROM, I/O p	orts, and timers	
2.	a) data bus only	re present in a	microcontroller for transfer b) data bus, address bus	rring data from one place to another	?
	c) address bus only	~	address bus, data bus, co	ntrol bus	
3.	. Which of the following file exte	nsion that is l	baded in a micro controller	for executing any instruction?	
	a). c b) .txt	.hex		d).doc	
4.	. Which of the following archite	ture is follow	ed by general-purpose micro	processors?	
	a) Von Neumann architectur		(b) Harvard architecture	•	
	c) None of the mentioned		d) All of the mentioned		
6.	When the micro controller exe following register are affected	cutes some ari	(CMSP430 Harvard ithmetic operations, then the	flag bits of which of the	
	a) DPTR DPSW	c) PC	d) SP		
7.	Which of the following steps ha	ve to be follow	ed for interfacing a sensor t	o a microcontroller 8051?	
	a) interface sensor with AD				
	b) interface sensor with the ADG conversion, analyse	MAX232, send the results	now to micro controller, analy	yse the results controller,	
	(E) make the appropriate con	nnections with	the micro controller		
	$\frac{1}{2}$ d) none of the mentioned			· D.	
			Dr. C. Balakri	ishnan, M.E., Ph.D.,	
			DI. O. Dalaki	rincipal	
			Tadas Capacan (follege of Engineering	
			Indra Ganesan C	adurai Main Road	
			Manikandar	n, Trichy-620 012.	
			IVIGITIKATIGAT	in the second	



8. Which of the following devices are specifically being used for converting serial to parallel and from parallel to serial respectively?

	a) Micro con	ntroller	b) timers	c) counters	~*	(Tregelsters	
9. '	Which of the	e following	pins of a micro	o controller ar	e directly conne	cted with 8255?	
	a)WR	b) D0-D7	c) RD	a	OT All of the men	ntioned	
1					ctro mechanical		
			e to be energize t to be energize		hey need zero vol one of the mentic		
1	. The total s	space for th	e data memor	y available in	the AVR-based	microcontroller is?	
	a) FFFH	b) FH	I OVER	FFH	d) FFFFFF	FH	
	a) it is used a) it is used b) it is used	to jump to to to check the to compare	he given menti e zero flag two registers		struction in avr a en the zero flag a	micro controller ? ccounts to 0	
1	c) it is used 3. AVR, wh a) PIN	1	ollowing regis	ters are there PORT	and the second se	ramming of ports? f the mentioned	
14	. What will any other		hat condition,	if an interrup	ot occurs while t	he microcontroller is se	rving
(ore priority in ill be handled s		ector table will be	e served first	
	c) the interru	upt having l	ow priority in t	he interrupt ve	ctor table will be	served first	
15			being done firs g bits are used b) DOR		e data frame siz	e?) 2\$ZO	
16	a) 3.3V	e internal V	V c)		d) all o	of the mentioned	0
	. The 8255 i a) Digital to	+	(DInput/Out	put c) Ana	alog to Digital	d) None of the mentior	ned
18	Which of t a)WR					ected with 8255?	
	a) WIC	0) D	0-D7	c) RD	An or th	Dr. G. Balakrish	nan, M.E., Ph.D.,
						Indra Ganesan Colle IG Valley, Madu Manikandam, T	
						Manikanuani	11 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1





19. Does 8255 have handshaking capability?

a) depends on the conditions b) cant be said (b) cant be said d) no

20. Why are ULN2803 normally used between the micro controllers and the relays?

- a) for increasing the voltage capability required by a relay
- b) for switching purposes
- for/increasing the current capability required by a relay
- d) all of the mentioned

21 .Why are opto isolators normally used between the micro controllers and the LN2803?

(a) to reduce the back emf b) to increase the current c) to increase the voltage d) to optimize the current

22. Which of the following bit/s of the status register that allows the microcontroller to operate in its low power mode?

CPU off	b) Z
c) N 🦯	d) Reserved

23. To improve the efficiency of an MSP430 based microcontroller, for one register

a) there are two values for each addressing mode

b) there is only one value for all addressing modes

Othere are 4 values for four addressing modes

d) there are 2 values for four addressing modes

24. Which of the following is the basic functions of a timer?

- a) it can control the compare, capture mode
- b) it provided a time delay
- c) it can act as a counter
- (d) all of the mentioned

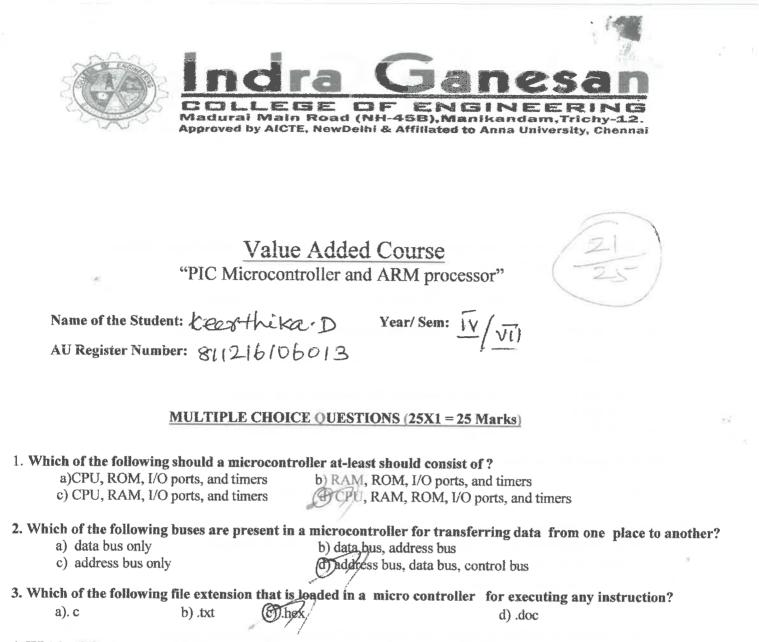
25. Which of the following is correct about WDTCTL?

