

Accredited by NAAC with 'B+' Grade, 2(f) & 12B Status Institution by UGC

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 MECHANICAL ENGINEERING

### ACADEMIC YEAR 2022-23 EVEN / 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 successfullycompleted during the last five years)

### AND

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

| VAC Title:   | Heat '  | Ventil | ation Air Co | onditio | ning   |            |  |                  |          |  |
|--------------|---|--------|--------------|---------|--------|------------|--|------------------|----------|--|
| Resource Pe  | erson:  | Exec   | Q MEP        | Mr.Dh   | ineshw | aran (     |  |                  |          |  |
| Date of cond | luct fro  | m:     | 22.05.2023   |         | To:    | 27.05.2023 |  | <b>Duration:</b> | 30 Hours |  |
| Organized I  | )epartm   | ent:   | MECHAN       | ICAL    | ENGI   | NEERING    |  |                  |          |  |
| Participant  | Participant Year: Mech IV,III,II Year Semester: EVEN Registered: 48 |        |              |         |        |            |  |                  |          |  |
| Venue: M     | Venue: Mechanical Seminar Hall                                      |        |              |         |        |            |  |                  |          |  |

### **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 Attendance Sheet               | 7-10    |
| 5.    | VAC Question Paper                 | 11-13   |
| 6.    | VAC Answer Key                     | 14-14   |
| 7.    | VAC Test Answer Sheet- Sample      | 15-17   |
| 8.    | VAC Assessment Sheet               | 18-21   |
| 9.    | VAC Report                         | 22-23   |
| 10.   | Certificate                        | 24-24   |



### COLLEGE OF ENGINEERING





### Department of Mechanical Engineering

Academic Year 2022-2023 - Even Semester

Date: 18.05,2023

### DEPARTMENT CIRCULAR

Department of Mechanical Engineering and IQAC of IGCE in Association with UNIQ-MEP, Trichy is going to organize Value added course for all III, IV Year students on "Heat ventilation Air conditioning Technology" from 22.05.2023 to 27.05.2023, certificates will be issued to be eligible participants at the end of the course. This training is to be provided in our campus.

|                         | 1. Mr.K.Deepak               |
|-------------------------|------------------------------|
|                         | Executive                    |
|                         | UNIQ-MEP                     |
| Resource Person Details | Trichy                       |
|                         | 2. Mr.Dhineshwaran G         |
|                         | Executive                    |
|                         | UNIQ-MEP                     |
|                         | Trichy                       |
| Venue                   | Mechanical Seminar Hall-IGCE |

Ce:

- · Principal Office
- IQAC Co-Ordinator
- Class In charges -II, III & IV-Year
- II,III & IV-Year MECH 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.



# COLLEGE OF ENGINEERING



Madurai Main Road (NH-45B), Manikandam, Tiruchirappalli - 620 012 Approved by AICTE, NewDelhi & Affiliated to Anna University, Chennai NAAC Accredited, 2(F) Status Institution by UGC



### Value Added Course

### "Heat Ventilation Air conditioning Technology"

### SYLLABUS

| S.NO | TOPIC COVERED  | DURATION<br>(in hours) | DATE       |
|------|--|------------------------|------------|
| 1    | Introduction of HVAC   | 3                      | 22.05.2023 |
| 2    | Air conditioning equipments and categories of air conditioning.  | 3                      | 22.05.2023 |
| 3    | psychometric   | 3                      | 23.05.2023 |
| 4    | Heat load calculation  | 3                      | 23.05.2023 |
| 5    | Fresh Air system   | 3                      | 24.05.2023 |
| 6    | HVAC software skills   | 3                      | 24.05.2023 |
| 7    | Electrical basis and electrical accessories                      | 3                      | 25.05.2023 |
| 8    | Lighting circuit system design                                   | 3                      | 25.05.2023 |
| 9    | Load calculation and distribution ,cables section & Installation | 3                      | 26.05.2023 |
| 10   | Application of HVAC  | 3                      | 26.05.2023 |
| 11   | Exam   | 1                      | 27.05.2023 |
|      | Total Hours(Excluding Exam)                                      | 30                     |            |

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

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

**VAC Coordinator** 



### COLLEGE OF ENGINEERING

Madurai Main Road (NH-45B), Manikandam, Tiruchirappalli - 620 012
Approved by AICTE, NewDelhi & Affiliated to Anna University, Chennal
NAAC Accredited, 2(F) Status Institution by UGC



### VALUE ADDED COURSE

### "Heat ventilation Air conditioning Technology"

### STUDENTS PARTICIPATION LIST

| S.No     | Reg.No                       | Students Name          | Year/Branch  |
|----------|------------------------------|------------------------|--------------|
| 1        | 811219114001                 | Aathilingam V          | IV/MECH      |
| 2        | 811219114002                 | Abimanyu C             | IV/MECH      |
| 3        | 811219114003                 | Ajay S                 | IV/MECH      |
| 4        | 811219114004                 | Christy Lourthu Samy A | TV/MECH      |
| 5        | 811219114006                 | Periyasamy P           | IV/MECH      |
| 6        | 811219114008                 | Saravana Kumar V       | IV/MECH      |
| 7        | 811219114010                 | Siriyac Selva A        | IV/MECH      |
| 8        | 811219114011                 | Suriyaganesh M         | IV/MECH      |
| 9        | 811219114012                 | Vaithiyalingam M       | IV/MECH      |
| 10       | 811219114013                 | Vikash R               | IV/MECH      |
|          | 811219114301                 | Hariharan R            | IV/MECH      |
| 11       | 811219114302                 | Mohanraj G             | IV/MECH      |
| 12       | 811219114303                 | Sivash K               | IV/MECH      |
| 13       | 811219114701                 | Gokul R                | IV/MECH      |
| 14<br>15 | 811219114702                 | Madhan Murugan S       | IV/MECH      |
|          | 811219114703                 | Muthukaruppan M        | IV/MECH      |
| 16       | 811219114704                 | Inigo Rithish P        | IV/MECH      |
| 17       | 811220114001                 | Abinesh As             | пі/месн      |
| 18       | 811220114003                 | Anbarasan M            | ПІ/МЕСН      |
|          | 811220114005                 | Arunkumar M            | JII/MECH     |
| 20       | 811220114008                 | Balamurugan R          | III/MECH     |
| 21       | 811220114008                 | Dhanushraja P          | III/MECH     |
| 22       | 811220114015                 | Durai Pandi A          | III/MECH     |
| 23       | 811220114013                 | Hariharan M            | III/MECH     |
| 24       | 811220114017                 | Kanishkavardhini S     | ШИМЕСН       |
| 25       |                              | Loganathan C           | III/MECH     |
| 26       | 811220114026<br>811220114032 | Mohamed Ashif A        | пи/месн      |
| 27       |                              | Sanjay Kumar M         | ПІ/МЕСН      |
| 28       | 811220114039                 | Santhosh Kumar R       | III/MECH     |
| 29       | 811220114040                 |                        | III/MECH     |
| 30       | 811220114042                 | Saranya Sree Tr        | III/MECH     |
| 31       | 811220114043                 | Saravanan M            | III/MECH     |
| 32       | 811220114044                 | Sathishkumar V         | III/MECH     |
| 33       | 811220114047                 | Sheik Ameer M          | III/MECH     |
| 34       | 811220114052                 | Thamaraiselvan K       | Dr. C. P. L. |

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

IG Valley, Madurai Main Road Manikandam, Trichy-620 012.



