

From
Dr.G.Mohan Babu,
Professor and head,
Department of Electrical and Electronics Engineering,
SSM Institute of Engineering and Technology,
Dindigul.

To
The Principal,
SSM Institute of Engineering and technology,
Dindigul.

Respected sir,

Sub: Requesting Approval of conducting **Technological Teaching** for II year and III year EEE Students –Reg

The Department of EEE has planned to conduct technological teaching for II year and III year EEE students on “**TRAINING ON PRODUCT DESIGN AND MANUFACTURING**” which is scheduled to be conducted on the month of December 2022. In this regard, I request your permission to conduct this training on the month. The quotation details, syllabus and training schedule are attached with this letter, kindly do the needful sir.

Name of the technological Training	Name of the Company	Total Number of students	No of hours	Date	Amount	Coordinator /Faculty in charges
Training On Product Design And Manufacturing	SUNSHIV Electronic solutions	76	48	10.10.22 to 15.10.22	1,48,200	Mr.D.Manoj AP/EEE Mr.P.Siva Subramanian AP/EEE

Resource person details:

Mr.S. Sundramoorthy
CEO
Sunshiv Electronic Solution

NOTE: Training cost will be settled to the company two days before the end of training.

Thanking you,



Dr.D.SENTHIL KUMARAN, M.E., Ph.D., IES
Principal
SSM Institute of Engineering and Technology
Kuttathupatti Village, Sindalagundu (Po),
Palani Road, Dindigul - 624 002.

Yours faithfully
(Dr.G.Mohan Babu)

SSM Institute of Engineering and Technology, Dindigul

Dindigul – Palani Highway, Dindigul – 624 002

(Approved by AICTE, New Delhi, Affiliated to Anna University, Chennai, Accredited by NAAC)

Department of Electrical and Electronics Engineering

Organizes

Six days Technology Training on

“Product Design and Manufacturing”

From:10.10.2022 to 15.10.2022

Resource Person



Mr.S.Sundaramoorthy
CEO, Sunshine Electronics Solutions,
Coimbatore.



RegistrationLink:<https://forms.gle/NVXNHCyMFervvoigd8>

(For III and II -year students of EEE)

Co-ordinators

Mr.D.Manoj,A.P/EEE
Mr.P.Siva Subramanian,
A.P/EEE

HoD/EEE

Dr.G.Mohanbabu

Principal

Dr.D.Senthil Kumaran

ALL ARE INVITED

Dr.D.SENTHIL

M.E., Ph.D. (NUS)

SSM Institute of Engineering and Technology
Kuttathupatti Village, Sindhalagundu (Po),
Palani Road, Dindigul - 624 002.



SSM INSTITUTE OF ENGINEERING AND TECHNOLOGY

(Approved by AICTE, New Delhi / Affiliated to Anna University, Chennai / Accredited by NAAC)
Dindigul-Palani Highway, Dindigul-624002

CIRCULAR

7/10/2022

This is to inform that six days training program on **PRODUCT DESIGN AND MANUFACTURING** is going to conduct for II year EEE & III YEAR students from 10.10.2022 to 15.10.2022, by Sunshiv electronics Dindigul. All the students are informed to attend and enrich your knowledge.

Faculty In-charge



HOD/EEE

[Signature]

Dr.D.SENTHIL KUMARAN, M.E., Ph.D., (NUS)

Principal

SSM Institute of Engineering and Technology
Kuttathupatti Village, Sindaiaguveli, (P.O),
Palani Road, Dindigul - 624 002



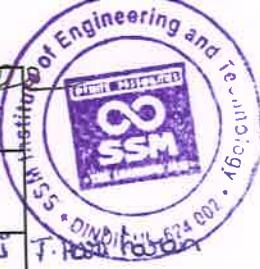
SSM INSTITUTE OF ENGINEERING AND TECHNOLOGY | Ph: +91 944608888

Sindalagundu post, Dindigul-624002, Tamilnadu.Ph:0451-2448800

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

DEPARTMENT OF ELECTRICAL
TECHNOLOGY TRAINING ON "PRODUCT DESIGN AND MANUFACTURING"
ATTENDANCE SHEET





S. No.	Reg.no.	Student Name	10/10/22 12.05.22		11/10/22 13.05.22		12/10/22 16.05.22		13/10/22 17.05.22		14/10/22 18.05.22		15/10/22 19.05.22	
			FN	AN										
17	922121105017	HARIHARAN T	T.Hari haran											
18	922121105018	JAYASRI S	S. Jay. S.P.J.	S.S.J.										
19	922121105020	KALEESWARAN M	M.Tank											
20	922121105021	KAMALEE A	A.Iq											
21	922121105022	KAMILA SAI K	K.Kamil											
22	922121105023	KANYA K	K.Kanya											
23	922121105024	KARTHICK RAJ D	← OD	ABSC	→	Kerry								
24	922121105025	KAVIYA LAKSHMI S	S.Kaviya											
25	922121105026	KISHOR N	N.Kishor											
26	922121105027	LOKENDRA SOWMIYAN S	Locendra											
27	922121105028	MANIKANDAN S	S.Manik											
28	922121105029	MANIVASAGAN B	B.Mani											
29	922121105030	MANI VEL G	G.Mani											
30	922121105031	MANOJKUMAR A	A.Qila											
31	922121105032	MINIPRIYA K	K.Priya											
32	922121105033	MOHAMMED SIDDIQ A	M.Sidhi											
33	922121105034	NARMATHA DEVI P	P.Narm											
34	922121105035	DR.D.SENTHIL KUMARAN PONRAJR Principal	D.Senthil Ponrajr											

SSM Institute of Engineering and Technology

Kattathupatti Village, Thiruvarur, 601101

Palani Road, Thiruvarur, 601101



S. No.	Reg.no.	Student Name	10.10.22 12.05.22		11.10.22 13.05.22		12.10.22 10.05.22		13.10.22 17.05.22		14.10.22 18.05.22		15.10.22 19.05.22	
			FN	AN										
35	922121105036	PRADISH V S	Rolf	Rolf										
36	922121105037	PRIYA DHARSHINI J	Priya	J	Priya	J	Priya	J	Priya	J	Priya	J	Priya	J
37	922121105038	RAGAVI R	R.Ragavi	R.Ragavi										
38	922121105039	RAJESHWARI J	J.Rajeshwari	J.Rajeshwari										
39	922121105040	RAJKUMAR S	← A-B				→				→	T.C	T.C	
40	922121105041	REETHANA M	M.Reethana	M.Reethana										
41	922121105042	SANJAY G	G.Sanjay	G.Sanjay										
42	922121105043	SANTHIYA M	M.Santhiya	M.Santhiya										
43	922121105044	SANTHOSH C	C.Santhosh	C.Santhosh										
44	922121105045	SARAN RAHUL G	G.Saran	G.Saran										
45	922121105046	SELVAKUMAR C	C.Selvakumar	C.Selvakumar										
46	922121105047	SHARMILA M	M.Sharmila	M.Sharmila										
47	922121105048	SRI SAKTHI J T	T.Sri Sakthi	T.Sri Sakthi										
48	922121105049	SRI SUPRAJA S	S.Sri Supraja	S.Sri Supraja										
49	922121105050	VAISHALI M	M.Vaishali	M.Vaishali										
50	922121105051	VANAJA G	G.Vanaja	G.Vanaja										
51	922121105052	VEERACHAMY S	S.Veerachamy	S.Veerachamy										
52	LE 1	SALAMAN VINCENT RAJ R	R.Salaman	R.Salaman										
53	LE 2	YUVARAJ T	T.Yuvraj	T.Yuvraj										
54	LE 3	DR.D.SENTHIL KUMARAN, MEXODISH	M.yf	M.yf										

Principal

SSM Institute of Engineering and

Kuttathupatti Village Sivaganga

Palani Road, Dindigul

20/1

SSM INSTITUTE OF ENGINEERING AND TECHNOLOGY

Sindalagundu post, Dindigul-624002, Tamilnadu.Ph:0451-2448800

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

TECHNOLOGY TRAINING ON "PRODUCT DESIGN AND MANUFACTURING"

ATTENDANCE SHEET



S. No.	Reg.no.	Student Name	10.10.22		11.10.22		12.10.22		13.10.22		14.10.22		15.10.22	
			FN	AN										
1	922120105001	M.Aakashkumar	M.Aakash											
2	922120105002	S.A.Amanulla	Amanulla											
3	922120105003	P.M.Balaji	P.M.Balaji											
4	922120105005	U.Dineshkumar	U.Dineshkumar											
5	922120105006	T.Geethanjali	T.Geethanjali											
6	922120105007	P.Jothiselvam	P.Jothiselvam											
7	922120105008	N.Karthikeyan	N.Karthikeyan											
8	922120105009	M.Mariaraj	M.Mariaraj											
9	922120105010	S.Mohamed Aburar	S.Mohamed Aburar											
10	922120105011	S.Mohamed Kasim	S.Mohamed Kasim											
11	922120105012	M.Monesh	M.Monesh											
12	922120105013	S.Preethi	S.Preethi											
13	922120105014	M. Preethiviraj	M. Preethiviraj											
14	922120105015	T.Rohith	T.Rohith											
15	922120105016	S.Sadham hussain	S.Sadham hussain											
16	922120105017	S.Sangarapandi	S.Sangarapandi											

26/10/2022
M.D.SENTHIL KUMARAN, M.E., Ph.D
Principal
SSM Institute of Engineering and Technology
Kurathupatti Village Sindalagundu
Dindigul District, Tamil Nadu, India
Pin: 624002

S. No.	Reg.no.	Student Name	10/10/22		11/10/22		12/10/22		13/10/22		14/10/22		15/10/22	
			12.05.22	13.05.22	12.05.22	13.05.22	12.05.22	13.05.22	12.05.22	13.05.22	12.05.22	13.05.22	12.05.22	13.05.22
17	922120105018	R.Shanmugavel	Shanmugavel											
18	922120105019	M.Suriya prakash	P.Suriya											
19	922120105020	V.Tamilselvan	V.T.Selvan											
20	922120105021	H. Thirsath daniel	H.T.Daniel											
21	922120105301	R.Sharan kailash	SK											
22	922120105302	M.Hariprasath	M.H.Prasath											



Faculty Incharge

Trainer

HoD EEE

Dr. D. SENTHIL KUMARAN, M.E., Ph.D., (AUG)
Principal
SSM Institute of Engineering and Technology
Kuttathupatti Village, Sindalagundu (P.O)
Palani Road, Dindigul - 624 002

29-09-2022

To,

The HOD -EEE

SSM college of Engineering & Technology
 Dindigul.