- a) it is guided against accidental writes that require a password
- b) a rese will occur if a value with an incorrect password is written to WDTCTL
- c) it is a 1/6 bit register

(D) all of the mentioned

9

Dr. G. Balakrishnan, M.E., Ph.D., Principal Indra Ganesan College of Engineering IG Valley, Madurai Main Road Manikandam, Trichy-620 012.



4. Which of the following architecture is followed by general-purpose microprocessors?

c) None of the mentioned

- b) Harvard architectured) All of the mentioned
- d) All of the r
- 5. Which of the following micro controller doesn't match with its architecture below? a) ARM7 - Von Neumann b) Microchip PIC - Harvard
 - d) MSP430 Harvard

c) PC

6. When the micro controller executes some arithmetic operations, then the flag bits of which of the following register are affected?

a) DPTR

d) SP

- 7. Which of the following steps have to be followed for interfacing a sensor to a microcontroller 8051?
 - b) interface sensor with the MAX232, send now to micro controller, analyse the results controller, ADC conversion, analyse the results
 - c) make the appropriate connections with the micro controller

(SDPSW/

d) none of the mentioned

Dr. G. Balakrishnan, M.E., Ph.D., Principal Indra Ganesan College of Engineering IG Valley, Madurai Main Road Manikandam, Trichy-620 012.



8. Which of the following devices are specifically being used for converting serial to parallel and from parallel to serial respectively?

- 18e -			N		
a) Micro co	ntroller	b) timers	Counters		d) registers
9. Which of the	e following	pins of a micro	o controller are d	irectly conne	ected with 8255?
a)WR	b) D0-D7	c) RD	Ē	All of the me	entioned
10. Why are s	olid-state r	elays advantag	eous over electro	mechanical	l relays?
a) they need	l less voltage	e to be energize	d b) they	need zero vo	Itage circuit
		t to be energize		of the mentio	
11. The total	space for th	e data memor	y available in the	AVR-based	microcontroller is?
GIFVFH	b) FI	I c) FF	FFH	d) FFFFFF	FH
12. Which of t	the followin	g is correct ab	out BRNE instru	iction in avr	micro controller ?
(Z) it is used	to jump to t	he given menti	oned label when t	he zero flag a	accounts to 0
a) it is used					
b) it is used	to compare	two registers			
c) it is used	to compare	two values			
13. AVR, wh	ich of the f	ollowing regist	ers are there for	the I/Q prog	ramming of ports?
a) PIN	b) DDR	c) H	PORT	(E) AN O	of the mentioned
any other i	interrupt?				he microcontroller is serving
b) both the	upt that is m	ore priority in t	he interrupt vecto	r table will be	e served first
		il be handled si			
c) the interri	ipt having lo	ow priority in the	ne interrupt vector	table will be	served first
d) the interru	pt which is	being done firs	t will be served fi	cst	
15.Which of t	he followin	g bits are used	for setting the da	ata frame siz	e?7
a) MPCM		b) DOR	c) U2X	-010	ØSZO
16 What is the	internalV	rofofon Atm			
16. What is the a) 3.3V	672,56	V c) 5	-		of the mentioned
	10400	• • • • •	Υ.Ψ.	u) all o	of the mentioned
17. The 8255 is	a	_			
a) Digital to a	analog chip.	(5) Input/ Out	out c) Analog	to Digital	d) None of the mentioned
			•) • • • • • • • • • • • • • • • • • •	to Digital	d) None of the mentioned
18. Which of the	he following	g pins of a mici	ocontroller are o	lirectly conn	ected with 8255?
a)WR	b) D	0-D7 c) RD		e mentioned
					Dr. G. Balakrishnan, M.E., Ph.D.,
					Principal
					Indra Ganesan College of Engineering
					IG Valley, Madurai Main Road
					Manikandam, Trichy-620 012.



19. Does 8255 have handshaking capability?

a) depends on the conditions

c) yes

b) cant be said 2010

- 20. Why are ULN2803 normally used between the micro controllers and the relays?
 - a) for increasing the voltage capability required by a relay
 - b) for switching purposes
 - of for increasing the current capability required by a relay
 - d) all of the mentioned

21 .Why are opto isolators normally used between the micro controllers and the LN2803?