### COLLEGE OF ENGINEERING

Madural Main Road (NH-45B), Manikandam, Tiruchirappalli - 620 012 Approved by AICTE, NewDelhi & Affiliated to Anna University, Chennal NAAC Accredited, 2(F) Status Institution by UGC



| S.No | Reg.No       | Students Name   | Year/Branch |
|------|--------------|-----------------|-------------|
| 35   | 811220114056 | Vigneswaran K   | Ш/МЕСН      |
| 36   | 811220114057 | Vijayakumar G   | III/MECH    |
| 37 - | 811220114060 | Yuvaraja A      | III/MECH    |
| 38   | 811220114302 | Chellapandian R | III/MECH    |
| 39   | 811220114305 | Mohamed Nafil A | III/MECH    |
| 40   | 811220114306 | Ruban A         | III/MECH    |
| 41   | 811221114006 | Dhanasejaran D  | II/MECH     |
| 42   | 811221114008 | Dhiwakar R      | II/MECH     |
| 43   | 811221114014 | Kannan P        | II/MECH     |
| 44   | 811221114022 | Naveen M        | II/MECH     |
| 45   | 811221114030 | Santhosh R      | II/MECH     |
| 46   | 811220114302 | Chellapandian R | III/MECH    |
| 47   | 811220114305 | Mohamed Nafil A | III/MECH    |
| 48   | 811220114306 | Ruban A         | III/MECH    |

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

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

VAC Coordinator

нормесн



### COLLEGE OF ENGINEERING

Madurai Main Road (NH-45B), Manikandam, Tiruchirappalli - 620 012 Apparently AICTE, New Deshi & Affainted to Amar University, Chemnal NAAC Accredited, 2(F) Status institution by UGC



## Department of Mechanical Engineering

Academic Year 2022-2023 - Even Semester

STUDENTS ATTENDANCE LIST

VALUE ADDED COURSE

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

"Heat ventilation Air conditioning Technology"

| S.N Reg No 0 811219114001 | Students Name              | Year/Branch                               | 1         | ate<br>05.23 |          | ate<br>05.23 |     | ate<br>05.23 |       | ate<br>05.23 |          | )ate<br>05.23 | SIGNATURE | NO OF          |                   |
|---------------------------|----------------------------|---|-----------|--------------|----------|--------------|-----|--------------|-------|--------------|----------|---------------|-----------|----------------|-------------------|
|                           | 811219114001 Aathilingam N | 811219114001 Aathilingan V                | Anthili   |              | FN       | AN           | FN  | AN           | FN    | AN           | FN       | AN            | FN        | AN             | OF THE<br>STUDENT |
| 2                         | 811219114002               | Aathilingam V                             | IV/MECH   | V            |          |              | 0   | ~            |       |              |          |               |           |                |                   |
| 3                         | 811219114003               | Abimanyu C                                | IV/MECH   | ~            | ~        |              | 2/  |              | سب    |              |          |               |           | y. Nathan      | (D)               |
| 4                         | 811219114004               | Ajay S                                    | IV/MECH   | 0            | -        |              |     |              |       |              | <u>-</u> | a             |           | CA             | 9                 |
| 5                         | 811219114006               | Christy Lourthu Samy<br>A<br>Periyasamy P | IV/MECH   | ~            | <b>-</b> |              |     | -            |       | 2            |          |               | 1         | g haz          | (0                |
|                           | 811219114008               | Saravana Kumar V                          | IV/MECH   | /            | 7        | 0            | 2 1 | 7            | Aurra |              |          |               |           | Au             | (0)               |
|                           | 0110101                    | Siriyac Selva A                           | IV/MECH   | 07           | 0        |              |     | 2            | 7     | 7            | 7        | 7             | 9         | TO ONE WELLSON | 8                 |
|                           |                            | only ac Selva A                           | IV/MECH ( | alb (        | ab       | ab /         | ,   | -            | 2     | 300          | 2        | 31 0          |           | V. gavo        | to                |

j Emis



## Indra Ganesan

### COLLEGE OF ENGINEERING

Madurai Main Road (NH-45B), Manikandam, Tiruchirappalli - 620 012 Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai NAAC Accredited, 2(F) Status Institution by UGC



Dr. G. Balakrishnan, M.E., Ph.D.,
Principal
Indra Ganesan College of Engineering
IG Valley, Madurai Main Road
Manikandam, Trichy-520 012