Dear sir,

Greetings from SUNSHIV ELECTRONIC SOLUTIONS, Coimbatore.

Thank you for choosing our industry for 6 days practical industrial training to our students.

I assure all our students will become as industry ready engineers by our exclusive hands-on practical training which are badly expected by Core & IT industries.

Topics for our 6 days training:

1. PRODUCT DESIGN AND MANUFACTURING :

- *Live Demo of electrical and electronics components(value finding and working principle)
- *Computer Aided Drafting (Practical Training)
- *Circuit creation for industrial applications
- *Circuit creation simulation softwares
- *PCB Designing(single and Multi layer PCB)
- * Trouble shooting of Products, Machines & Instruments
- *Product Manufacturing (2 products/ student) (All soldering tools , pcb , components will be arranged by us) - TWO Take away products

2. Industrial EMBEDDED PROGRAMMING USING PIC MICRO CONTROLLER :

- * C keywords with applications
- * PIC IC architecture and PIN configuration
- * SENSORS - Digital & Analog
- * Circuit creation for micro controller products
- * I/O PORTS (ROBOTIC) Programming
- * TIMER programming
- * ADC (Analog sensors interfacing)
- * Programming 7 seg. Display & sensors interfacing
- * MPLAB, REAL PIC SIMULATOR & SIMULIDE software training
- * IOT(Internet Of Things) –Data storing in CLOUD.

Programming for industrial applications (50 products and more)



Address: 245,Chinnasamy naidu road,Opp to Ayyappan temple, New Sights, Gandhipuram, Coimbatore-641044. Phone – 0422 4980499. Cell : 98422 82351, 97509 24445.
 Email : sunshivpcb@gmail.com Web : sunshivelectronics.com


Dr. D. SENTHIL KUMARAN, M.E., Ph.D., (NUS)
 Principal

SSM Institute of Engineering and Technology
 Kottathangal, Vellore, Tamil Nadu (Po),
 Palani Road, 631107, India. Tel: +91 98422 82444



Your Technical Friend

SUNSHIV
Electronic Solutions

Since 1994

ELECTRONIC CORE INDUSTRY

**PCB Designing & Manufacturing
Industrial Automation Products
Electronics / Embedded / PLC Training
In-plant / Internship Training
3D Modeling & Printing**

Training schedule for our 6 days industrial training

1. PRODUCT DESIGN AND MANUFACTURING :

Day1

Forenoon :

Live Demo, value finding, identification, working principle of electronic components and circuits & Drafting fundamentals

@ conference hall

Afternoon :

Hands on – Computer Aided Designing & Drafting

@ computer lab

Day2 :

Forenoon

INDUSTRIAL PCB DESIGNING – single & Multilayer

@ Conference hall

Afternoon :

PCB DESIGNING (Single & multilayer) – PRACTICAL

@Computer lab

Day 3 :

Forenoon :

Two individual products manufacturing & Testing

@ Electronics lab

(All equipments, soldering iron, stand , lead, pcb & components will be arranged by our industry)

Afternoon :

Circuit Creation for industrial and domestic electronic products &

Trouble shooting of Components, Products & instruments

(All multimeters , components will be arranged by our industry)




Dr.D.SENTHIL KUMARAN, M.E., Ph.D., (NUS)
Principal

SSM Institute of Engineering and Technology
Kuttathupatti Village, Sindhalagundu (P.O),
Palani Road, Dindigul - 624 002

Address: 245, Chinnasamy naidu road, Opp to Ayyappan temple, New Siddhapudur,
Gandhipuram, Coimbatore-641044. Phone – 0422 4980499. Cell : 98422 02351, 97509 14445.
Email : sunshivpcb@gmail.com Web : sunshivelectronics.com

2. Industrial EMBEDDED PROGRAMMING USING PIC MICRO CONTROLLER :

Day 4 :

Forenoon

C keywords with applications

PIC IC architecture and PIN configuration

I/O PORTS (ROBOTIC) Programming

- With Source code & hardware explanations

@ Conference hall

Afternoon :

Robotic I/O , MPLAB & REAL PIC SIM programming – PRACTICAL

@ Computer lab (Or conference hall with laptops)

Day 5 :

Forenoon

SENSORS - Digital & Analog

Circuit creation for micro controller products

TIMER programming with live applications & SFRs

7 Seg. Display interfacing programming

SIMULIDE Software training

Afternoon:

Timer Programming & simulation - Practical

@Computer lab (Or conference hall with laptops)

Day 6 :

Forenoon

ADC - Analog sensors interfacing

Programming for Industrial applications (50 products and more)



Dr.D.SENTHIL KUMARAN, M.E.,P.Eng.

Principal

SSM Institute of Engineering and Technology
Kuttathupatti Village, Sindhalagundu (Po),
Palani Road, Dindigul - 624 002.



Address: 245,Chinnasamy naidu road,Opp to Ayyappan temple, New Siddhapudur,
Gandhipuram,Coimbatore-641044. Phone – 0422 4980499. Cell : 98422 02351,97509 14445.

Email : sunshivpcb@gmail.com Web : sunshivelectronics.com

Afternoon:

Analog sensor Programming & simulation - Practical

How to become an ENTREPRENEUR?

How to get outsourcing orders from Industries on your studying period?

How to get Industry Projects & Internships?

Feedback session

Training certification

@Computer lab (Or conference hall with laptops)

Outcome of our exclusive practical training:

1. Our trainings are purely practical oriented.
2. Participants can create drawings, Circuits, Programs for any industrial applications on their own.
3. All Participants can trouble shoot machines, instruments and PCB kits.
4. Participants will meet all the expectations of IT & Core industries.
5. Participants can manufacture their projects by their own at our college premises (No need of project centers)
6. Industrial certification (Training , Internship certificates)
7. Our Industry visit & follow up session after training

Note :

Minimum students batch - 70

Maximum students batch – 140

Fees :

For 6 days training with two individual take away products

Rs 1950 / Participant – for cash payment

(For cheque or bank transfer Taxes will be extra)



Thank you.

Regards

S.SUNDARAMOORTHY, CEO, 9842202351
SUNSHIV ELECTRONIC SOLUTIONS,
COIMBATORE.



Dr.D. SENTHIL KUMARAN, M.E., Ph.D.,(NUS)
Principal
SSM Institute of Engineering and Technology
Kuttathupatti Village, Sindalagundu (Po),
Palani Road, Dindigul - 624 002

SSM INSTITUTE OF ENGINEERING AND TECHNOLOGY

(Approved by AICTE, New Delhi / Affiliated to Anna University, Chennai / Accredited by NAAC & NBA)
Dindigul – Palani Highway, Dindigul 624 002 .

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

Value added Course Summary (2022-2023)

Course Name : Product Design and Manufacturing

Course Duration : 48 Hours

Year offered : II & III year students -2022-2023

Course Instructors : Mr. D. Manoj

Assistant professor /EEE

Course Outcome: The student gained practical knowledge about computer aided drafting, PCB designing.

Course Type : Self Framed / Collaboration with Industry

Assessment Mode

Attendance : 48 Hours

Number of participants : 76

Scheme of Exam : MCQ offline



Course Coordinator

HOD

Dr. D. SENTHIL KUMARAN, M.E., Ph.D., (SUS)
Principal

SSM Institute of Engineering and Technology
Kuttathupatti Village, Sindalagundu (Po),
Palani Road, Dindigul - 624 002



SSM INSTITUTE OF ENGINEERING AND TECHNOLOGY, DINDIGUL - 624 002

(Approved by AICTE, New Delhi / Affiliated to Anna University, Chennai / Accredited by NAAC)
Dindigul – Palani Highway, Dindigul 624 002

Department of Electrical and Electronics Engineering

TECHNOLOGY TRAINING PROGRAMME ON PRODUCT DESIGN AND MANUFACTURING

PRODUCT DESIGN AND MANUFACTURING MULTIPLE CHOICE QUESTION

Name of the student:

Year/Sem :

Date:

1. Which phenomenon is not reduced by the circuit paths of lowest impedances especially provided by power and return planes for shielding purposes?

- a) Radiation
- b) Convection
- c) Noise
- d) Crosstalk

2. High current circuits are purposely located or placed near the edge of PCB in accordance to the supply lines for _____

- a) Removal of heat
- b) Isolation of stray current
- c) Reduction of path length
- d) All of the above

3. Which among the below stated soldering methods is also renowned as 'High Frequency Resistance Soldering'?

- a) Iron Soldering
- b) Furnace Soldering
- c) Torch Soldering
- d) Electrical Soldering

4. Which among the below mentioned approaches belongs to the category of In-circuit Testing?

- a) Impedance Testing
- b) Component Testing
- c) Apply Signal and check output
- d) All of the above

5. Which type of solderability testing is carried out for the generation of solder sample due to immersion of wire or sheet metal specimen in a bath of molten solder?