Morequee the back emf b) to increase the current c) to increase the voltage d) to optimize the current

22. Which of the following bit/s of the status register that allows the microcontroller to operate in its low-power mode? b)Z

d) Reserved

ADOPU off	
a) CPU off c) N	
< C) IN /	

23. To improve the efficiency of an MSP430 based microcontroller, for one register

- a) there are two values for each addressing mode
- b) there is only one value for all addressing modes
- Othere are 4 values for four addressing modes
- d) there are 2 values for four addressing modes

24. Which of the following is the basic functions of a timer?

- a) it can control the compare, capture mode
- b) it provided a time delay
- c) it can act as a counter
- (all of the mentioned

25. Which of the following is correct about WDTCTL?

- a) it is guided against accidental writes that require a password
- b) a rese will occur if a value with an incorrect password is written to WDTCTL
- c) it is a 16 bit register
- (d) all of the mentioned

Dr. G. Balakrishnan, M.E., Ph.D.,

0

Principal Indra Ganesan College of Engineering IG Valley, Madurai Main Road Manikandam, Trichy-620 012.



Department of Electronics and Communication Engineering

Academic Year 2019-2020 - Odd Semester

STUDENTS ATTENDANCE LIST

Value Added Course

"PIC Micro Controller and ARM Processor"

															the second se
S.N		CTUDENTE MARAE	YEAR/ BRANC	02.12	.2019	03.12	.2019	04.12	.2019	05.12	.2019	06.12	.2019	NO OF SESSIONS	SIGN OF THE
0	REG NO	STUDENTS NAME	H	FN	AN	ATTENDE D	STUDENT								
1	811216106001	ABARNA T	IV/ECE	1	1	5	N	1	1	M	1	1	1	10	9. Aburno
2	811216106002	AMSAVALLI S	IV/ECE	1	N	1	1	1	A	1	1	1	~	9	Schmachi
3	811216106003	ANUSHYA S	IV/ECE	1	1	N	N	5	5	1	A	1	1	9	Amth: Su
4	811216106004	AROCKIA NIVETHA S	IV/ECE	1	1	1	21	1	A	1	5	1	1	9	Anghi North of
5	811216106005	ASHEFA N	IV/ECE	~	1	1	-7	1	11	1	A	1	1	9	ickhyan W
6	811216106006	DHANALAKSHMI T	IV/ECE	1	1	1	1	1	1	1	A	1	1	9	Dharala Whi
7	811216106008	FEMINA BEGUM A	IV/ECE	1	1	1	-7	01	0	1	1	-1	1	01	Lame 689
8	811216106009	GAYATHRI J	IV/ECE	1	1	1	1	1	A	1	1	01	1	9	treph
9	811216106011	KEERTHANA P	IV/ECE	1	1	1	-7	R	6	7/	-1	1	5	_ q	B. Kouth
10	811216106012	KEERTHANA S	IV/ECE	1	1	1	1	1	1	1	A	VA	1	9	gS. (Keerthane)
11	811216106013	KEERTHIKA D	IV/ECE	-	1	1	-	1	1	1	1	N	1	10-	D Keethika
12	811216106014	LATHASRI S	IV/ECE	1	1-1	1	1	1	1	1/	A	0	N	9	Leith
13	811216106015	MENAKA R	IV/ECE	1	1-1	1	1	1	1	1	1	1	1	, 10	Mabor
14	811216106016	MITHRA P	IV/ECE	1	/	2 ~	7-1	1 1	11	0	7	1A	1	10	P.Mitture.

Dr. G. Balakrishnan, M.E., Ph.D.,

Principal Indra Ganesan College of Engineering IG Valley, Madurai Main Road Manikandam, Trichy-620 012.





Approved by AICTE, NewDelhi & Affillated to Anna University, Chennai

s. NO	REG NO	STUDENTS NAME	YEAR/ BRANCH	02.12	2.2019	03.12	2.2019	04.12	2.2019	05.12	.2019	06.12	2.2019	NO OF SESSIONS	SIGNATURE OF THE
				FN	AN	EN	AN	FN	AN	FN	AN	FN	AN	ATTENDED	STUDENT
15	811216106017	MOHAN RAJ S	IV/ECE	1	1	1	1	1	A	1	1	1	1	q	S. Mohakaj
16	811216106018	NILAVAR NISHA F	IV/ECE	1	1	1	1	A	2	1	A		1	3	Nord New
17	811216106019	PAVITHRA P	IV/ECE	1	1	1	1	1	A	-1	A	1	1	8	T P D
18	811216106020	PAVITHRA V	IV/ECE	N	.1	1	M	5	A	4	1	1	1	g	Padhe
19	811216106021	PRABHU A	IV/ECE	1	N	.1	~	N	1	5	CA.	5	1	10	Janethea
20	811216106022	PREETHA M	IV/ECE	1	0	1	N	1	1	1	h	1	0	9	Preetha
21	811216106024	PREMA S	IV/ECE	N	1	1	A	1	A	1		1	4	- 4	and the second se
22	811216106025	RAAHUL BN	IV/ECE	0	2	1	-1	1	A	1	1		70	q	Proma A
23	811216106026	RAMYA S	IV/ECE	0		1	1	0	1	-1	1	1	~		C 00, 0
24	811216106027	RUBAN RAJ S	IV/ECE	1	1	57	1	1	1	1		5	1	10	Riba.
25	811216106028	SARANYA M	IV/ECE	1	1	11	1	1	1	1	1	1	-	0 [D	-1
26	811216106030	SARAVANAN S	IV/ECE	1	1	1	.1	1	1	2	01	1	V		Paranya
27	811216106031	SHANAKYA P	IV/ECE	1	1	1			1	2	3	1	5	10	Saweinn
28	811216106032	SORNA J	IV/ECE	1	1	1	1	1	1	PX	07	1	1	9	Semp elap
29	811216106033	SUDHARSAN K	IV/ECE	0	1	1	1	1	5	1	A	27	M	9	Som J.
30	811216106034	SUVATHI R	IV/ECE	1	1	-	4	1	1	1	0	1	17	9	
31	811216106035	SWATHI S	IV/ECE	1	F/	10	. 1	N	N	N	1	10	1		Superior
32	811216106036	UDAYA RANI K	IV/ECE	1	10	-V	1	A	0	1	11	10	N	9	Charth of
33	811216106037	VETTAI P	IV / ECE	50	10	1	A	5	5	A	VI	V/	-7	8	Veletura h
34	811217106001	AISHWARIYA S	III /ECE	0	5	1	N	A	. 1	1	5	1	in	9	Vellait
35	811217106002	ANEESHA A	III / ECE	N	01	5	1	V		5	1	1	VI	10	Augoch A
36	811217106003	DEEPIKA B	III / ECE	V	\$1	5	N	V	1	h	1	1	N	C	Deepil ?