| S.N<br>o | Reg No       | Students Name    | Year/Branch    |    | 05.23   | 1  | ate<br>05.23 |    | ate<br>05.23 |     | ate<br>05.23 | 1    | ate<br>05.23 | SIGNATURE         | NO OF    |
|----------|--------------|------------------|----------------|----|---------|----|--------------|----|--------------|-----|--------------|------|--------------|-------------------|----------|
|          | -            |                  | · out/ bratier | FN | AN      | FN | AN           | FN | AN           | FN  | AN           | FN   | AN           | OF THE<br>STUDENT | SESSIONS |
| 8        | 811219114011 | Suriyaganesh M   | IV/MECH-       | V  |         |    |              |    | -            | -   |              |      |              |                   | 2)       |
| 9        | 811219114012 | Vaithiyalingam M |                |    |         | (  | 1            | 7  | 9            | 7   | 7            | 7    | 7            | gus               | O        |
| 10       | 811219114013 | Vikash R         | IV/MECH        | 7  | 7       | 7  | 7            | 9  | 7            | 7   | Or.          | 77   | 27           | Suith.            | Q        |
| 11       | 811219114301 | Hariharan R      | IV/MECH        | 9  | 7       | 01 | 07           | 9  | 97           | -   | 5            | 9    | 2            | Wikoh             | q        |
| 12       | 811219114302 | Mohanraj G       | IV/MECH        | 7  | 7       | 2  | 7            | 5  | 07           | 9   | 7            | 9    | っ            | Cook              | C.J      |
| 13       | 811219114303 | Sivash K         | IV/MECH        | 7  | 5       | 9  | 9            | 07 | 07           | 01  | 2            | 07   | <b>ラ</b>     | Ma                | 10       |
| 14       | 811219114701 | Gokul R          | IV/MECH        | 91 | W       |    |              | ان |              | سا  | レ            | U    | <u> </u>     | Sun               | 9        |
| 15       | 811219114702 | Madhan Murugan S | IV/MECH        | ~  | <u></u> |    | a            | 9  | 0            | -   |              |      | <u> </u>     | they              | 8        |
| 16       | 811219114703 | Muthukaruppan M  | IV/MECH        | ~  | س       |    | ~            |    | رست          | Or  | <u>ー</u>     | -7   | 9            | mann              | . 9      |
| 17       | 811219114704 | Inigo Rithish P  | IV/MECH        | ~  | 2       | 7  | 7            | 7  | 5            | 2   | 7            | 2    | 7            | Park.             | 10       |
| 18       | 811220114001 | Abinesh As       | IV/MECH        | 1  | 1       | 07 | 01           | 01 | 9            | a   | 0            | 0    | 9            | Res               | 9        |
| 19       | 811220114003 | Anbarasan M      | III/MECH       | 4  | , ,     | 9  | a            | 1  | 9            | 9   | 9            | 7    | 7            | Abuss.            | 8        |
| 20       | 811220114005 | Arunkumar M      | III/MECH       | a  | 9.      | 9  | 7            | 9  | 7            | 9   | -            | 7    | رب           | ala               | 8        |
| 21       | 811220114008 | Balamurugan R    | III/MECH       | 9  | 9       | 0  | 9            | 7  | 4            | 7   | 7            | 4    | رب           | 100               | 8        |
| 2        | 811220114013 |                  | III/MECH       | 9  | 9       | 4  | 2            | 07 | 7            | L-> |              | IN N |              | Post.             | 8        |
| 23       | 811220114015 | Dhanushraja P    | III/MECH       | 7  | 9       | 70 | 1            | 7  | 4            | a   | 27           | 2    | 2            | Dy                | 8        |
| 24       | 811220114017 | Durai Pandi A    | III/MECH       | 1  | 1       | 1  | 7            | 9  | 7            | 1   | 2            | 7    | 1            | Dural             | 6        |
|          |              | Hariharan M      | III/MECH       | M  | 1       | 2  | 1            | 1  | 1            |     | 5            | 1    |              | Har               | 10       |



### COLLEGE OF ENGINEERING

Madurai Main Road (NH-45B), Manikandam, Tiruchirappelli - 620 012 Approved by AICER, Nes Delhi & Affiliatut to Anna University, Chemnal NAAC Accredited, 2(F) Status Enstitution by UGC



|          |              |                    |             |    | ate<br>05.23 |    | ate<br>05.23 | Da<br>24.0 |    | 1    | ate<br>15.23 | 1  | ate<br>05.23 | SIGNATURE         | Noor                          |
|----------|--------------|--------------------|-------------|----|--------------|----|--------------|------------|----|------|--------------|----|--------------|-------------------|-------------------------------|
| 5.N<br>0 | Reg No       | Students Name      | Year/Branch | FN | AN           | FN | AN           | FN         | AN | FN   | AN           | FN | AN           | OF THE<br>STUDENT | NO OF<br>SESSIONS<br>ATTENDED |
| 25       | 811220114020 | Kanishkavardhini S | III/MECH    | 5  | 9            | 7  |              | 9          |    | 10 I | 2            | 5  | 5            | Spe               | 10                            |
| 26       | 811220114026 | Loganathan C       | III/MECH    | 5  | 0            | 5  |              | •          | 5  | 2    | 5            | ~  | 5            | د.@               | (O)                           |
| 27       | 811220114032 | Mohamed Ashif A    | III/MECH    | 5  | 5            | 5  | 5            | 5          | 5  | -7   | 5            | ب  | 5            | D.Q               | (0)                           |
| 28       | 811220114039 | Sanjay Kumar M     | III/MECH    | 5  | Ś            | 2  | -            | 9          | 5  | وما  | 5            | 5  | 5            | M. Q              | ·                             |
| 29       | 811220114040 | Santhosh Kumar R   | III/MECH    | 10 | 0            | 1  | 0            | 1          | 0  |      | 0            | 0  |              | Risan             | 10                            |
| 30       | 811220114042 | Saranya Sree Tr    | HI/MECH     | 1  | 0            | 0  | 0            | /          |    |      |              |    |              | 77. Can           | (0)                           |
| 31       | 811220114043 | Saravanan M        | III/MECH    | 1  | 0            | 1  | 1            | 1          | -  | 1    |              | 2  | <u></u>      | 6.0               | (0)                           |
| 32       | 811220114044 | Sathishkumar V     | III/MECH    | 0  | 1            | 1  |              | 0          | /  | 0    | /            | 0  | _            | (V 52)            | (Q)                           |
| 33       | 811220114047 | Sheik Ameer M      | ІШ/МЕСН     | 1  | 1            | 0  | 1            | 0          | 0  |      | 1            | 0  |              |                   | (0)                           |
| 34       | 811220114052 | Thamaraiselvan K   | III/MECH    | 1  | 1            | 1  | 1            | 7          | 1  | 0    | m            | 0  |              | M. Shew           | (0                            |
| 35       | 811220114056 | Vigneswaran K      | ІП/МЕСН     | 1  | 1            | 0  | 1            | 0          | 0  | 0    | 0            | 0  | _            | (c 7hw)           | (0)                           |
| 36       | 811220114057 | Vijayakumar G      | III/MECH    | 1  | 0            | 1  | Á            | 1          |    | 0    | 7            | 0  | 0            | (c. w)            | (0)                           |
| 37       | 811220114060 | Yuvaraja A         | III/MECH    | 1  | 0            |    | /            |            |    | 0    |              | 0  |              | (F. W)            |                               |
| 38       | 811220114302 | Chellapandian R    | III/MECH    | 0  |              | 1  | 1            | ~          |    | 0    | 0            |    | ~            | CW.               | (0                            |
| 39       | 811220114305 | Mohamed Nafil A    | III/MECH    | 1  | 0            | 1  | 1            | 1          | ~  | .0   |              | 1  | 2            | amon a            | (0)                           |