- a) Solder Bath Testing
- b) Meniscus Rise Testing
- c) Solder Iron Testing
- d) None of the above

6. What is/are the necessity/ies to provide guarding to precision differential amplifiers?

- a) To increase leakage resistance
- b) To reduce capacitance between signal conductors & ground
- c) Both a and b
- d) None of the above

7. Which among the below mentioned assertions is not a way of crosstalk reduction while designing digital

D.D.SENTHIL KUMARAN



P.I.I.E.T.
SSM Institute of Engineering and Technology
Kuttathupatti Village, Sindalagundu(Po),
Palani Road, Dindigul - 624 002.



- a) Decrease in the distance between conductors
 - b) Shielding of clock lines with guard strips
 - c) Reduction in the loop area of circuits
 - d) Avoid running of parallel traces for longer distances especially for asynchronous signals
8. Which among the below mentioned packages does not belong to the category of 'Small Outline Package'?
- a) SO
 - b) SOP
 - c) SOT
 - d) SON
9. Which among the below specified assertions is not a grounding consideration associated with ADC as well as DAC?
- a) Analog side to analog ground
 - b) Digital side to digital ground
 - c) Use of separate power supply and connection of their ground leads to single point reference
 - d) Reduction of inductive loop area between power and return traces
10. Which among the below stated devices/equipments are preferred for elimination of ground and supply line noise especially in TTL/CMOS / ECL PCB designing?
- a) Coupling capacitor
 - b) Decoupling capacitor
 - c) Snubber circuits
 - d) All of the above
11. Which among the below specified condition is precise in the crosstalk verification mechanism using logic flow in opposite direction with the limit of avoiding dangerous interference in digital PCB designing?
- a) $Z_{even} > Z_{odd}$
 - b) $Z_{odd} \geq 0.5 Z_{even}$
 - c) $Z_{odd} \geq 0.8 Z_{even}$
 - d) $Z_{odd} = Z_{even}$
12. Which terminology of PCB represents a thin photo-sensitive polymer by supporting photographic pattern of single traces or IC pads for etching?
- a) Prepreg
 - b) Etching
 - c) Photo-resist
 - d) Solder mask
13. Which problems are about to occur if PCB is not designed properly in a confined manner for digital circuits?
- A. Diffraction
 - B. Refraction
 - C. Ground & Supply-line Noise
 - D. Electromagnetic Interference
- a) A & B
 - b) B & C
 - c) C & D
 - d) A, B, C, D
14. Which among the following assists in obtaining the desired value of wave impedance in reflection phase while designing digital PCBs?
- A. Width of signal lines
 - B. Distance between signal line and ground line
 - C. Signal Delays
 - D. Double Pulsing




Dr. D. SENTHIL KUMARAN, M.E., Ph.D., (NUS)
 Principal
SSM Institute of Engineering and Technology
 Kuttathupatti Village, Sindalagundam - 69,
 Palani Road, Dindigul - 624 009.

15. What are the components of the electric system?

1. Electric joints and cables
2. Batteries and electric wiring
3. Engines and joints
4. thunder and lightning

16. How many components does the control system have?

1. 4
2. 1
3. 2
4. 5

17. The processor belongs to the

1. Sensory system
2. Mechanic system
3. Electric system
4. Control system

18. One of these is NOT a type of robot

1. Medical
2. Industrial
- 3 Household
- 4.Apologetic

19. The small mobile robot base used in the Robot Educator. This robot is able to perform some but not all of the tasks in the Robotics Engineering activities

1. Light sensor
2. Lego Mindstorms Education Software
3. Robot
4. Robot Educator Model (REM)

20. A block is the basic unit of programming in the NXT programming Software. Blocks perform their operations in order along the Sequence Beam

1. Touch Sensor
2. Block (programming)
3. Ports
4. Behaviors

21. The primary source of physical motion in the Mindstorms NXT system.

1. Interactive Servo Motor
2. Behaviors
3. Light Sensor
4. Touch Sensor

22. A machine that is able to interact with and respond to its environment. characterized by three central capabilities: the ability to Sense, the ability to Plan, and the ability to Act

1. Code
2. Taskbot
3. Robots
4. Ports

23. The three characteristic capabilities that define a robot _____

1. Comment
2. Sensor
3. Sense-Plan-Act



Dr.D.SENTHIL KUMARAN, M.E., Ph.D.,(NUS)

Principal

SSM Institute of Engineering and Technology

Kuttathupatti Village, Sindalagundi (Po),

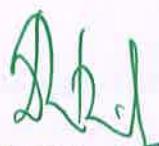
Palani Road, Dindigul - 624 002.

24. When working in a group for robotics, students should _____

1. Socialize instead of work and then work alone
2. Stay on task and don't work with your group
3. Work alone and don't socialize with group members
4. stay on task and work with group members appropriately

25. General term for any command or group of commands in a program. In the NXT Programming Software, this is one or more blocks _____

1. Comment
2. Code
3. Ports
4. Robot



Dr.D.SENTHIL KUMARAN, M.E., Ph.D.,(NUS)

Principal

SSM Institute of Engineering and Technology

Kuttathupatti Village, Sindalagundu (Po),

Palani Road, Dindigul - 624 002





SSM INSTITUTE OF ENGINEERING AND TECHNOLOGY

Sindalagundu post, Dindigul-624002, Tamilnadu. Ph:0451-2448800

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

TECHNOLOGY TRAINING ON " PRODUCT DESIGN AND MANUFACTURING MARK SHEET

S. No.	Reg.no.	Student Name	MARK
1	922120105001	M.AKASHKUMAR	12
2	922120105002	S.A.AMANULLA	9
3	922120105003	P.M.BALAJI	17
4	922120105005	U.DINESHKUMAR	15
5	922120105006	T.GEETHANJALI	20
6	922120105007	P.JOTHSIELVAM	15
7	922120105008	N.KARTHIKEYAN	19
8	922120105009	M.MARIARAJ	21
9	922120105010	S.MOHAMED ABURAR	12
10	9221120105011	S.MOHAMED KASIM	12
11	922120105012	M.MONESH	10
12	922120105013	S.PREETHI	14
13	922120105014	M. PREETHIVIRAJ	13
14	922120105015	T.ROHITH	17
15	922120105016	S.SADHAM HUSSAIN	8
16	922120105017	S.SANGARAPANDI	19
17	922120105018	R.SHANMUGAVEL	15
18	922120105019	M.SURIYA PRAKASH	09
19	922120105020	V.TAMILSELVAN	20
20	922120105021	H. THIRSATH DANIEL	19
21	922120105301	M.HARIKRASATH	11
22	922120105302	R.SHARAN KAILASH	13

Faculty Incharge



Yours
HoD/EEE

Abd
PRINCIPAL

Dr.D.SENTHIL KUMARAN, M.E., Ph.D., (NUS),
Principal
SSM Institute of Engineering and Technology
Kuttathupatti Village, Sindalagundu (Po),
Palani Road, Dindigul - 624 002.



SSM INSTITUTE OF ENGINEERING AND TECHNOLOGY

Sindalagundu post, Dindigul-624002, Tamilnadu, Ph:0451-2448800

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

TECHNOLOGY TRAINING ON "PRODUCT DESIGN AND MANUFACTURING MARK SHEET"

S. No.	Reg.no.	Student Name	MARK
1	922121105001	ABIRAMI G	15
2	922121105003	AISHWARYA M.P	18
3	922121105004	ARCHANA DEVI B	12
4	922121105005	ARUN KUMAR S	11
5	922121105006	BALAMURUGAN M	10
6	922121105007	BALA SUBRAMANIYAN R	12
7	922121105008	BHUVANESWARI G	13
8	922121105009	CATHRIN NISHA M	15
9	922121105010	CELIN JAYAMARY A	13
10	922121105011	DEENA DHAYALAN P A	08
11	922121105013	DIVYA J	14
12	922121105014	DOMINIC SCAPLARAJ A	10
13	922121105015	EZHUMALAI NAGA VISHNU S	11
14	922121105016	GOPI J	15
15	922121105017	HARIHARAN T	14
16	922121105018	JAYASRI S	12
17	922121105020	KALEESWARAN M	15
18	922121105021	KAMALEE A	18
19	922121105022	KAMILA SAI K	20
20	922121105023	KANYA K	19
21	922121105024	KARTHICK RAJ D	17
22	922121105025	KAVIYA LAKSHMI S	14
24	922121105027	LOKENDRA SOWMIYAN S	20
25	922121105028	MANIKANDAN S	22
26	922121105029	MANIVASAGAN B	18
27	922121105030	MANI VEL G	12
28	922121105031	MANOJKUMAR A	18
29	922121105032	MINIPRIYA K	18
30	922121105033	MOHAMMED SIDDIQ A	12
	922121105034	NARMATHA DEVI P	11
	922121105035	PONRAJR	10
	922121105036	PRADEEP	13
		PROF. D. SENTHIL KUMARAN, M.E., Ph.D., (NUS)	

Principal

SSM Institute of Engineering and Technology

Kuttathupatti Village, Sindalagundu (P.O),

Palani Road, Dindigul - 624 002.



34	922121105037	PRIYA DHARSHINI J	18
35	922121105038	RAGAVI R	12
36	922121105039	RAJESHWARI J	15
37	922121105041	REETHANA M	12
38	922121105042	SANJAY G	8
39	922121105043	SANTHIYA M	19
40	922121105044	SANTHOSH C	12
41	922121105045	SARAN RAHUL G	20
42	922121105046	SELVAKUMAR C	18
43	922121105047	SHARMILA M	17
44	922121105048	SRI SAKTHI J T	12
45	922121105049	SRI SUPRAJA S	15
46	922121105050	VAISHALI M	16
47	922121105051	VANAJA G	19
48	922121105052	VEERACHAMY S	18
49	922121105301	SALAMON VINCENT RAJ R	16
50	922121105302	YUDISH M	10
51	922121105303	YUVARAJ T	11

Faculty Incharge



aym
HOD/EEE

PRINCIPAL

Dr.D.SENTHIL KUMARAN, M.E., Ph.D.,
Principal
SSM Institute of Engineering and Technology
Kuttathupatti Village, Sindalagundu (P.O),
Palani Road, Dindigul - 624 002.