Dr. G. Balakrishnan, M.E., Ph.D., Principal Indra Ganesan College of Engineering IG Valley, Madurai Main Road Manikandam, Trichy-620 012.

惷

0





關係動力 12-22-0

anda	ollege of English adurai Main Road m, Trichy-620 012. REG NO	STUDENTS NAME	YEAR/	02.12	2.2019	03.12	.2019	04.12	.2019	05.12	.2019	06.12	.2019	NO OF SESSIONS	SIGNATURE OF THE
NO			BRANCH	FN	AN	FN	AN	FN	AN	FN	AN	FN	AN	ATTENDED	STUDENT
37	811217106004	DURGA D	III / ECE	V	V	V	V	V	~	V	V	~	*	ol:	D. Aure
38	811217106005	GANGADEVI M	III / ECE		~	V	-	~	V	2	V	V	V	10	6 woodini
39	811217106006	JANANI C	III ECE	Y	V	1	~	~	V	V	1	V	~	112	Janani.C.
40	811217106009	KARTHICK K	III / ECE	V	V	V	~	V	A	~	\checkmark	V	V	CI	Kart Wil
41	811217106010	KOSIANANTH R	I'I / ECE	~	V	in	A	V	V	-	A	V.	~	8	Kee
42	811217106011	LAKSHMI M	III/ECE	~	V	V	V	V	V	V	A	V	V	9	Laborn 1
43	811217106012	MANIKANDAN M	III / ECE	~	V	V	V	1	V	V	V	4	V	10	Marlin
44	811217106013	MEKALA DEVIS	III / ECE	v	V	1V	V	V	V	V.	A	~	~	9	Megueka
45	811217106014	PANDIMEENA R	III / ECE	V	V	4	V	~	V	V	V	V	V	10	Ponebr
46	811217106016	PREETHI V	III / ECE	· ····	Y	V	V	V	V	~	V	V	V	10	Breathing
47	811217106017	RAASHITHA JANNATH A	III / ECE	~	A	V	V.	Y	V	V	V	V	1	9	toashil!
48	811217106018	RANJITHA I	III / ECE	~	A	~	A	~	V	-	-	2	V	8	Ranjolher
49	811217106019	RIYAS MOHAMMED K	III / ECE	~	V	-	5	A	V	V	17.		V	8	Ruyas
50	811217106020	SAIMOULIN	III / ECE	~	V	V	V	V	A	V	in	V	V	9	Sumpelle
51	811217106021	SARUMATHI A	III / ECE	~	V	1	V	1	1	V	V		V	10	Durke
52	811217106022	SHALINI M	III / ECE	1	V	V	A	V	1	~	~		V	9	Shalini .r
53	811217106023	SIVA SANKARI M	III / ECE	V	A	V	V	\checkmark	V	A	\checkmark	1	V	3	Siver Ser
54	811218106001	ABINAYAR	II / ECE	V	~	N	A	11	V	V	1	V	~	9	Abunyor
55	811218106002	AKILAK -	II / ECE		V	1	· 🗸	V		~	1		V	10	K AKIL
56	811218106004	ARTHI M	11 / ECE	1	V	V	~	V	1	V	V		V	10	M. DRH
57	811218106005	AZHAGU MEENA M	II / ECE	~	~	V	V	V	V	~	V	V	V	10	
58	811218106006	DEVI K	II / ECE	V	V	V	V	14	V		r	6-	-	10	Henry on
59	811218106007	DHÅNALAKSHMI S	II / ECE	V	V	V	A	V	Ø	. ~	X	V	V	8	Dhares
60	811218106008	HARI KRISHNAN S	II / ECE	V	V	V	V	V	A	V	A		r	8	9. your
61	811218106009	JANANI V	II / ECE	V	V	V	A	~	V	V			~	9.1	V. Jone
62	811218106010	JENIFER C	II / ECE	V	V	1~	~	V	V	~	V	V	V	10	Citer.
63	811218106011	JENIFER S	II / ECE	V	V		V	IV	V	~	V	100	V	10	Jorte