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



### COLLEGE OF ENGINEERING

Madurai Main Road (NH-45B), Manikandam, Tiruchirappalli - 620 012 Appared by AlCTE, New Delhi & Affiliated to Anna University, Chemosi NAAC Accredited, 2(F) Status Institution by UGC



|          | ,            |                 |             |    | ate<br>)5.23 |    | ate<br>)5.23 | Da<br>24.0 |         |    | ite<br>5.23 |     | ate<br>05.23 |                                | 160                           |
|----------|--------------|-----------------|-------------|----|--------------|----|--------------|------------|---------|----|-------------|-----|--------------|--------------------------------|-------------------------------|
| S.N<br>o | Reg No       | Students Name   | Year/Branch | FN | AN           | FN | AN           | FN         | AN      | FN | AN          | FN  | AN           | SIGNATURE<br>OF THE<br>STUDENT | NO OF<br>SESSIONS<br>ATTENDED |
| 40       | 811220114057 | Vijayakumar G   | III/MECH    | 7  | 1            | ~  | 4            | 1          | 01      | 1  | رمه         | ب   | 7            | Dujk                           | (O)                           |
| 41       | 811220114060 | Yuvaraja A      | -III/MECH   | 1  | 1            | 7  | A            | 1          | 5       | c  | رسي         | 4   | رسه          | Jun                            | (O)                           |
| 42       | 811220114302 | Chellapandian R | III/MECH    | 1  | 1            | 9  | 1            | 1          | M       | 1  | 0           | ~   | -            | Bur ?                          | 10                            |
| 43       | 811220114305 | Mohamed Nafil A | III/MECH    | 1  | 0            | 07 | in           |            | 4       | 1  | 9           |     | 4            | 1 Jan                          | 01                            |
| 44       | 811220114306 | Ruban A         | III/MECH    | 7  | 4            | 1  | -1           | 4          | <u></u> | 1  | 0           | 0   | 5            | Dua                            | 10                            |
| 45       | 811221114006 | Dhanasejaran D  | II/MECH     | 4  | 1            | Ci | 4            | را.        | 4       | 4  | -           | 107 | 0            | bn                             | 10                            |
| 46       | 811221114008 | Dhiwakar R      | II/MECH     | 5  | 5            | 10 | 9            | 07         | 4       | 22 | Con .       | 0   | 4            | Diwakan R                      | 10                            |
| 47       | 811221114014 | Kannan P        | II/MECH     | 01 | 0            | 4  | 0            | 47         | 4       | 4  | 5           | 47  | 7            | okun.                          | 0)                            |
| 48       | 811221114022 | Naveen M        | II/MECH     | 91 | 07           | 9  | 9            | 4          | 4       | >  | رسا         | 9   | 5            | muny.                          | lo                            |

VAC Coordinator

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

HoDMECHANICAL



### COLLEGE OF ENGINEERING

Madurai Main Road (NH-45B), Manikandam, Tiruchirappalli - 620 012 Approved by AICTE, NewDelhi & Affiliated to Anna University, Chemical NAAC Accredited, 2(F) Status Institution by UGC



Name of the Student:

Year/Sem:

**AU Register Number:** 

### **Value Added Course**

"Heat ventilation Air conditioning Technology"

### MCQ OUESTIONS (25X4 = 100 Marks)

1. Types of air conditioning are

a. Comfort air conditioning

b. Industrial air conditioning

c. Both (a) & (b)

d.None

2. Summer air conditioning means

a. Cooling & humidification

b.Cooling & dehumidification d.None

c. Both (a) & (b)

3. Winter air conditioning means

a. Cooling and humidification

b. Heating & dehumidification

c. Heating and humidification

d. None

4. In comfort air conditioning

a. Total room air recirculates

b.Total fresh air circulates

c. 50-50 room and fresh air circulates

d.None

5. In comfort air conditioning, room air and ventilation air are in the ratio

a. 80:20

b.60:40

c. 40:60

d.None

5. In comfort air conditioning, room air

a. Alone is cooled & then mixed with ventilation air b.Is mixed with ventilation air & then cooled

c. Both (a) & (b)

d.None

7.In operation theatres of comfort air conditioning, the ratio of room air and ventilation air is

a. 100:0

b.0:100

c. 50:50

d.NONE

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

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



### COLLEGE OF ENGINEERING

Madurai Main Road (NH-45B), Manikandam, Tiruchirappalli - 620 012
Approved by AICTE, NewDelhi & Affiliated to Anna University, Chennal
NAAC Accredited, 2(F) Status Institution by UGC



| 8. ` | Inside | design | conditions fo | r comfort : | air | conditioning are |
|------|--------|--------|---------------|-------------|-----|------------------|
|------|--------|--------|---------------|-------------|-----|------------------|

a. 20°C & 80 % RH

b.24°C & 100 % RH

c. 20-24°C & 90 % RH

d.None

9.Inside design conditions for comfort air conditioning are

a. 20-24<sup>6</sup>C & 80 % RH

b.24-28°C & 100 % RH

c. | 22-27°C & 40-60 % RH

d.None

10. In air conditioning, types of loads added are

a. Sensible heat loads

b.Latent heat loads

c. Both (a) & (b)

d.None

11. In comfort air conditioning, which load is more comes from the occupants

a. Sensible heat load

b.Latent heat load

c. Both (a) & (b)

d.None

12. Outside design conditions in comfort air conditioning are

a. Constant

b.Variable

c. Can't say

d. None

13. In order to achieve dehumidification, it is essential to decrease the temperature of air

a. Below wet bulb temperature

b.Dew point temperature

c. Below dry bulb temperature

d. None

14. For heating & humidification of air, it is passed through

a. Water spray & then heated

b.Hot water spray

c. Over the heated surface

d.None

15. The air conditioning used for winter air conditioning is

a. Refrigerator

b.Heat engine

c. Heat pump

d.None

16. The refrigerant used in car air conditioning is

a. Ammonia

b.R-134a

c. R-22

d.None

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

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

17. Fan coil unit is used in air conditioning of a

a. Room

b.Auditorium

c. Both (a) & (b)

d.None



### COLLEGE OF ENGINEERING

Madurai Main Road (NH-45B), Manikandam, Tiruchirappalli - 620 012
Approved by AICTE, NewDellit & Affiliated to Anna University, Chemnal
NAAC Accredited, 2(F) Status Institution by UCC