SSM INSTITUTE OF ENGINEERING AND TECHNOLOGY, DINDIGUL - 624 002

(Approved by AICTE, New Delhi / Affiliated to Anna University, Chennai / Accredited by NAAC)
Dindigul – Palani Highway, Dindigul 624 002

Department of Electrical and Electronics Engineering

TECHNOLOGY TRAINING PROGRAMME ON PRODUCT DESIGN AND MANUFACTURING

PRODUCT DESIGN AND MANUFACTURING MULTIPLE CHOICE QUESTION

Name of the student:

T. Geethanjali

Year/Sem :

IV

Date:

10/10/22

1. Which phenomenon is not reduced by the circuit paths of lowest impedances especially provided by power and return planes for shielding purposes?

- a) Radiation
- b) Convection
- c) Noise
- d) Crosstalk

2. High current circuits are purposely located or placed near the edge of PCB in accordance to the supply lines for

- a) Removal of heat
- b) Isolation of stray current
- c) Reduction of path length
- d) All of the above

3. Which among the below stated soldering methods is also renowned as 'High Frequency Resistance Soldering'?

- a) Iron Soldering
- b) Furnace Soldering
- c) Torch Soldering
- d) Electrical Soldering

4. Which among the below mentioned approaches belongs to the category of In-circuit Testing?

- a) Impedance Testing
- b) Component Testing
- c) Apply Signal and check output
- d) All of the above

5. Which type of solderability testing is carried out for the generation of solder sample due to immersion of wire or sheet metal specimen in a bath of molten solder?

- a) Solder Bath Testing
- b) Meniscus Rise Testing
- c) Solder Iron Testing
- d) None of the above

6. What is/are the necessity/ies to provide guarding to precision differential amplifiers?

- a) To increase leakage resistance
- b) To reduce capacitance between signal conductors & ground
- c) Both a and b
- d) None of the above

Which among the below mentioned assertions is not a way of cross-talk reduction while designing digital

Dr.D.SENTHIL KUMARAN, M.E., Ph.D., (NUS)

Principal

SSM Institute of Engineering and Technology

Kuttathupatti Village, Sindagundu (P.O.)

Palani Road, Dindigul - 624 002.



- a) Decrease in the distance between conductors
 b) Shielding of clock lines with guard strips
 c) Reduction in the loop area of circuits
 d) Avoid running of parallel traces for longer distances especially for asynchronous signals
8. Which among the below mentioned packages does not belong to the category of 'Small Outline Package'?
- SO
 - SOP
 - ~~SOT~~
 - SON
9. Which among the below specified assertions is not a grounding consideration associated with ADC as well as DAC?
- Analog side to analog ground
 - Digital side to digital ground
 - Use of separate power supply and connection of their ground leads to single point reference
 - Reduction of inductive loop area between power and return traces
10. Which among the below stated devices/equipments are preferred for elimination of ground and supply line noise especially in TTL/CMOS / ECL PCB designing?
- Coupling capacitor
 - ~~Decoupling capacitor~~
 - Snubber circuits
 - All of the above
11. Which among the below specified condition is precise in the crosstalk verification mechanism using logic flow in opposite direction with the limit of avoiding dangerous interference in digital PCB designing?
- ~~Zeven > Zodd~~
 - ~~Zodd ≥ 0.5 Zeven~~
 - ~~Zodd ≥ 0.8 Zeven~~
 - ~~Zodd = Zeven~~
12. Which terminology of PCB represents a thin photo-sensitive polymer by supporting photographic pattern of single traces or IC pads for etching?
- Prepreg
 - Etching
 - ~~Photo-resist~~
 - Solder mask
13. Which problems are about to occur if PCB is not designed properly in a confined manner for digital circuits?
- Diffraction
 - Refraction
 - Ground & Supply-line Noise
 - Electromagnetic Interference
- A & B
 - B & C
 - ~~C & D~~
 - A, B, C, D
14. Which among the following assists in obtaining the desired value of wave impedance in reflection phase while designing digital PCBs?
- Width of signal lines
 - Distance between signal line and ground line
 - Signal Delays
 - Double Pulsing



- a) A & B
- b) B & C
- c) C & D
- d) A, B, C, D

15. What should be the resistance of 0.6 mm wide conductor with 15 cm length and 25 μm thickness of standard copper foil? (Assume $\rho = 1.7241 \times 10^{-6}$ (at 20° C))

- a) 118.2 m Ω
- b) 138.2 m Ω
- c) 172.4 m Ω
- d) 192.4 m Ω

16. The actual cost of PCB can be evaluated on the basis of _____

- a) PCB size & material
- b) Number of layers
- c) Vias on PCB
- d) All of the above

17. Which factors contribute to the occurrence of mechanical stress?

- a) Resonance
- b) Cracked Solder Joints
- c) Both a and b
- d) None of the above

18. Which type of PCB requires minimum soldering on component side in order to avoid replacement oriented difficulties?

- a) Single-sided PCB
- b) Double-sided PCB
- c) Both a and b
- d) None of the above

19. What effects can be observed if the separate power and ground planes are provided with large conducting surfaces for better decoupling in PCB layouts?

- a) Increase in self-inductance
- b) Reduction in self-inductance
- c) Stability in self-inductance
- d) None of the above

20. 1. Which memory storage is widely used in PCs and Embedded Systems?

- a) EEPROM
- b) Flash memory
- c) SRAM
- d) DRAM

21. 1. Which of these designs considers both the software and hardware during the embedded design?

- a. Peripheral Design
- b. Platform-Based Codesign
- c. Software/Hardware Design
- d. Memory Design

22. Which of these can lead to a reduction of the loop overhead thus leading to an increase in the speed?

- a. Loop permutation
- b. Loop fusion
- c. Loop unrolling
- d. Loop tiling



23. The Index set L would denote what?

- a. Processor
- b. Task Graph Node Type
- c. Task Graph Node
- d. Hardware Components

24. The main ingredient for the optimization of power is:

- a. Energy Model
- b. Power Model
- c. Watt Model
- d. Power Compiler

25. The first power model was proposed by:

- a. Tiwari
- b. Russell
- c. Jacome
- d. Jacome and Russel



Dr.D.SENTHIL KUMARAN, M.E., Ph.D., (INUS)
Principal

SSM Institute of Engineering and Technology
Kuttathupatti Village, Sindalagundu (Po),
Palani Road, Dindigul - 624 002.





SSM INSTITUTE OF ENGINEERING AND TECHNOLOGY, DINDIGUL - 624 002

(Approved by AICTE, New Delhi / Affiliated to Anna University, Chennai / Accredited by NAAC)
Dindigul – Palani Highway, Dindigul 624 002

Department of Electrical and Electronics Engineering

TECHNOLOGY TRAINING PROGRAMME ON PRODUCT DESIGN AND MANUFACTURING

PRODUCT DESIGN AND MANUFACTURING MULTIPLE CHOICE QUESTION

Name of the student:

Year/Sem :

Date:

1. Which phenomenon is not reduced by the circuit paths of lowest impedances especially provided by power and return planes for shielding purposes?

- a) Radiation
- b) Convection
- c) Noise
- d) Crosstalk

2. High current circuits are purposely located or placed near the edge of PCB in accordance to the supply lines for

- a) Removal of heat
- b) Isolation of stray current
- c) Reduction of path length
- d) All of the above

3. Which among the below stated soldering methods is also renowned as 'High Frequency Resistance Soldering'?

- a) Iron Soldering
- b) Furnace Soldering
- c) Torch Soldering
- d) Electrical Soldering

4. Which among the below mentioned approaches belongs to the category of In-circuit Testing?

- a) Impedance Testing
- b) Component Testing
- c) Apply Signal and check output
- d) All of the above

5. Which type of solderability testing is carried out for the generation of solder sample due to immersion of wire or sheet metal specimen in a bath of molten solder?

- a) Solder Bath Testing
- b) Meniscus Rise Testing
- c) Solder Iron Testing
- d) None of the above

6. What is/are the necessity/ies to provide guarding to precision differential amplifiers?

- a) To increase leakage resistance
- b) To reduce capacitance between signal conductors & ground
- c) Both a and b
- d) None of the above

7. Which among the below mentioned assertions is not a way of cross-talk reduction while designing digital

Dr. D. SENTHIL KUMARAN, M.E., Ph.D., (NUS)
Principal

SSM Institute of Engineering and Technology
Kuttathupatti Village, Sindalagundu (P.O),
Palani Road, Dindigul - 624 002



- a) Decrease in the distance between conductors
- b) Shielding of clock lines with guard strips
- c) Reduction in the loop area of circuits
- d) Avoid running of parallel traces for longer distances especially for asynchronous signals

8. Which among the below mentioned packages does not belong to the category of 'Small Outline Package'?

- a) SO
- b) SOP
- c) SOT
- d) SON

9. Which among the below specified assertions is not a grounding consideration associated with ADC as well as DAC?

- a) Analog side to analog ground
- b) Digital side to digital ground
- c) Use of separate power supply and connection of their ground leads to single point reference
- d) Reduction of inductive loop area between power and return traces

10. Which among the below stated devices/equipments are preferred for elimination of ground and supply line noise especially in TTL/CMOS / ECL PCB designing?

- a) Coupling capacitor
- b) Decoupling capacitor
- c) Snubber circuits
- d) All of the above

11. Which among the below specified condition is precise in the crosstalk verification mechanism using logic flow in opposite direction with the limit of avoiding dangerous interference in digital PCB designing?

- a) $Z_{even} > Z_{odd}$
- b) $Z_{odd} \geq 0.5 Z_{even}$
- c) $Z_{odd} \geq 0.8 Z_{even}$
- d) $Z_{odd} = Z_{even}$

12. Which terminology of PCB represents a thin photo-sensitive polymer by supporting photographic pattern of single traces or IC pads for etching?