36

s. NO	REG NO	STUDENTS NAME	YEAR/ BRANCH	02.1	2.2019	03.12	2.2019	04.1	2.2019	05.1	2.2019	06.12	2.2019	NO OF	SIGNATURE
64	811218106012	KESAVAMURTHI M		FN	AN	FN	AN	FN	AN	FN	AN	FN	A. N.	SESSIONS	OF THE
65	811218106013	KIRUTHIKA S	II / ECE	1	10	V	V	V	V	V		FN	AN	ATTENDED	STUDENT
66	811218106015	MARIA FRANCIS D	II / ECE	~	V	-	V	~			-			01	Din
67	811218106016	RAGAVIA	II / ECE	v	A	~	A	v		~	F.	Land .	V	9	Kiruthel
68	811218106017	RUTHRAMOORTHY M	II / ECE	V	~	1	V	v	X		~	r	V	8	meral
69	811218106018	the second	II / ECE	V	V	~	~	1.000	1	V	V	V		9	Ragasser
70	811218106019	SABARINATHAN K	II / ECE	-	V	V	V	V	A	~	- Im-	~	-	10	Store of
	811218106020	SARMILA M	II / ECE	V	V	~	~	~	1		V	~	V	9	Salardo
	811218106021	SUMATHI S	II / ECE	v	V	V	V	~	~	~	V	V	V	0	50 10
	10100021	THIVYA PRIYA R	II / ECE	1	V			-	~	~	V	V	1	10	Sun.S.
			L		V	~	V	V	~	V	A	V	VI	9	Thury Ren \$

R. Dithay VAC Coordinator

0

Dr. G. Balakrishnan, M.E., Ph.D., Principa! Indra Ganesan College of Engineering IG Valley, Madurai Main Road Manikandam, Trichy-620 012.

HoD/ECE



Department of Electronics and Communication Engineering

Academic Year 2019-2020 - Odd Semester

VALUE ADDED COURSE ASSESMENT SHEET

Pic Microcontroller and ARM Processor

			18 71-7 A 11-9 (Attenda	nce Details	VAC-M	ICQ TEST	OVERALL MARK(100)
S.NO	REG NO	STUDENTS NAME	YEAR/ BRANCH	No. cf Session Attended	Attendance Mark(100) (A)	No of Correct Answers	MCQ Mark(100) (B)	MARK(100) (50% of A + 50% of B)
1	811216106001	ABARNA T	IV/ECE	30	100	20	80	90
2	811216106002	AMSAVALLI S	IV/ECE	27	90	19	76	83
3	811216106003	ANUSHYA S	IV/ECE	27	90	19	76	83
4	811216106004	AROCKIA NIVETHA S	IV/ECE	27	90	21	84	87
5	811216106005	ASHEFA N	IV/ECE	27	90	19	76	83
6	811216106006	DHANALAKSHMI T	IV/ECE	27	90	19	76	83
7	811216106008	FEMINA BEGUM A	IV/ECE	30	100	20	80	90
8	811216106009	GAYATHRI J	IV/ECE	27	90	19	76	83
9	811216106011	KEERTHANA P	IV/ECE	27	90	19	76	83
10	811216106012	KEERTHANA S	IV/ECE	27	90	19	76	83
11	811216106013	KEERTHIKA D	IV/ECE	30	100	21	84	92

Dr. G. Balakrishnan, M.E., Ph.D., Principal Indra Ganesan College of Engineering IG Valley, Madurai Main Road Manikandam, Trichy-620 012.

C



S.NO	REG NO	EVENT THE TO BE THE A THE A	YEAR/	Attenda	nce Details	VAC-M	ICQ TEST	OVERALL
	ALC: NO	STUDENTS NAME	BRANCH	No. of Session Attended	Attendance Mark(100) (A)	No of Correct Answers	MCQ Mark(100)	MARK(100) (50% of A + 50% of B)
12	811216106014	LATHASRI S	IV/ECE	27	90	20	(B)	
13	811216106015	MENAKA R	IV/ECE	30	100	******	80	85
14	811216106016	MITHRA P	IV/ECE	30	And and a second se	21	84	92
15	811216106017	MOHAN RAJ S	IV/ECE	\$ • • • · · · ·	100	19	76	88
16	811216106018	NILAVAR NISHA F	IV/ECE	27	90	19	76	83
17	811216106019	PAVITHRA P	IV/ECE	24	80	20	80	80
18	811216106020	PAVITHRA V	IV/ECE	24	80	21	84	82
19	811216106021	PRABHU A	IV/ECE	27	90	22	88	89
20	811216106022	PREETHAM	Personal Physics Physi	30	100	20	80	90
21	811216106024	PREMA S	IV/ECE	27	90	21	84	87
22	811216106025	RAAHUL BN	IV/ECE	24	80	20	80	80
23	811216106025	and the second s	IV/ECE	27	90	21	84	87
	And and a second s	RAMYA S	IV/ECE	30	100	20	80	90
24	811216106027	RUBAN RAJ S	IV/ECE	30	100	16	64	82
25	811216106028	SARANYA M	IV/ECE	30	100	19	76	88
26	811216106030	SARAVANAN S	IV/ECE	30	100	21	84	·····
27	811216106031	SHANAKYA P	IV/ECE	27	90	19		92
28	811216106032	SORNA J	IV/ECE	27	90		76	83
29	811216106033	SUDHARSAN K	IV/ECE	27	90	19	76	83
30	811216106034	SUVATHI R	IV/ECE	27		19	, 76	83
				41	90 (19	76	83