### 18. Air handling unit is used in the air conditioning of a

a. Room

b.Auditorium

c. Both (a) and (b)

d.None

19. Fan coil unit is used in a

a. Window air conditioner

b.Split air conditioner

c. Both (a) & (b)

d.None

20. Ducts are used with

a. Window air conditioner

b.Split air conditioner

c. Both (a) & (b)

d.None

21. Ducts used in air conditioning are made of

a. Copper

b.GI steel

c. Wood

d.None

22. The best shape of ducts in air conditioning is

a. Round

b.Rectangular

c. Square

d.None

23. Condensers in central air conditioning plants are

a. Air cooled

b.Water cooled

c. Evaporative cooled

d.None

24. Condensers in window air conditioner are

a. Air cooled

b.Water cooled

c. Evaporative cooled

d.None

25. Condensers in air conditioning of auditoriums are

a. Air cooled

b.Water cooled

c. Evaporative cooled

d.None

VAC Coordinator

Hop Mech

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



### COLLEGE OF ENGINEERING

Madurai Main Road (Nil-45B), Manikandam, Tiruchirappalli - 620 012 Approved by AICTE, New Delhit & Affiliated to Anna University, Chemnal NAAC Accredited, 2(F) Status Institution by UGC



### Value Added Course

### "Heat ventilation Air conditioning Technology"

### ANSWER KEY

| 1 | c | 6  | С | 11 | b | 16 | ь | 21 | b |
|---|---|----|---|----|---|----|---|----|---|
| 2 | ь | 7  | Ъ | 12 | b | 17 | a | 22 | a |
| 3 | c | 8  | d | 13 | b | 18 | ь | 23 | С |
| 4 | d | 9  | С | 14 | ь | 19 | С | 24 | a |
| 5 | a | 10 | С | 15 | C | 20 | d | 25 | ь |

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

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

VAC Goordinator



### COLLEGE OF ENGINEERING

Madurai Main Road (NH-45B), Manikandam, Tiruchirappalli - 620 012
Approved by AICTE, NewDelhi & Affiliated to Anna University; Chemzai
NAAC Accredited, 2(F) Status Institution by UGC



Name of the Student: Frunkuran m

AU Register Number: 811 220114 005

Year/Sem: 11 meet

### Value Added Course

"Heat ventilation Air conditioning Technology"

### MCQ QUESTIONS (25X4 = 100 Marks)

| I.   | 1 9 | pes | 01 | air | COL | ndı | tion | ing | ar |
|------|-----|-----|----|-----|-----|-----|------|-----|----|
| _ `` | _   |     | _  | ,   | ·   |     |      |     |    |

Comfort air conditioning
C. Both (a) & (b)

b. Industrial air conditioning d.None

2. Summer air conditioning means

a. Cooling & humidification

c. Both (a) & (b)

b Cooling & dehumidification

d.None

3. Winter air conditioning means

a. Cooling and humidification

c. Heating and humidification

b. Heating & dehumidification

d. None

4. In comfort air conditioning

(3) Fotal room air recirculates

c. 50-50 room and fresh air circulates

b.Total fresh air circulates

d .None

5. In comfort air conditioning, room air and ventilation air are in the ratio

a. 80:20

c. 40:60

B 60:40

d.None

5. In comfort air conditioning, room air

a. Alone is cooled & then mixed with ventilation air b.Is mixed with ventilation air & then cooled

c. Both (a) & (b)

d.None

7.In operation theatres of comfort air conditioning, the ratio of room air and ventilation air is

a. 100:0

c. 50:50

b.0:100

d.NONE

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



COLLEGE OF ENGINEERING
Madurai Main Road (NH-45B), Manikandam, Tiruchirappalli - 620 012



| R(F) Status Institution by UGC                   |
|--|
| t air conditioning are                           |
| b.24°C & 100 % RH                                |
| dNone  |
| air conditioning are                             |
| b.24-28°C & 100 % RH                             |
| d.None   |
| dded are   |
| b.Latent heat loads                              |
| d.None   |
| load is more comes from the occupants            |
| b.Latent heat load                               |
| d.None   |
| ort air conditioning are                         |
| b. Variable                                      |
| d. None  |
| ion, it is essential to decrease the temperature |
|  |
| b Dew point temperature                          |
| d. None  |
| it is passed through                             |
| hot water spray                                  |
| d.None   |
| er air conditioning is                           |
| b.Heat engine                                    |
| d.None   |
| tioning is Batakrishnan, M.E., Pl                |
| Ch.R-134a Principal                              |
| d.None IG Valley, Madural Main Road              |
| Manikandam, Trichy-620 012                       |
| b.Auditorium                                     |
| d.None   |
|  |



### COLLEGE OF ENGINEERIN

Madurai Main Road (NH-45B), Manikandam, Tiruchirappalli - 620 012 Approved by AICTE, NewDelhi & Affillated to Atma University, Chennal NAAC Accredited, 2(F) Status Institution by UGC



| 18. | Air | handling | unit is | used | in | the air | conditioning of | 9 |
|-----|-----|----------|---------|------|----|---------|-----------------|---|
|     |     |          |         |      |    |         |                 |   |

a. Room

c. Both (a) and (b)

b. Auditorium

d.None

19. Fan coil unit is used in a

a. Window air conditioner Both (a) & (b)

b.Split air conditioner d.None

20. Ducts are used with

a. Window air conditioner

c. Both (a) & (b)

b.Split air conditioner

d.None

21. Ducts used in air conditioning are made of

a. Copper

c. Wood

(b.GI steel

d.None

22. The best shape of ducts in air conditioning is

Round

b.Rectangular

Square

d.None

23. Condensers in central air conditioning plants are

a. Air cooled

**Evaporative cooled** 

b.Water cooled

d.None

24. Condensers in window air conditioner are

Air cooled

c. Evaporative cooled

b.Water cooled

d.None

25. Condensers in air conditioning of auditoriums are

a. Air cooled

c. Evaporative cooled

Water cooled

d.None

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

IG Valley, Madurai Main Road Manikandam, Trichy-620 012.