- a) Prepreg
- b) Etching
- c) Photo-resist
- d) Solder mask

13. Which problems are about to occur if PCB is not designed properly in a confined manner for digital circuits?

- A. Diffraction
 - B. Refraction
 - C. Ground & Supply-line Noise
 - D. Electromagnetic Interference
- a) A & B
 - b) B & C
 - c) C & D
 - d) A, B, C, D

14. Which among the following assists in obtaining the desired value of wave impedance in reflection phase while designing digital PCBs?

- A. Width of signal lines
- B. Distance between signal line and ground line
- C. Signal Delays
- D. Double Pulsing



- a) A & B
- b) B & C
- c) C & D
- d) A, B, C, D

15. What should be the resistance of 0.6 mm wide conductor with 15 cm length and 25 μm thickness of standard copper foil? (Assume $\rho = 1.7241 \times 10^{-6}$ at 20° C)

- a) 118.2 m Ω
- b) 138.2 m Ω
- c) 172.4 m Ω
- d) 192.4 m Ω

16. The actual cost of PCB can be evaluated on the basis of _____

- a) PCB size & material
- b) Number of layers
- c) Vias on PCB
- d) All of the above

17. Which factors contribute to the occurrence of mechanical stress?

- a) Resonance
- b) Cracked Solder Joints
- c) Both a and b
- d) None of the above

18. Which type of PCB requires minimum soldering on component side in order to avoid replacement oriented difficulties?

- a) Single-sided PCB
- b) Double-sided PCB
- c) Both a and b
- d) None of the above

19. What effects can be observed if the separate power and ground planes are provided with large conducting surfaces for better decoupling in PCB layouts?

- a) Increase in self-inductance
- b) Reduction in self-inductance
- c) Stability in self-inductance
- d) None of the above

20. 1. Which memory storage is widely used in PCs and Embedded Systems?

- a) EEPROM
- b) Flash memory
- c) SRAM
- d) DRAM

21. 1. Which of these designs considers both the software and hardware during the embedded design?

- a. Peripheral Design
- b. Platform-Based Codesign
- c. Software/Hardware Design
- d. Memory Design

22. Which of these can lead to a reduction of the loop overhead thus leading to an increase in the speed?

- a. Loop permutation
- b. Loop fusion
- c. Loop unrolling
- d. Loop tiling



23. The Index set L would denote what?

- a. Processor
- b. Task Graph Node Type
- c. Task Graph Node
- d. Hardware Components

24. The main ingredient for the optimization of power is:

- a. Energy Model
- b. Power Model
- c. Watt Model
- d. Power Compiler

25. The first power model was proposed by:

- a. Tiwari
- b. Russell
- c. Jacome
- d. Jacome and Russel



A handwritten signature in black ink, appearing to read "Dr. D. Senthil Kumaran".

Dr. D. SENTHIL KUMARAN M.P. Ph.D
F. No. 12/2012
SSM Institute of Engineering and Technology
Kuttathupatti Village, Sindhalagundu (Po),
Palani Road, Dindigul - 624 002.



SSM INSTITUTE OF ENGINEERING AND TECHNOLOGY, DINDIGUL - 624 002

(Approved by AICTE, New Delhi / Affiliated to Anna University, Chennai / Accredited by NAAC)
Dindigul – Palani Highway, Dindigul 624 002

Department of Electrical and Electronics Engineering

TECHNOLOGY TRAINING PROGRAMME ON PRODUCT DESIGN AND MANUFACTURING

PRODUCT DESIGN AND MANUFACTURING MULTIPLE CHOICE QUESTION

Name of the student:

R. Shanmugavel

Year/Sem :

SS 1 ✓

Date:

15/10/22

1. Which phenomenon is not reduced by the circuit paths of lowest impedances especially provided by power and return planes for shielding purposes?

- a) Radiation
- b) Convection
- c) Noise
- d) Crosstalk

2. High current circuits are purposely located or placed near the edge of PCB in accordance to the supply lines for _____

- a) Removal of heat
- b) Isolation of stray current
- c) Reduction of path length
- d) All of the above

3. Which among the below stated soldering methods is also renowned as 'High Frequency Resistance Soldering'?

- a) Iron Soldering
- b) Furnace Soldering
- c) Torch Soldering
- d) Electrical Soldering

4. Which among the below mentioned approaches belongs to the category of In-circuit Testing?

- a) Impedance Testing
- b) Component Testing
- c) Apply Signal and check output
- d) All of the above

5. Which type of solderability testing is carried out for the generation of solder sample due to immersion of wire or sheet metal specimen in a bath of molten solder?

- a) Solder Bath Testing
- b) Meniscus Rise Testing
- c) Solder Iron Testing
- d) None of the above

6. What is/are the necessity/ies to provide guarding to precision differential amplifiers?

- a) To increase leakage resistance
- b) To reduce capacitance between signal conductors & ground
- c) Both a and b
- d) None of the above

7. Which among the below mentioned assertions is not a way of cross-talk reduction while designing digital

PCBs?

Dr. D. SENTHIL KUMARAN, M.E., Ph.D., (NUS)

Principal

SSM Institute of Engineering and Technology
Kuttathupatti Village, Sindalagundu (Po),
Palani Road, Dindigul - 624 002



- a) Decrease in the distance between conductors

b) Shielding of clock lines with guard strips

c) Reduction in the loop area of circuits

d) Avoid running of parallel traces for longer distances especially for asynchronous signals

8. Which among the below mentioned packages does not belong to the category of 'Small Outline Package'?

a) SO

b) SOP

c) SOT

d) SON

9. Which among the below specified assertions is not a grounding consideration associated with ADC as well as DAC?

a) Analog side to analog ground

b) Digital side to digital ground

c) Use of separate power supply and connection of their ground leads to single point reference

d) Reduction of inductive loop area between power and return traces

10. Which among the below stated devices/equipments are preferred for elimination of ground and supply line noise especially in TTL/CMOS / ECL PCB designing?

a) Coupling capacitor

b) Decoupling capacitor

c) Snubber circuits

d) All of the above

11. Which among the below specified condition is precise in the crosstalk verification mechanism using logic flow in opposite direction with the limit of avoiding dangerous interference in digital PCB designing?

a) $Z_{even} > Z_{odd}$

b) $Z_{odd} \geq 0.5 Z_{even}$

c) $Z_{odd} \geq 0.8 Z_{even}$

d) $Z_{odd} = Z_{even}$

12. Which terminology of PCB represents a thin photo-sensitive polymer by supporting photographic pattern of single traces or IC pads for etching?

a) Prepreg

b) Etching

c) Photo-resist

d) Solder mask

13. Which problems are about to occur if PCB is not designed properly in a confined manner for digital circuits?

A. Diffraction

B. Refraction

C. Ground & Supply-line Noise

D. Electromagnetic Interference

a) A & B

b) B & C

c) C & D

d) A, B, C, D

14. Which among the following assists in obtaining the desired value of wave impedance in reflection phase while designing digital PCBs?

Width of signal lines

B. Distance between signal line and ground line

Signal Delays

Double Pulsing



Dr.D.SENTHIL KUMARAN, M.E., Ph.D., (NUS)

Principal

SSM Institute of Engineering and Technology
Kuttathupatti Village, Sindhalgundu (Po),
Palani Road, Dindigul - 624 002.

- a) A & B
- b) B & C
- c) C & D
- d) A, B, C, D

15. What should be the resistance of 0.6 mm wide conductor with 15 cm length and 25 μm thickness of standard copper foil? (Assume $\rho = 1.7241 \times 10^{-6}$ (at 20° C))

- a) 118.2 m Ω
- b) 138.2 m Ω
- c) 172.4 m Ω
- d) 192.4 m Ω

16. The actual cost of PCB can be evaluated on the basis of _____

- a) PCB size & material
- b) Number of layers
- c) Vias on PCB
- d) All of the above

17. Which factors contribute to the occurrence of mechanical stress?

- a) Resonance
- b) Cracked Solder Joints
- c) Both a and b
- d) None of the above

18. Which type of PCB requires minimum soldering on component side in order to avoid replacement oriented difficulties?

- a) Single-sided PCB
- b) Double-sided PCB
- c) Both a and b
- d) None of the above

19. What effects can be observed if the separate power and ground planes are provided with large conducting surfaces for better decoupling in PCB layouts?

- a) Increase in self-inductance
- b) Reduction in self-inductance
- c) Stability in self-inductance
- d) None of the above

20. 1. Which memory storage is widely used in PCs and Embedded Systems?

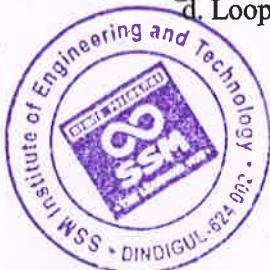
- a) EEPROM
- b) Flash memory
- c) SRAM
- d) DRAM

21. 1. Which of these designs considers both the software and hardware during the embedded design?

- a. Peripheral Design
- b. Platform-Based Codesign
- c) Software/Hardware Design
- d. Memory Design

22. Which of these can lead to a reduction of the loop overhead thus leading to an increase in the speed?

- a. Loop permutation
- b. Loop fusion
- c) Loop unrolling
- d. Loop tiling




Dr. D. SENTHIL KUMARAN, M.E., Ph.D., (NUS)
Principal
SSM Institute of Engineering and Technology
Kuttathupatti Village, Sindalagundu (Po),
Palani Road, Dindigul - 624 002

4 23. The Index set L would denote what?

- a. Processor
- b. Task Graph Node Type
- c. Task Graph Node
- d. Hardware Components

4 24. The main ingredient for the optimization of power is:

- a. Energy Model
- b. Power Model
- c. Watt Model
- d. Power Compiler

4 25. The first power model was proposed by:

- a. Tiwari
- b. Russell
- c. Jacome
- d. Jacome and Russel



A handwritten signature in black ink, appearing to read 'Dr. D. Senthil Kumaran'.