Balakrishnan, M.E., Ph.D., Principal Indra Ganesan College of Engineering. IG Valley, Madurai Main Road Manikandam, Trichy-620 012-



S.NO	REG NO		YEAR/	Attenda	nce Details	VAC-M	ICQ TEST	OVERALL
		STUDENTS NAME	BRANCH	No. of Session Attended	Attendance Mark(100) (A)	No of Correct Answers	MCQ Mark(100) (B)	MARK(100) (50% of A + 50% of B)
31	811216106035	SWATHI S	IV/ECE	30	100	19	76	88
32	811216106036	UDAYA RANI K	IV/ECE	27	90	19	76	83
33	811216106037	VETTAL P	IV/ECE	24	80	21	84	83 82
34	811217106001	AISHWARIYA S	III /ECE	27	90	20	80	85
35	811217106002	ANEESHA A	III / ECE	30	100	20	84	85 92
36	811217106003	DEEPIKA B	III / ECE	27	90	19	76	83
37	811217106004	DURGA D	III / ECE	30	100	19	76	88 88
38	811217106005	GANGADEVI M	III / ECE	30	100	19	76	
39	811217106006	JANANI C	III / ECE	30	100	21	84	88 92
40	811217106009	KARTHICK K	III / ECE	27	90	21	84	92 87
41	811217106010	KOSIANANTH R	III / ECE	24	80	20	80	
42	811217106011	LAKSHMI M	III / ECE	27	90	20	80	80 87
43	811217106012	MANIKANDAN M	III / ECE	30	100	20	80	90
44	811217106013	MEKALA DEVI S	III / ECE	27	90	19	76	83
45	811217106014	PANDIMEENA R	III / ECE	30	100	19	76	88
46	811217106016	PREETHI V	III / ECE	30	100	21	84	water when when when we wanter
47	811217106017	RAASHITHA JANNATH A	III / ECE	27	90	19	- 04 76	92
48	811217106018	RANJITHA T	III / ECE	24	80	20	80	83
49	811217106019	RIYAS MOHAMMED K	III / ECE	24	80	20	80	80

Dr. G. Balakrishnan, M.E., Ph.D., Principal Indra Ganesan College of Engineering IG Valley, Madurai Main Road



Dr. G. Balakrishnan, M.E., Ph.D., Principal Indra Ganesan College of Engineering IG Valley, Madurai Main Road

		Approved by AICT				Inversity,	Chennai	And the second sec	Madurai Main
S.NO	REG NO	STUDENTS NAME	YEAR/		nce Details		ICQ TEST	Manikand OVERALL MARK(100)	am, Trichy-62(
		ST ODER TO REAVE	BRANCH	No. of Session Attended	Attendance Mark(100) (A)	No of Correct Answers	MCQ Mark(100) (B)	(50% of A + 50% of B)	
50	811217106020	SAIMOULI N	III / ECE	27	90	19	76	83	
51	811217106021	SARUMATHI A	III / ECE	30	100	20	80	90	
52	811217106022	SHALINI M	III / ECE	27	90	19	76	83	
53	811217106023	SIVA SANKARI M	III / ECE	24	80	21	84	82	
54	811218106001	ABINAYA R	II / ECE	27	90	20	80	85	
55	811218106002	AKILA K	II / ECE	30	100	21	84	92	
56	811218106004	ARTHI M	II /ECE	30	100	19	76	88	
57	811218106005	AZHAGU MEENA M	II /ECE	30	100	20	80	90	
58	811218106006	DEVI K	II /ECE	30	100	20	84	90	
59	811218106007	DHANALAKSHMI S	II /ECE	27	90	21	84	87	
60	811218106008	HARI KRISHNAN S	II /ECE	24	80	20	80	87	
61	811218106009	JANANI V	II / ECE	27	90	20	80	85	
62	811218106010	JENIFER C	II / ECE	30	100	19	76	88	
63	811218106011	JENIFER S	II / ECE	30	100	20	80	90	
64	811218106012	KESAVAMURTHI M	II / ECE	30	100	20	84	90	
65	811218106013	KIRUTHIKA S	II / ECE	27	90	21	84	92 87	
66	811218106015	MARIA FRANCIS D	II / ECE	24	80	20	80		
67	811218106016	RAGAVIA	II / ECE	27	90	20	84	80 87	
68	811218106017	RUTHRAMOORTHY M	II / ECE	30	100	20	80		
69	811218106018	SABARINATHAN K	II / ECE	27	90	19	76	90	
70	811218106019	SARMILA M	II / ECE	30	100	19	76	83	
71	811218106020	SUMATHI S	II / ECE	30	100	21		88	
72	811218106021	THIVYA PRIYA R	II / ECE	27	90	19.	84	92 83	







This is to certify that Ms. PREMA.S, IV Year, ECE has successfully completed the Value Added Course on "Pic Micro Controller and ARM processor" organized by Department of Electronics & Communication Engineering and IQAC of our Institution in Association with Pantech Solutions from 02nd December 2019 to 06th December 2019 (5days) during the Academic year 2019-2020.