### COLLEGE OF ENGINEERING

Madurai Main Road (NH-458), Manikandam, Truchirappalli - 620 012 Approved by AICTE, NewDelhi & Affiliated to Areas University, Chemisi NAAC Accredited, 2(P) Status Institution by UGC



## Department of Mechanical Engineering

Academic Year 2022-2023 - Even Semester

VALUE ADDED COURSE ASSESEMENT SHEET

"Heat ventilation Air conditioning Technology"

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

| C' BT |              |                        | T7 .            |                   | lance Details | VAC-MCQ TEST  |              | OVERALL<br>MARK(100) |  |
|-------|--------------|------------------------|-----------------|-------------------|---------------|---------------|--------------|----------------------|--|
| S.No. | Reg.No       | Student's Name         | Year/<br>Branch | No. of<br>Session | Attendance    | No of Correct | MCQ          | -                    |  |
| 1     | 811219114001 | Aathilingam V          | 1320 mm         | Attended          | Mark(100) (A) | Answers       | Mark(100)(B) | (50% of A + 50%      |  |
| 2     | 811219114002 | Abimanyu C             | IV/MECH         | 30                | 100           | 18            | 72           | of B)                |  |
| 3     | 811219114003 | Ajay S                 | IV/MECH         | 28                | 93            | 16            | 64           | 86                   |  |
| 4     | 811219114004 | Christy Lourthu Samy A | IV/MECH         | 30                | 100           | 18            |              | 79                   |  |
| 5     | 811219114006 | Periyasamy P           | IV/MECH         | 30                | 100           | 21            | 72           | 86                   |  |
| .6    | 811219114008 |                        | IV/MECH         | 26                | 87            |               | 84           | 92                   |  |
| 7     | 811219114010 | Saravana Kumar V       | IV/MECH         | 30                | 100           | 17            | 68           | 77                   |  |
| 8     | 811219114011 | Siriyac Selva A        | IV/MECH         | AB                |               | 18            | 72           | 86                   |  |
| 9     |              | Suriyaganesh M         | IV/MECH         | 30                | AB            | AB            | AB           | AB                   |  |
|       | 811219114012 | Vaithiyalingam M       | IV/MECH         |                   | 100           | 21            | 84           | 92                   |  |
| 10    | 811219114013 | Vikash R               |                 | 28                | 93            | 20            | 80           | 87                   |  |
|       | 95           |                        | IV/MECH         | 28                | 93            | 18            | 72           | 83                   |  |



### COLLEGE OF ENGINEERING

Madural Main Road (NH-45B), Manikandam, Tiruchirappalli - 620 012 Approved by ATCTE, NewDelbi & Affibried to Annu University, Chemisk NAAC Accredited, 2(F) Scales Institution by UGC



| S.No. | Reg.No          | Student's Name     | Year/     |                   | lance Details | VAC-MCQ TEST     |              | OVERALL                  |  |
|-------|-----------------|--------------------|-----------|-------------------|---------------|------------------|--------------|--------------------------|--|
| 1.1   | 0110101         |                    | Branch    | No. of<br>Session | Attendance    | No of<br>Correct | MCQ          | MARK(100)                |  |
| 11    | 811219114301    | Hariharan R        | IV/MECH   | Attended          | Mark(100) (A) | Answers          | Mark(100)(B) | (50% of A + 50%<br>of B) |  |
| 12    | 811219114302    | Mohanraj G         |           | 29                | 97            | 17               | 68           | 82                       |  |
| 13    | 811219114303    | Sivash K           | IV/MECH   | 29                | 97            | 18               | 72           | 84                       |  |
| 14    | 811219114701    | Gokul R            | IV/MECH   | 28                | 93            | 19               | 76           | 85                       |  |
| 15    | 811219114702    | Madhan Murugan S   | IV/MECH   | 29                | .97           | 21               | 84           |                          |  |
| 16    | 811219114703    | Muthukaruppan M    | IV/MECH   | 29                | 97            | 20               | 80           | 90                       |  |
| 17    | 811219114704    | Inigo Rithish P    | IV/MECH   | 29                | 97            | 22               | 88           | 88                       |  |
| 18    | 811220114001    | Abinesh As         | IV/MECH   | 28                | 93            | 20               | 80           | 92 ·                     |  |
| 19    | 811220114003    | Anbarasan M        | III/MECH  | 28                | 93            | 21               | 84           | 87                       |  |
| 20    | 811220114005    | Arunkumar M        | III/MECH  | 29                | 97            | 20               | 80           | 89                       |  |
| 21    | 811220114008    | Balamurugan R      | III/MECH  | 29                | 97            | 22               | 88           | 88                       |  |
| 22    | 811220114013    | Dhanushraja P      | IIVMECH   | 28                | 93            | 18               |              | 92                       |  |
| 23    | 811220114015    | Durai Pandi A      | III/MECH  | 29                | 97            | 19               | 72           | 83                       |  |
| 24    | 811220114017    |                    | III/MECH  | 30                | 100           | 18               | 76           | 86                       |  |
| 25    | 811220114020    | Hariharan M        | ПІ/МЕСН   | 29                | 97            | 21               | 72           | 86                       |  |
| 26    | 811220114026    | Kanishkavardhini S | Ш/МЕСН    | 29                | 97            |                  | 84           | 90                       |  |
| 27    | 811220114032    | Loganathan C       | III/MECH  | 28                | 93            | 22               | 88           | 92                       |  |
|       | 0.1.2.2.0114032 | Mohamed Ashif A    | III/MECH  | 129               | 97            | 20               | 80           | 87                       |  |
|       |                 |                    | Dr. G. Ba | 1                 | 91            | 21               | 84           | 90                       |  |

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

Indra Ganesan College of Engineering IG Valley, Madurai Main Road

Manikandam, Trichy-620 012.



### COLLEGE OF ENGINEERING

Madurai Main Road (NH-45B), Manikandam, Tiruchirappalli - 620 012 Approved by AICTE, New Delhi & Affiliates to Arms University, Chemrai NAAC Accredited, 2(F) Status Institution by UGC