Dr.D.SENTHIL KUMARAN, M.E., Ph.D.,(NUS)
Principal
SSM Institute of Engineering and Technology
Kuttathupatti Village, Sindalagundu
Palani Road, Dindigul - 624 092



SSM INSTITUTE OF ENGINEERING AND TECHNOLOGY, DINDIGUL - 624 002

(Approved by AICTE, New Delhi / Affiliated to Anna University, Chennai / Accredited by NAAC)
Dindigul – Palani Highway, Dindigul 624 002

Department of Electrical and Electronics Engineering

TECHNOLOGY TRAINING PROGRAMME ON PRODUCT DESIGN AND MANUFACTURING

PRODUCT DESIGN AND MANUFACTURING MULTIPLE CHOICE QUESTION

Name of the student: M. Monesh

Year/Sem : III IV

Date:

15/10/22

10

1. Which phenomenon is not reduced by the circuit paths of lowest impedances especially provided by power and return planes for shielding purposes?

- a) Radiation
- b) Convection
- c) Noise
- d) Crosstalk

2. High current circuits are purposely located or placed near the edge of PCB in accordance to the supply lines for _____

- a) Removal of heat
- b) Isolation of stray current
- c) Reduction of path length
- d) All of the above

3. Which among the below stated soldering methods is also renowned as 'High Frequency Resistance Soldering'?

- a) Iron Soldering
- b) Furnace Soldering
- c) Torch Soldering
- d) Electrical Soldering

4. Which among the below mentioned approaches belongs to the category of In-circuit Testing?

- a) Impedance Testing
- b) Component Testing
- c) Apply Signal and check output
- d) All of the above

X

5. Which type of solderability testing is carried out for the generation of solder sample due to immersion of wire or sheet metal specimen in a bath of molten solder?

- a) Solder Bath Testing
- b) Meniscus Rise Testing
- c) Solder Iron Testing
- d) None of the above

✓

6. What is/are the necessity/ies to provide guarding to precision differential amplifiers?

- a) To increase leakage resistance
- b) To reduce capacitance between signal conductors & ground
- c) Both a and b
- d) None of the above

7. Which among the below mentioned assertions is not a way of cross-talk reduction while designing digital PCBs?



Dr. D. SENTHIL KUMARAN, M.E., Ph.D., (NUS)

Principal

SSM Institute of Engineering and Technology

Kuttathupatti Village, Sindalagundu PO,

Palani Road, Dindigul 624 002

- a) Decrease in the distance between conductors
- b) Shielding of clock lines with guard strips
- c) Reduction in the loop area of circuits
- d) Avoid running of parallel traces for longer distances especially for asynchronous signals

8. Which among the below mentioned packages does not belong to the category of 'Small Outline Package'?

- a) SO
- b) SOP
- c) SOT
- d) SON

9. Which among the below specified assertions is not a grounding consideration associated with ADC as well as DAC?

- a) Analog side to analog ground
- b) Digital side to digital ground
- c) Use of separate power supply and connection of their ground leads to single point reference
- d) Reduction of inductive loop area between power and return traces

10. Which among the below stated devices/equipments are preferred for elimination of ground and supply line noise especially in TTL/CMOS / ECL PCB designing?

- a) Coupling capacitor
- b) Decoupling capacitor
- c) Snubber circuits
- d) All of the above

11. Which among the below specified condition is precise in the crosstalk verification mechanism using logic flow in opposite direction with the limit of avoiding dangerous interference in digital PCB designing?

- a) $Z_{even} > Z_{odd}$
- b) $Z_{odd} \geq 0.5 Z_{even}$
- c) $Z_{odd} \geq 0.8 Z_{even}$
- d) $Z_{odd} = Z_{even}$

12. Which terminology of PCB represents a thin photo-sensitive polymer by supporting photographic pattern of single traces or IC pads for etching?

- a) Prepreg
- b) Etching
- c) Photo-resist
- d) Solder mask

13. Which problems are about to occur if PCB is not designed properly in a confined manner for digital circuits?

- A. Diffraction
 - B. Refraction
 - C. Ground & Supply-line Noise
 - D. Electromagnetic Interference
- a) A & B
 - b) B & C
 - c) C & D
 - d) A, B, C, D

14. Which among the following assists in obtaining the desired value of wave impedance in reflection phase while designing digital PCBs?

- A. Width of signal lines
- B. Distance between signal line and ground line
- C. Signal Delays
- D. Double Pulsing



A handwritten signature in blue ink, which appears to read 'Dr. D. Senthil Kumaran'.

Dr. D. SENTHIL KUMARAN, M.E., Ph.D., (NUS)
Principal
SSM Institute of Engineering and Technology
Kuttathupatti Village, Sindalagundu (P.O),
Palani Road, Dindigul - 624 002.

- a) A & B
- b) B & C
- c) C & D
- d) A, B, C, D

15. What should be the resistance of 0.6 mm wide conductor with 15 cm length and 25 μm thickness of standard copper foil? (Assume $\rho = 1.7241 \times 10^{-6}$ (at 20° C))

- a) 118.2 m Ω
- b) 138.2 m Ω
- c) 172.4 m Ω
- d) 192.4 m Ω

16. The actual cost of PCB can be evaluated on the basis of _____

- a) PCB size & material
- b) Number of layers
- c) Vias on PCB
- d) All of the above

17. Which factors contribute to the occurrence of mechanical stress?

- a) Resonance
- b) Cracked Solder Joints
- c) Both a and b
- d) None of the above

18. Which type of PCB requires minimum soldering on component side in order to avoid replacement oriented difficulties?

- a) Single-sided PCB
- b) Double-sided PCB
- c) Both a and b
- d) None of the above

19. What effects can be observed if the separate power and ground planes are provided with large conducting surfaces for better decoupling in PCB layouts?

- a) Increase in self-inductance
- b) Reduction in self-inductance
- c) Stability in self-inductance
- d) None of the above

20. 1. Which memory storage is widely used in PCs and Embedded Systems?

- a) EEPROM
- b) Flash memory
- c) SRAM
- d) DRAM

21. 1. Which of these designs considers both the software and hardware during the embedded design?

- a. Peripheral Design
- b. Platform-Based Codesign
- c. Software/Hardware Design
- d. Memory Design

22. Which of these can lead to a reduction of the loop overhead thus leading to an increase in the speed?

- a. Loop permutation
- b. Loop fusion
- c. Loop unrolling
- d. Loop tiling



23. The Index set L would denote what?

- a. Processor
- b. Task Graph Node Type
- c. Task Graph Node
- d. Hardware Components

24. The main ingredient for the optimization of power is:

- a. Energy Model
- b. Power Model
- c. Watt Model
- d. Power Compiler

25. The first power model was proposed by:

- a. Tiwari
- b. Russell
- c. Jacome
- d. Jacome and Russel



Dr.D.SENTHIL KUMARAN, M.E.,Ph.D.,(NUS)
Principal

SSM Institute of Engineering and Technology
Kuttathupatti Village, Sindhalagundu(Po),
Palani Road, Dindigul 624 002


SSM INSTITUTE OF ENGINEERING AND TECHNOLOGY, DINDIGUL - 624 002

(Approved by AICTE, New Delhi / Affiliated to Anna University, Chennai / Accredited by NAAC)
Dindigul – Palani Highway, Dindigul 624 002

Department of Electrical and Electronics Engineering
**TECHNOLOGY TRAINING PROGRAMME ON PRODUCT DESIGN AND
MANUFACTURING**

13

PRODUCT DESIGN AND MANUFACTURING MULTIPLE CHOICE QUESTION
Name of the student:
Year/Sem :
Date:

1. Which phenomenon is not reduced by the circuit paths of lowest impedances especially provided by power and return planes for shielding purposes?
 - a) Radiation
 - b) Convection
 - c) Noise
 - d) Crosstalk
2. High current circuits are purposely located or placed near the edge of PCB in accordance to the supply lines for
 - a) Removal of heat
 - b) Isolation of stray current
 - c) Reduction of path length
 - d) All of the above
3. Which among the below stated soldering methods is also renowned as 'High Frequency Resistance Soldering'?
 - a) Iron Soldering
 - b) Furnace Soldering
 - c) Torch Soldering
 - d) Electrical Soldering
4. Which among the below mentioned approaches belongs to the category of In-circuit Testing?
 - a) Impedance Testing
 - b) Component Testing
 - c) Apply Signal and check output
 - d) All of the above
5. Which type of solderability testing is carried out for the generation of solder sample due to immersion of wire or sheet metal specimen in a bath of molten solder?
 - a) Solder Bath Testing
 - b) Meniscus Rise Testing
 - c) Solder Iron Testing
 - d) None of the above
6. What is/are the necessity/ies to provide guarding to precision differential amplifiers?
 - a) To increase leakage resistance
 - b) To reduce capacitance between signal conductors & ground
 - c) Both a and b
 - d) None of the above
7. Which among the below mentioned assertions is not a way of cross-talk reduction while designing digital PCBs?