M. Senthull

Mr.Senthil Murugan M Chief Executive Officer. Pantech Solutions

Dr. G. Balakrishnan, M.E., Ph.D., Principal Indra Ganesan College of Engineering IG Valley, Madurai Main Road Manikandam, Trichy-620 012.

PANTECH





CERTIFICATE OF PARTICIPATION

This is to certify that Ms.ANUSHYA S, IV Year, ECE has successfully completed the Value Added Course on "Pic Micro Controller and ARM processor" organized by Department of Electronics & Communication Engineering and IQAC of our Institution in Association with Pantech Solutions from 02nd December 2019 to 06th December 2019 (5days) during the Academic year 2019-2020.

M. Senthul

Dr. G. Balakrishnan, M.E., Ph.D., Principal Indra Ganesan College of Engineering IG Valley, Madurai Main Road Manikandam, Trichy-620 012.

Principal

IGCE



This is to certify that Ms.KEERTHANA P, IV Year, ECE has successfully completed the Value Added Course on "Pic Micro Controller and ARM processor" organized by Department of Electronics & Communication Engineering and IQAC of our Institution in Association with Pantech Solutions from 02nd December 2019 to 06th December 2019 (5days) during the Academic year 2019-2020.

M. Senthull

Mr.Senthil Murugan M Chief Executive Officer Pantech Solutions



Dr. G. Balakrishnan, M.E., Ph.D., Principal Indra Ganesan College of Engineering IG Valley, Madurai Main Road Motel of them, Trichy-620 012.







This is to certify that Ms. PAVITHRA V, IV Year, ECE has successfully completed the Value Added Course on "Pic Micro Controller and ARM processor" organized by Department of Electronics & Communication Engineering and IQAC of our Institution in Association with Pantech Solutions from 02nd December 2019 to 06th December 2019 (5days) during the Academic year 2019-2020.

M. Sen thill

Mr.Senthil Murugan M Chief Executive Officer Pantech Solutions

crishnan. M.E., Ph.D.,

Dr. G. Balakrismian, M.E., Filb., Principal Indra Ganesan College of Engineering IG Valley, Madurai Main Road Manikandam, Trichy-620 012.



This is to certify that Mr. RAAHUL B N, IV Year, ECE has successfully completed the Value Added Course on "Pic Micro Controller and ARM processor" organized by Department of Electronics & Communication Engineering and IQAC of our Institution in Association with Pantech Solutions from 02nd December 2019 to 06th December 2019 (5days) during the Academic year 2019-2020.

M. Senthull

Mr.Senthil Murugan M Chief Executive Officer Pantech Solutions

Dr. G. Balakrishnan, M.E., Ph.D., Principal Indra Ganesan College of Engineering IG Valley, Madurai Main Road Manist Storm, Trichy-620 012.

Principal IGCE



This is to certify that Ms.SWATHI S, IV Year, ECE has successfully completed the Value Added Course on "Pic Micro Controller and ARM processor" organized by Department of Electronics & Communication Engineering and IQAC of our Institution in Association with Pantech Solutions from 02nd December 2019 to 06th December 2019 (5days) during the Academic year 2019-2020.

M. Senthull

Dr. G. Balakrishnan, M.E., Pu.D., Principal Indra Ganesan College of Engineering IG Valley, Madurai Main Road Manikandam, Trichy-620 012.

Principal IGCE



This is to certify that Ms. VETTAI P, IV Year, ECE has successfully completed the Value Added Course on "Pic Micro Controller and ARM processor" organized by Department of Electronics & Communication Engineering and IQAC of our Institution in Association with Pantech Solutions from 02nd December 2019 to 06th December 2019 (5days) during the Academic year 2019-2020.

M. Senthulp

Dr. G. Balakrishnan, M.E., Ph.D., Principal Indra Ganesan College of Engineering IG Valley, Madurai Main Road Manikandam, Trichy-620 012.

Principal IGCE



This is to certify that Ms.AISHWARIYA S, III Year, ECE has successfully completed the Value Added Course on "Pic Micro Controller and ARM processor" organized by Department of Electronics & Communication Engineering and IQAC of our Institution in Association with Pantech Solutions from 02nd December 2019 to 06th December 2019 (5days) during the Academic year 2019-2020.

M. Sen thill

Mr.Senthil Murugan M Chief Executive Officer Pantech Solutions

Dr. G. Balakrishnan, M.E., F... Principal Indra Ganesan College of Engineering IG Valley, Madurai Main Road Manikandam, Trichy-620 012.

Principal IGCE



This is to certify that Ms.JANANI C, III Year, ECE has successfully completed the Value Added Course on "Pic Micro Controller and ARM processor" organized by Department of Electronics & Communication Engineering and IQAC of our Institution in Association with Pantech Solutions from 02nd December 2019 to 06th December 2019 (5days) during the Academic year 2019-2020.

M. Senthull

Mr.Senthil Murugan M Chief Executive Officer Pantech Solutions

Scht.

Dr. G. Balakrishnan, M.E., Ph.D., Principal Indra Ganesan College of Engineering IG Valley, Madurai Main Road Manikandam, Trichy-620 012.

Principal IGCE



This is to certify that Mr.MANIKANDAN M, III Year, ECE has successfully completed the Value Added Course on "Pic Micro Controller and ARM processor" organized by Department of Electronics & Communication Engineering and IQAC of our Institution in Association with Pantech Solutions from 02nd December 2019 to 06th December 2019 (5days) during the Academic year 2019-2020.