| S.No. | Reg.No       | Student's Name   | 77              |                               | lance Details               | VAC-MCQ TEST                |                     | OVERALL<br>MARK(100) |  |
|-------|--------------|------------------|-----------------|-------------------------------|-----------------------------|-----------------------------|---------------------|----------------------|--|
| 28    | 811220114039 | Contraction      | Year/<br>Branch | No. of<br>Session<br>Attended | Attendance<br>Mark(100) (A) | No of<br>Correct<br>Answers | MCQ<br>Mark(100)(B) | (50% of A + 50%      |  |
| 29    | 811220114040 | Sanjay Kumar M   | III/MECH        | 28                            | 93                          | 20                          | 80                  | of B)                |  |
| 30    | 811220114042 | Santhosh Kumar R | III/MECH        | 29                            | 97                          | 22                          | 88                  | 87                   |  |
| 31    | 811220114043 | Saranya Sree Tr  | HI/MECH         | 29                            | 97                          | 20                          |                     | 92                   |  |
| 32    |              | Saravanan M      | III/MECH        | 29                            | 97                          | 22                          | 80                  | 88                   |  |
| 33    | 811220114044 | Sathishkumar V   | ш/месн          | 30                            | 100                         | 20                          | 88                  | 92                   |  |
| 34    | 811220114047 | Sheik Ameer M    | III/MECH        | 28                            | 93                          |                             | 80                  | 90-                  |  |
|       | 811220114052 | Thamaraiselvan K | III/MECH        | 29                            | 97                          | 21                          | 84                  | 89                   |  |
| 35    | 811220114056 | Vigneswaran K    | IIVMECH         | 28                            | 93                          | 20                          | 80                  | 88                   |  |
| 36    | 811220114057 | Vijayakumar G    | III/MECH        | 29                            |                             | 22                          | 88                  | 91                   |  |
| 37    | 811220114060 | Yuvaraja A       | III/MECH        | 29                            | 97                          | 21                          | 84                  | 90                   |  |
| 38    | 811220114302 | Chellapandian R  | III/MECH        |                               | 97                          | 22                          | 88                  | 92                   |  |
| 39    | 811220114305 | Mohamed Nafil A  |                 | 30                            | 100                         | 20                          | 80                  | 90                   |  |
| 40    | 811220114306 | Ruban A          | III/MECH        | 29                            | 97                          | 21 %                        | 84                  | 90                   |  |
| 41    | 811221114006 | Dhanasejaran D   | III/MECH        | 29                            | 97                          | 20                          | 80                  | 88                   |  |
| 42    | 811221114008 | Dhiwakar R       | II/MECH         | 27                            | 98                          | 22                          | 88                  | 92                   |  |
| 43    | 811221114014 | Kannan P         | II/MECH         | 28                            | 99                          | 20                          | 80                  | 90                   |  |
| 44    | 811221114022 | Naveen M         | DIVMECH         | 29                            | 94                          | 21                          | 84                  | 89                   |  |
|       |              |                  | hnan M.R. Di    | 30                            | 97                          | 20                          | 80                  | 88                   |  |

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



### COLLEGE OF ENGINEERING

Medurai Main Road (NH-45B), Manikandam, Tiruchirappalli - 620 012
Approved by AICTE, New Delhi & Affiliant to Army University, Chestral
NAAC Accredited, 2(8) Status Institution by UGC



|       |              |                  | Attendance Details |                               |                             | VAC-N                       | ICQ TEST            | OVERALL<br>MARK(100)     |  |
|-------|--------------|------------------|--------------------|-------------------------------|-----------------------------|-----------------------------|---------------------|--------------------------|--|
| S.No. | Reg.No       | Student's Name   | Year/<br>Branch    | No. of<br>Session<br>Attended | Attendance<br>Mark(100) (A) | No of<br>Correct<br>Answers | MCQ<br>Mark(100)(B) | (50% of A + 50%<br>of B) |  |
|       |              |                  |                    |                               | 93                          | 22                          | 88                  | 91                       |  |
| 45    | 811220114043 | Saravanan M      | II/MECH            | 28                            |                             | 21                          | 84                  | 90                       |  |
|       | 811220114044 | Sathishkumar V   | II/MECH            | 29                            | 97                          |                             | 88                  | 92                       |  |
| 46    |              |                  | II/MECH            | 29                            | 97                          | 22                          | 00                  |                          |  |
| 47    | 811220114047 | Sheik Ameer M    |                    | 30                            | 100                         | 20                          | 80                  | 90                       |  |
| 48    | 811220114052 | Thamaraiselvan K | II/MECH            | 30                            | 100                         |                             |                     |                          |  |

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

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



### COLLEGE OF ENGINEERING

Madurai Main Road (NH-45B), Manikandam, Tiruchirappalli - 620 012
Approved by AICTE, NewDelhi & Affiliated to Anna University, Chennal
NAAC Accredited, 2(F) Status Institution by UGC



| ,         |   |                                      | Report on '      | Value    | Adde    | ed Cou                                       | irse      |          |
|-----------|---|--------------------------------------|------------------|----------|---------|--|-----------|----------|
| Title:    | Heat v  | entila                               | tion Air conditi | ioning T | echnol  | ogy  |           |          |
| Resource  | Person:   | Mr.Deepak Executive UNIQ-MEP Trichy. |                  |          |         | Mr.Dhineshwaran G Executive UNIQ-MEP Trichy. |           |          |
| Date of c | onduct fro  | om:                                  | 22.05.2023       | To:      | 27.05.2 |  | Duration: | 30 Hours |
| Organize  | d Departi   | nent:                                | MECHANICA        | AL ENG   |         |  |           |          |
|           | Participant Year: 2,3,                                    |                                      |                  |          |         |  | ered: 48  |          |
| Venue:    | Mechanical Seminar Hall Third Floor Mechanical Department |                                      |                  |          |         |  |           |          |
|           |   |                                      |                  |          |         |  |           |          |

## Outcome of Value Added Course (VAC): At the end of the Course, Students can able to

- Knowledge about HVAC system
- Application of HVAC clearly students known
- Various gases usage in HVAC system Explained.
- Load circuits and pipeline circuits are explained clearly

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

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

### Assessment Process

- Students, who are securing more than 70% on total score and secured more than 75% in attendance is eligible to receive the certificate for the VAC course conducted
- Total Score = (0.5 \*Attendance in VAC out of 100 percentage + 0.5 \*Test mark in VAC out of 100 marks)

VAC Coordinator

Hop/MECH

Principal



Madurai Main Road (NH-45B), Manikandam, Tiruchirappalli - 620 012 Approved by AICTE, NewDelhi & Affiliated to Anna University, Chemnal NAAC Accredited, 2(F) Status Institution by UGC



Sample Photos of Value Added Course

Title:

Heat ventilation Air conditioning Technology

Resource Person:

Mr.Deepak

Executive

**UNIQ-MEP** 

Trichy.

Mr.Dhineshwaran G

Executive

**UNIO-MEP** 

Trichy.

Date of conduct from:

22.05.2023

To:

27.05.2023

Duration:

30 Hours

Organized Department:

MECHANICAL ENGINEERING

Participant Year:

2,3,4

No. of Students Registered:

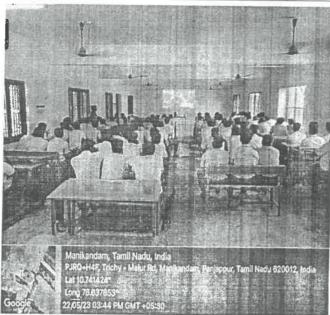
Seminar Hall

Venue:

Third Floor- Mechanical Department

**IGCE** 

Sample Photo



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

IG Valley, Madurai Main Road Manikandam, Trichy-620 012.