Dr.D.SENTHIL KUMARAN, M.E.,Ph.D.,(NUS)
Principal
SSM Institute of Engineering and Technology
Kuttathupatti Village, Sindlagundu (Po),
Palani Road, Dindigul - 624 002

- a) Decrease in the distance between conductors
 b) Shielding of clock lines with guard strips
 c) Reduction in the loop area of circuits
 d) Avoid running of parallel traces for longer distances especially for asynchronous signals
8. Which among the below mentioned packages does not belong to the category of 'Small Outline Package'?
- a) SO
 b) SOP
 c) SOT
 d) SON
9. Which among the below specified assertions is not a grounding consideration associated with ADC as well as DAC?
- a) Analog side to analog ground
 b) Digital side to digital ground
 c) Use of separate power supply and connection of their ground leads to single point reference
 d) Reduction of inductive loop area between power and return traces
10. Which among the below stated devices/equipments are preferred for elimination of ground and supply line noise especially in TTL/CMOS / ECL PCB designing?
- a) Coupling capacitor
 b) Decoupling capacitor
 c) Snubber circuits
 d) All of the above
11. Which among the below specified condition is precise in the crosstalk verification mechanism using logic flow in opposite direction with the limit of avoiding dangerous interference in digital PCB designing?
- a) $Z_{even} > Z_{odd}$
 b) $Z_{odd} \geq 0.5 Z_{even}$
 c) $Z_{odd} \geq 0.8 Z_{even}$
 d) $Z_{odd} = Z_{even}$
12. Which terminology of PCB represents a thin photo-sensitive polymer by supporting photographic pattern of single traces or IC pads for etching?
- a) Prepreg
 b) Etching
 c) Photo-resist
 d) Solder mask
13. Which problems are about to occur if PCB is not designed properly in a confined manner for digital circuits?
- A. Diffraction
 B. Refraction
 C. Ground & Supply-line Noise
 D. Electromagnetic Interference
 a) A & B
 b) B & C
 c) C & D
 d) A, B, C, D
14. Which among the following assists in obtaining the desired value of wave impedance in reflection phase while designing digital PCBs?
- A. Width of signal lines
 B. Distance between signal line and ground line
 C. Signal Delays
 D. Double Pulsing

Dr. D. SENTHIL KUMARAN, M.E., Ph.D., (NUS)
 Principal
 SSM Institute of Engineering and Technology
 Kuttathupatti Village, Sindalagundu (Po),
 Palani Road, Dindigul - 624 002



- a) A & B
- b) B & C
- c) C & D
- d) A, B, C, D

15. What should be the resistance of 0.6 mm wide conductor with 15 cm length and 25 μm thickness of standard copper foil? (Assume $\rho = 1.7241 \times 10^{-6}$ (at 20° C))

- a) 118.2 m Ω
- b) 138.2 m Ω
- c) 172.4 m Ω
- d) 192.4 m Ω

16. The actual cost of PCB can be evaluated on the basis of _____

- a) PCB size & material
- b) Number of layers
- c) Vias on PCB
- d) All of the above

17. Which factors contribute to the occurrence of mechanical stress?

- a) Resonance
- b) Cracked Solder Joints
- c) Both a and b
- d) None of the above

18. Which type of PCB requires minimum soldering on component side in order to avoid replacement oriented difficulties?

- a) Single-sided PCB
- b) Double-sided PCB
- c) Both a and b
- d) None of the above

19. What effects can be observed if the separate power and ground planes are provided with large conducting surfaces for better decoupling in PCB layouts?

- a) Increase in self-inductance
- b) Reduction in self-inductance
- c) Stability in self-inductance
- d) None of the above

20. 1. Which memory storage is widely used in PCs and Embedded Systems?

- a) EEPROM
- b) Flash memory
- c) SRAM
- d) DRAM

21. 1. Which of these designs considers both the software and hardware during the embedded design?

- a. Peripheral Design
- b. Platform-Based Codesign
- c. Software/Hardware Design
- d. Memory Design

22. Which of these can lead to a reduction of the loop overhead thus leading to an increase in the speed?

- a. Loop permutation
- b. Loop fusion
- c. Loop unrolling
- d. Loop tiling



23. The Index set L would denote what?

- a. Processor
- b. Task Graph Node Type
- c. Task Graph Node
- d. Hardware Components

24. The main ingredient for the optimization of power is:

- a. Energy Model
- b. Power Model
- c. Watt Model
- d. Power Compiler

25. The first power model was proposed by:

- a. Tiwari
- b. Russell
- c. Jacome
- d. Jacome and Russel



Dr.D.SENTHIL KUMARAN, M.E., Ph.D.,(NUS)
Principal

SSM Institute of Engineering and Technology
Kuttathupatti Village, Sindalagundu (Po)
Palani Road, Dindigul 624 002





Department of Electrical and Electronics Engineering

STUDENT FEEDBACK FORM

Year/Sem: II year / 5th Sem

Date: 15/10/22

Dear Student,

Thank you for your participation in Technology Training on "Product Design and Manufacturing & Industrial Embedded Programming using PIC Microcontroller" conducted from October 10-15, 2022. We would like to hear from you - areas that you find useful and areas that you think we can do better. Your feedback will help us evaluate the effectiveness of this program and allow us to make improvements in future.

S.No	Criteria	Rating				
		Excellent	Verygood	Good	Fair	Satisfactory
1	Course content	✓				
2	Skill development	✓				
3	Motivation	✓				
4	Regularity and punctuality of trainer	✓				
5	Coverage of syllabus	✓				
6	Interaction	✓				
7	Individual attention	✓				
8	Outcome	✓				

Feel free to give QUALITATIVE comments too

I'm so lucky to have this sessions... I have learned lots of new things... I'm so proud that I'm going to do something new in my life.

Signature of the student with name

Dr.D.SENTHIL KUMARAN, M.E., Ph.D., (NUS)
Principal

SSM Institute of Engineering and Technology
Kuttathupatti Village, Sindalagundu (Po),
Palani Road, Dindigul - 624 002



Department of Electrical and Electronics Engineering

STUDENT FEEDBACK FORM

Year/Sem: 2nd, 3rd semester

Date: 15/10/22

Dear Student,

Thank you for your participation in Technology Training on "Product Design and Manufacturing & Industrial Embedded Programming using PIC Microcontroller" conducted from October 10-15, 2022. We would like to hear from you - areas that you find useful and areas that you think we can do better. Your feedback will help us evaluate the effectiveness of this program and allow us to make improvements in future.

S.No	Criteria	Rating				
		Excellent	Verygood	Good	Fair	Satisfactory
1	Course content	✓				
2	Skill development	✓				
3	Motivation	✓				
4	Regularity and punctuality of trainer	✓				
5	Coverage of syllabus	✓				
6	Interaction	✓				
7	Individual attention	✓				
8	Outcome	✓				

Feel free to give QUALITATIVE comments too

About this training, it is very useful for our course, and I have learnt lot of new things about circuits, AUTOCAD, EAGLE, PIC microcontroller etc...)

Signature of the student with name

A. KAMALEE

Dr.D.SENTHIL KUMARAN, M.E., Ph.D.,(NUS)

Principal

SSM Institute of Engineering and Technology

Kuttathupatti Village Sindalagundu (P.O.)

100 Road, Dindigul 624 002





Department of Electrical and Electronics Engineering

STUDENT FEEDBACK FORMYear/Sem: III / VDate: 15/10/22

Dear Student,

Thank you for your participation in Technology Training on "Product Design and Manufacturing & Industrial Embedded Programming using PIC Microcontroller" conducted from October 10-15, 2022. We would like to hear from you - areas that you find useful and areas that you think we can do better. Your feedback will help us evaluate the effectiveness of this program and allow us to make improvements in future.

S.No	Criteria	Rating				
		Excellent	Verygood	Good	Fair	Satisfactory
1	Course content	✓				
2	Skill development	✓				
3	Motivation	✓				
4	Regularity and punctuality of trainer	✓				
5	Coverage of syllabus	✓				
6	Interaction	✓				
7	Individual attention	✓				
8	Outcome	✓				

Feel free to give QUALITATIVE comments too

I t was..... very..... useful.... and..... learn.....
to..... of..... things..... about..... PCB..... and.....
Embedded.....
etc.....

Signature of the student with name GIEETHANJALI
DR.D.SENTHIL KUMARAN, M.E., Ph.D., (NUS)
Principal
SSM Institute of Engineering and Technology
Kuttathupatti Village, Sindalagundu (Po),
Palani Road, Dindigul - 624 002.



Department of Electrical and Electronics Engineering

STUDENT FEEDBACK FORM

Year/Sem: 2nd year / 3rd Sem

Date: 15/10/22

Dear Student,

Thank you for your participation in Technology Training on "Product Design and Manufacturing & Industrial Embedded Programming using PIC Microcontroller" conducted from October 10-15, 2022. We would like to hear from you - areas that you find useful and areas that you think we can do better. Your feedback will help us evaluate the effectiveness of this program and allow us to make improvements in future.

S.No	Criteria	Rating				
		Excellent	Verygood	Good	Fair	Satisfactory
1	Course content	✓				
2	Skill development	✓				
3	Motivation	✓				
4	Regularity and punctuality of trainer	✓				
5	Coverage of syllabus	✓				
6	Interaction	✓				
7	Individual attention	✓				
8	Outcome	✓				

Feel free to give QUALITATIVE comments too

.....your teaching is so useful for us....we learned many things from you sir...Now I am so proud to tell I am a BE EEE.

P. Narmatha Devi
Signature of the student with name

Dr. D. SENTHIL KUMARAN, M.E., Ph.D., (NUS)
Principal
SSM Institute of Engineering and Technology
Kuttathupatti Village, Sindalagundu (Po),
Palani Road, Dindigul - 624 002.



Department of Electrical and Electronics Engineering

STUDENT FEEDBACK FORM

Year/Sem: II - 3rd Sem

Date: 15/10/22

Dear Student,

Thank you for your participation in Technology Training on "Product Design and Manufacturing & Industrial Embedded Programming using PIC Microcontroller" conducted from October 10-15, 2022. We would like to hear from you - areas that you find useful and areas that you think we can do better. Your feedback will help us evaluate the effectiveness of this program and allow us to make improvements in future.

S.No	Criteria	Rating				
		Excellent	Verygood	Good	Fair	Satisfactory
1	Course content	✓				
2	Skill development	✓				
3	Motivation	✓				
4	Regularity and punctuality of trainer	✓				
5	Coverage of syllabus	✓				
6	Interaction	✓				
7	Individual attention	✓				
	Outcome	✓				



Feel free to give QUALITATIVE comments too

This training helps us to get knowledge more about our knowledge about electrical. It is very useful.