M. Senthulp

Dr. G. Balakrishnan, M.E., Ph.D., Principal Indra Ganesan College of Engineering IG Valley, Madurai Main Road Manikandam, Trichy-620 012.

Principal IGCE



This is to certify that Ms.RANJITHA T, III Year, ECE has successfully completed the Value Added Course on "Pic Micro Controller and ARM processor" organized by Department of Electronics & Communication Engineering and IQAC of our Institution in Association with Pantech Solutions from 02nd December 2019 to 06th December 2019 (5days) during the Academic year 2019-2020.

M. Senthul

Dr. G. Balakrishnan, M.E., Ph.D., Principal Indra Ganesan College of Engineering IG Valley, Madurai Main Road Manikandam, Trichy-620 012.

Principal IGCE



This is to certify that Ms.SAIMOULI N, III Year, ECE has successfully completed the Value Added Course on "Pic Micro Controller and ARM processor" organized by Department of Electronics & Communication Engineering and IQAC of our Institution in Association with Pantech Solutions from 02nd December 2019 to 06th December 2019 (5days) during the Academic year 2019-2020.

M. Sen Kull

Dr. G. Balakrishnan, M.E., Ph.D., Principal Indra Ganesan College of Engineerie IG Valley, Madurai Main Road Mandrandam Trining-570'07'

Principal IGCE



This is to certify that Ms.SIVA SANKARI M, III Year, ECE has successfully completed the Value Added Course on "Pic Micro Controller and ARM processor" organized by Department of Electronics & Communication Engineering and IQAC of our Institution in Association with Pantech Solutions from 02nd December 2019 to 06th December 2019 (5days) during the Academic year 2019-2020.

M. Sen Kull

Dr. G. Balakrishnan, M.E., Ph.D., Principal Indra Ganesan College of Engineering IG Valley, Madurai Main Road Manikandam, Trichy-620 012.

Principal IGCE



This is to certify that Ms.AKILA K, II Year, ECE has successfully completed the Value Added Course on "Pic Micro Controller and ARM processor" organized by Department of Electronics & Communication Engineering and IQAC of our Institution in Association with Pantech Solutions from 02nd December 2019 to 06th December 2019 (5days) during the Academic year 2019-2020.

M. Sen thirty

Mr.Senthil Murugan M Chief Executive Officer Pantech Solutions

shpan. M.E. Ph.D.

Principal Indra Ganesan College of Engineering IG Valley Maniference

Principal IGCE



This is to certify that Ms. DEVI K, II Year, ECE has successfully completed the Value Added Course on "Pic Micro Controller and ARM processor" organized by Department of Electronics & Communication Engineering and IQAC of our Institution in Association with Pantech Solutions from 02nd December 2019 to 06th December 2019 (5days) during the Academic year 2019-2020.

M. Senthull

Mr.Senthil Murugan M Chief Executive Officer Pantech Solutions

Dr. G. Balakrishnan, M.E., Ph.D. Principal Indra Ganesan College of Engines IG Valley, Madurai Main Road Manikandam, Trichy-620 012.



This is to certify that Ms. JENIFER S, II Year, ECE has successfully completed the Value Added Course on "Pic Micro Controller and ARM processor" organized by Department of Electronics & Communication Engineering and IQAC of our Institution in Association with Pantech Solutions from 02nd December 2019 to 06th December 2019 (5days) during the Academic year 2019-2020.

M. Senthul

Dr. G. Balakrishnan, M.E., Ph.D., Principal Indra Ganecan College of Engineering IG Valley, Madural Main Road Manikandam, Trichy-620 012.

Principal IGCE



This is to certify that Ms.RAGAVI A, II Year, ECE has successfully completed the Value Added Course on "Pic Micro Controller and ARM processor" organized by Department of Electronics & Communication Engineering and IQAC of our Institution in Association with Pantech Solutions from 02nd December 2019 to 06th December 2019 (5days) during the Academic year 2019-2020.

M. Senthulp

Mr.Senthil Murugan M Chief Executive Officer Pantech Solutions

Phrops Phrops Indra Ganesan Collegs of Engineering IG Valley, Medicial Main Road Manikandam, Trichy-620 012.



This is to certify that Mr.SABARINATHAN K, II Year, ECE has successfully completed the Value Added Course on "Pic Micro Controller and ARM processor" organized by Department of Electronics & Communication Engineering and IQAC of our Institution in Association with Pantech Solutions from 02nd December 2019 to 06th December 2019 (5days) during the Academic year 2019-2020.

M. Senthull

Mr.Senthil Murugan M Chief Executive Officer Pantech Solutions



This is to certify that Ms. SUMATHI S, II Year, ECE has successfully completed the Value Added Course on "Pic Micro Controller and ARM processor" organized by Department of Electronics & Communication Engineering and IQAC of our Institution in Association with Pantech Solutions from 02nd December 2019 to 06th December 2019 (5days) during the Academic year 2019-2020.

M. Senthull

Mr.Senthil Murugan M Chief Executive Officer Pantech Solutions

Dr. G. Balakrishnan, M.E., Ph.D., Principal Indra Ganesan College of Engineering IG Valley, Madurai Main Road Manikandam, Trichy-620 012, Scht.