CADD

Premier Plaza, No-122, II Floor, 5&44, Bharathiar Salai, Cantonment, Tiruchirappalli,

# CERTIFICATE OF PARTICIPATION

from 22 May 2023 to 26 May 2023 (5days) during the Academic year 2022-MECH, Indra Ganesan College of Engineering has successfully completed the Value Added course Heat ventilation Air conditioning Technology conducted This is to certify that Mr. Quraipandi A of III year Year B.E.

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

Indra Ganesan College of Engineering

Madural Main Road

だ ()…と Mr.K.Deepak

CADD Centy



CENTRE

Premier Plaza, No-122, II Floor, 5&44, Bharathiar Salai, Cantonment, Tiruchirappalli,

# CERTIFICATE OF PARTICIPATION

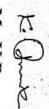
from 22 May 2023 to 26 May 2023 (5days) during the Academic year 2022-Value Added course Heat ventilation Air conditioning Technology conducted MECH, Indra Ganesan College of Engineering has successfully completed the This is to certify that Mr. Balamurugan R of III year Year B.E.-

(A)

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

Indra Ganesan College of Engineering

IG Valley, Madurai Main Road Manikandam, Trichy-620 012.





CADD.

Premier Plaza, No-122, II Floor, 5&44, Bharathiar Salai, Cantonment, Tiruchirappalli,

# CERTIFICATE OF PARTICIPATION

Technology conducted from 22 May 2023 to 26 May 2023 (5days) during the completed the Value Added course Heat ventilation Air conditioning B.E-MECH, Indra Ganesan College of Engineering has successfully This is to certify that Mr. Mohan Raj G of IV year Year

Academic year 2022-2023.

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

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

K Que



CADD.

Premier Plaza, No-122, II Floor, 5&44, Bharathiar Salai, Cantonment, Tiruchirappalli,

# CERTIFICATE OF PARTICIPATION

from 22 May 2023 to 26 May 2023 (5days) during the Academic year 2022-MECH, Indra Ganesan College of Engineering has successfully completed the Value Added course Heat ventilation Air conditioning Technology conducted This is to certify that Mr. Hariharan R of IN year Year B.E.-

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

Indra Ganesan College of Engineering Principal

IG Valley, Madurai Main Road Manikandam, Trichy-620 012.

> Mr.K.Deepak CADD Centy

K Jux



CADD

Premier Plaza, No-122, II Floor, 5&44, Bharathiar Salai, Cantonment, Tiruchirappalli,

# CERTIFICATE OF PARTICIPATION

from 22 May 2023 to 26 May 2023 (5days) during the Academic year 2022-Value Added course Heat ventilation Air conditioning Technology conducted MECH, Indra Ganesan College of Engineering has successfully completed the This is to certify that Mr. Vikash R of IV year Year B.E.

Ø.:

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

Indra Ganesan College of Engineering

IG Valley, Madurai Main Road Manikandam, Trichy-620 012.

K Que



CADD

Premier Plaza, No-122, II Floor, 5&44, Bharathiar Salai, Cantonment, Tiruchirappalli,

# CERTIFICATE OF PARTICIPATION

B.E-MECH, Indra Ganesan College of Engineering has successfully completed the Value Added course Heat ventilation Air conditioning Academic year 2022-2023. Technology conducted from 22 May 2023 to 26 May 2023 (5days) during the This is to certify that Mr. Saravana Kumar V of IV year Year

G. Balakriskoan, M.B., Ph.D.,

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

K. Que



CADD'

Premier Plaza, No-122, II Floor, 5&44, Bharathiar Salai, Cantonment, Tiruchirappalli,

### CERTIFICATE OF PARTICIPATION

This is to certify that Mr. **Dhanasejaran D** of II year Year B.E-MECH, Indra Ganesan College of Engineering has successfully completed the Value Added course Heat ventilation Air conditioning Technology conducted from 22 May 2023 to 26 May 2023 (5days) during the Academic year 2022-2023.

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

Principal

Indra Ganesan College of Engineering

IG Valley, Madurai Main Road Manikandam, Trichy-620 012.



CADD'

Premier Plaza, No-122, II Floor, 5&44, Bharathiar Salai, Cantonment, Tiruchirappalli,

### CERTIFICATE OF PARTICIPATION

This is to certify that Mr. Dhiwakar R. of II year Year B.E.—MECH, Indra Ganesan College of Engineering has successfully completed the Value Added course Heat ventilation Air conditioning Technology conducted from 22 May 2023 to 26 May 2023 (5days) during the Academic year 2022-2023.

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

Principal

Indra Ganesan College of Engineering

ra Ganesan College of Englished IG Valley, Madurai Main Road Manikandam, Trichy-620 012. K. Juk



CADD'

Premier Plaza, No-122, II Floor, 5&44, Bharathiar Salai, Cantonment, Tiruchirappalli,

### CERTIFICATE OF PARTICIPATION

This is to certify that Mr. Santhosh R of II year Year B.E—MECH, Indra Ganesan College of Engineering has successfully completed the Value Added course Heat ventilation Air conditioning Technology conducted from 22 May 2023 to 26 May 2023 (5days) during the Academic year 2022-2023.

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

Principal

Indra Ganesan College of Engineering

Indra Ganesan College of Engineering

IG Valley, Madurai Main Road Manikandam, Trichy-620 012. K Juk



CADD'

Premier Plaza, No-122, II Floor, 5&44, Bharathiar Salai, Cantonment, Tiruchirappalli,

### CERTIFICATE OF PARTICIPATION

This is to certify that Mr. Naveen M of II year Year B.E.– MECH, Indra Ganesan College of Engineering has successfully completed the Value Added course Heat ventilation Air conditioning Technology conducted from 22 May 2023 to 26 May 2023 (5days) during the Academic year 2022-2023.

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

Principal

Indra Ganesan College of Engineering
IG Valley, Madural Main Road

Manikandam, Trichy-620 012.

K. Quie



CADD'

Premier Plaza, No-122, II Floor, 5&44, Bharathiar Salai, Cantonment, Tiruchirappalli,

### CERTIFICATE OF PARTICIPATION

Kannan P of II year This is to certify that Mr. MECH, Indra Ganesan College of Engineering has successfully completed the Value Added course Heat ventilation Air conditioning Technology conducted from 22 May 2023 to 26 May 2023 (5days) during the Academic year 2022-2023.

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

Principal

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