Signature of the student with name

[K. Kanya]

Dr. D. SENTHIL KUMARAN, M.E., Ph.D., (NUS)
Principal
SSM Institute of Engineering and Technology
Kuttathupatti Village, Sindalagundu (P.O),
Palani Road, Dindigul - 624 002.



Your Technical Friend

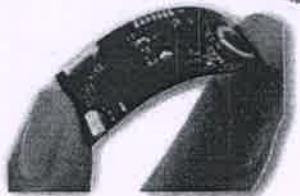
SUNSHIV

Electronic Solutions

Electronic Core Industry Since 1994



Industrial Products Manufacturing
PCB Designing & Manufacturing
Industrial Electronics Training
PCB Design Hands-on-Training
PIC Industrial Embedded Training



245, Chinnasamy Naidu Road, New Siddhapudur,
Gandhipuram, COIMBATORE – 641 044.

Phone : 0422 -4980499, M :97509 14445.

Hands-On-Training Certificate

This is to Certify that Mrs. / Mr. / Ms.....HARIHARAN....I.....II..year..EEE.....

...SSM...Institute...of....Engineering..and..Technology.....Dindigul.....

has successfully completed hands-on-training on

*.Industrial...Embedded...C.programming...I/O.ports...TIMER, ADC, SENSOR & 7.SEGMENT
..display...interfacing,..PCB..designing...circuit.creation...&..Trouble..Shooting...*

Trainer

Dr.D.SENTHIL KUMARAN, M.E.,Ph.D.,(NUS)
Principal
SSM Institute of Engineering and Technology
Kuttathupatti Village, Sindalagundu (Po),
Palani Road, Dindigul - 624 002.



Your Technical Friend

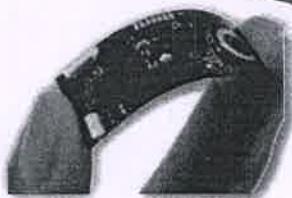
SUNSHIV

Electronic Solutions

Electronic Core Industry Since 1994



Industrial Products Manufacturing
PCB Designing & Manufacturing
Industrial Electronics Training
PCB Design Hands-on-Training
PIC Industrial Embedded Training



245, Chinnasamy Naidu Road, New Siddhapudur,
Gandhipuram, COIMBATORE – 641 044.

Phone : 0422 -4980499, M :97509 14445.

Hands-On-Training Certificate

This is to Certify that Mrs. / Mr. / Ms.....MANOJ..KUMAR..A.....II..year..EEE.....

...SSM.....Institute...of....Engineering..and..Technology....-..Dindigul.....

has successfully completed hands-on-training on

..Industrial...Embedded...C.p.rограмming.,..I/O..PORTS.,..T.I.M.E.R.,..A.D.C.,..S.E.N.S.O.R.s...T.....

segment..display...interfacing...,.P.C.B....Designing....Gruit.Creation.s.....

Trouble Shooting

Trainer

www.sunshivelectronics.com
sunshivpcb@gmail.com

Dr.D.SENTHIL KUMARAN, M.E., Ph.D., (NUS)
Principal
SSM Institute of Engineering and Technology
Ettuthuratti Village, Sindalagundu (Po),



Industrial Products Man
PCB Designing & Manufacture
Industrial Electronics Trai
PCB Design Hands-on-Traini
PIC Industrial Embedded Traini

245, Chinnasamy Naidu Road, New Siddhapuram
Gandhipuram, COIMBATORE - 641 044.
Phone : 0422 - 4980499, M : 97509 14445.



Hands-On-Training Certificate

To Certify that Mr. / Ms. / Me.....DIVYA.....I.....II.....year EEE.....
SSM Institute of Engineering and Technology.....Dindigul.....

has successfully completed hands-on-training on

Industrial Embedded C Programming - I/O PORTS, TIMER, ADC,
SENSOR & 7 segment display interfacing, PCB Designing,
Circuit creation & Troubleshooting

Trainer

Dr. D. SENTHIL KUMARAN, M.E., Ph.D., (NUS)
Principal
SSM Institute of Engineering and Technology
Kutithupatti Village, Sindhalagundu (P.O)
Palani Road, Dindigul - 624 092

Industrial Products Manufacturing
PCB Designing & Manufacturing
Industrial Electronics Training
PCB Design Hands-on-Training
PIC Industrial Embedded Training

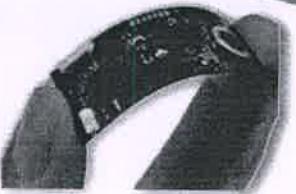


Your Technical Friend

SUNSHIV

Electronic Solutions

Electronic Core Industry Since 1994



245, Chinnasamy Naidu Road, New Siddhapudur
Gandhipuram, COIMBATORE – 641 044.
Phone : 0422 -4980499, M :97509 14445.

Hands-On-Training Certificate

This is to Certify that Mrs. / Mr. / Ms.....D.HEENA..DHAYALAN..P.A.....II.year.EEE.....
..SSM...Institute..of.....Engineering..and..Technology.....Dindigul.....
has successfully completed hands-on-training on
...Industrial....Embedded...C..programming...I/O..PORTS.,..TIMER.,..ADC.,..SENSOR.S.
....7..Segment..display..interfacing...,.P.C.B..Designing.,..Circuit..creation..&..Trouble..Shooting

www.sunshivelectronics.com
sunshivpcb@gmail.com

Appu Paudge
Trainer

Dr.D.SENTHIL KUMARAN, M.E., Ph.D.,(NUS)
Principal
SSM Institute of Engineering and Technology
Kuttathupatti Village, Sindalagundu, Ongi,
Palani Road, Dindigul 624 001.

Your Technical Friend



SUNSHIV

Electronic Solutions

Electronic Core Industry Since 1994



Industrial Products Manufacturing
PCB Designing & Manufacturing
Industrial Electronics Training
PCB Design Hands-on-Training
PIC Industrial Embedded Training



245, Chinnasamy Naidu Road, New Siddhapudur,
Gandhipuram, COIMBATORE – 641 044.
Phone : 0422 -4980499, M :97509 14445.

Hands-On-Training Certificate

This is to Certify that Mrs. / Mr. / Ms.....DOMINIC.. CLAPALARAJ....A.....II...Year...EEE.....
...SSM....Institute....of....Engineering...and...Technology.....Dindigul.....
has successfully completed hands-on-training on
...Industrial..Embedded..C..programming.. IO.PORTS., TIMER., ADC., SENSOR & 7 SEGMENT
...display...Interfacing.....

www.sunshivelectronics.com

sunshivpcb@gmail.com

Trainer

Dr.D.SENTHIL KUMARAN, M.E., Ph.D., (NUS)
Principal
SSM Institute of Engineering and Technology
Kuttathupatti Village, Sindlagundu (Po),
Palani Road, Dindigul - 624 002.

Your Technical Friend

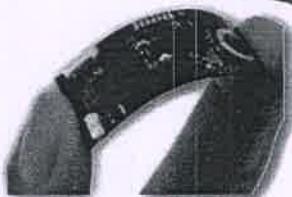


Electronic Solutions

Electronic Core Industry Since 1994



Industrial Products Manufacturing
PCB Designing & Manufacturing
Industrial Electronics Training
PCB Design Hands-on-Training
PIC Industrial Embedded Training



245, Chinnasamy Naidu Road, New Siddhapudur,
Gandhipuram, COIMBATORE – 641 044.

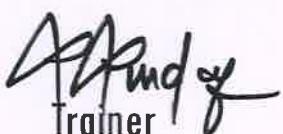
Phone : 0422 -4980499, M :97509 14445.

Hands-On-Training Certificate

This is to Certify that Mrs. / Mr. / Ms.....E.ZHUMALA.I..NAGA..VISHNU...S.....11: year FEE...
...SSM....Institute....of....Engineering....and....Technology....-Dindigul.....

has successfully completed hands-on-training on

.Industrial..Embedded..C..programming...I/O..ports.,..TIMER.,..ADC.,..SENSOR..7..segment
.display..interfacing...P.C.B..Designing...Circuit..creation..&..Trouble..Shooting)....


Trainer



Dr.D.SENTHIL KUMARAN, M.E., Ph.D.,(NUS)
Principal
SSM Institute of Engineering and Technology
Kuttathupatti Village, Sindalagundu Po,
Perum. Road, Dindigul 624 002

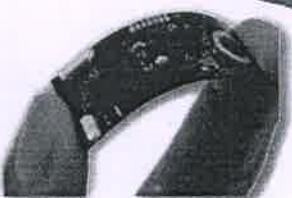


Your Technical Friend

SUNSHIV

Electronic Solutions

Electronic Core Industry Since 1994



Industrial Products Manufacturing
PCB Designing & Manufacturing
Industrial Electronics Training
PCB Design Hands-on-Training
PIC Industrial Embedded Training

245, Chinnasamy Naidu Road, New Siddhapudur,
Gandhipuram, COIMBATORE – 641 044.

Phone : 0422 -4980499, M :97509 14445.

Hands-On-Training Certificate

This is to Certify that Mrs. / Mr. / Ms..... Gopi...J..... II year EEE.....

...SSM...Institute...of....Engineering...and...Technology....- Dindigul.....

has successfully completed hands-on-training on

..Industrial..Embedded...C..programming...I/O..PORTS.,..TIMER.,..ADC.,..SENSOR.Q.7.....

.Segment..display..Interfacing...,.PC.B..Designing.,..Circuit..Creation.&.Trouble..Shooting

www.sunhivelectronics.com
sunshivpcb@gmail.com

AP Murugan
Trainer

Dr.D.SENTHIL KUMARAN, M.E., Ph.D.,(NUS)
Principal
SSM Institute of Engineering and Technology
Kuttathupatti Village, Sindalagundu(Po),
Erode Road, Dindigul - 624 002