Indra Ganesan
COLLEGE OF ENGINEERING

Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai
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 – 2

TEACHING-LEARNING AND EVALUATION

SUBMITTED BY

IQAC

INTERNAL QUALITY ASSURANCE CELL

INDRA GANESAN COLLEGE OF ENGINEERING

Criteria2	Teaching-Learning and Evaluation	350

KeyIndicator-2.3.Teaching-Learning Process (40)

2022-2023

PARTICIPATIVE LEARNING

CIVIL AND AGRICULTURAL ENGINEERING

Activity	NumberofStudents Attended	Page No.
Value Added Course(VAC)	48	3
TOTAL STUDENTS ATTENDED	48	-

Criteria2	Teaching-Learning and Evaluation	350

KeyIndicator-2.3.Teaching-Learning Process(40)

2022-2023

CIVIL AND AGRICULTURAL ENGINEERING

PARTICIPATIVE LEARNING

VALUE ADDED COURSE

Indra Ganesan
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

Ref: IGCE/AGRI/2022-23/VAC/01 DATE: 22.07.2022

Department of Agricultural Engineering

Academic year 2022-2023 odd semesters

DEPARTMENT CIRCULAR

Department of Agricultural Engineering and IQAC, IGCE in association with **Sri Enterprise Agro Industries Corporation** is going to organize Value Added Course for all second, third year students on "**VERTICAL FARMING**" from 01.08.2022 to 05.08.2022 .Certificates will be issued to the eligible participants at the end of the course. This training is to be provided in our campus.

Resource person Details:	Mr.R.Sankar, CEO, N.Ramachandran, HR, Sri Enterprise Agro industries corporation Trichy
Venue:	Civil Seminar Hall

HoD/AGRI **Principal**

Cc:

- Principal Office
- HOD/Agri & Faculty Members
- All II,III B.TECH AgriClasses
- IQAC Coordinator
- Notice Board
- Office File

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

Value Added Course on "VERTICAL FARMING"

SYLLABUS

S.NO	TOPIC COVERED	DURATION (in hours)	DATE
1.	Introduction for Agricultural Engineering, farmhouse requirements in India	3	01.08.2022
2.	Farmhouse Requirements In India	3	01.08.2022
3.	Origins of Vertical Farming,Types of Vertical Farms, Specialization of vertical farming house	3	02.08.2022
4.	Implementation vertical farming house	3	02.08.2022
5.	Advantages and Disadvantages of Vertical Farming	3	03.08.2022
6.	What are the Accessories available in market from vertical farm house? Techniques of Vertical Farming	3	03.08.2022
7.	Techniques of Vertical Farming	3	04.08.2022
8.	How to build vertical farming house,	3	04.08.2022
9.	Principles of vertical farming house	3	05.08.2022
10.	Conclusion of vertical farming house	3	05.08.2022
11.	Exam	1	05.08.2022
	Total Hours	30(Excluding test)	-

VAC Coordinator

HoD/AGRI

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

Indra Ganesan
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

STUDENTS PARTICIPATION LIST

VAC PROGRAM–"VERTICAL FARMING"

S.No.	Reg.No	Student's Name	Year/ Branch
1.	811220103011	Dharun Kumar R	III/CIVIL
2.	811220103020	Gunaseelan G	III/CIVIL
3.	811220103024	Iyyapan Mani A	III/CIVIL
4.	811220103025	KalanchiyaMuniyaraj B	III/CIVIL
5.	811220103029	ManiKandan M	III/CIVIL
6.	811220103030	Mohanapriya S	III/CIVIL
7.	811220103032	MuthuSelvam A	III/CIVIL
8.	811220103041	Sudhakar R	III/CIVIL
9.	811220103046	Vishwa S	III/CIVIL
10.	811221225002	Abinaya R	II/AGRI
11.	811221225007	Charulatha V	II/AGRI
12.	811221225011	Hariharan M	II/AGRI
13.	811221225013	Ilayaraja E	II/AGRI
14.	811221225014	Jayasoundarya M	II/AGRI
15.	811221225016	KalpanaPriya R	II/AGRI
16.	811221225019	Kaviya T	II/AGRI
17.	811221225022	Kowsalya I	II/AGRI
18.	811221225025	Ponniyammal B	II/AGRI
19.	811221225028	Rajabunisha M	II/AGRI
20.	811221225029	Rajesg K	II/AGRI
21.	811221225030	Rajeshwari D	II/AGRI
22.	811221225031	Sairam M	II/AGRI
23.	811221225040	Vijayakrishna G	II/AGRI
24.	811221225301	Rishi Krishna A	II/AGRI

VAC Coordinator

HoD/AGRI

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

Indra Ganesan
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

Name of the Student : **Year/Sem:**

AU Register Number:

Value Added Course on **"VERTICAL FARMING""**

MCQ QUESTIONS (25X4 = 100 Marks)

1. What is one advantage to vertical farming?

   a) Its fast
   b) Year round
   c) Increases jobs
   d) Makes food taste like candy

2. What is the global population in 2050?

   a) 10 million
   b) 15 billion
   c) 10 billion
   d) 15 trillion

3. How much of earth's land is being used for crop production

   a) 11%
   b) 5%
   c) 20%
   d) 100%

4. Disadvantage of Vertical Farming

   a) seasonal growth
   b) Less jobs
   c) Weather impacts plant production
   d) creates runoff

5. What is needed in order to create a vertical farm

   a) Be a pro gardener
   b) Have to be a botanist
   c) Have LED lights
   d) Have Quick Maf skills

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

6. Why is Traditional Farming bad
   a) Creates better soil
   b) Uses pesticides
   c) Destroys local businesses
   d) Damages the atmosphere
7. Agriculture is a _____
   a) Greek word
   b) Latin word
   c) German word
   d) Spanish
8. The term agronomy is derived from _____
(A) German word
(B) Latin word
(C) Spanish
(D) Greek word
9. Primary resource for agriculture
(A) Land, air and water
(B) Seed, Fertilizer and Pesticide
(C) Seed, air and water
(D) Land, Fertilizer and water
10. Cultivation of rice begins in _____
(A) 2200 BC
(B) 5700 BC
(C) 7700 BC
(D) 8700 BC
11. The book 'Horse hoeing husbandry' was published by _____
(A) Van Helmont
(B) Gregor Johann Mendel
(C) Jethrotull
(D) None
12. Kharif, Rabi and Zaid word belong to _____
(A) Urdu
(B) French
(C) Persian (D) Arabic

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

13. Principles of mercury barometers was discovered by
(A) Torricelli
(B) Aristotle
(C) Pliny
(D) Galileo
14. The term PET was coined by _____
(A) Sarkar and Biswas
(B) Haigreaves
(C) Thornthwaite
(D) Mendel
15. National Research Centre for Litchi (NRCL) is located at
(A) Pune
(B) Muzaffarpur
(C) Lucknow
(D) Kolkata
16. National Biodiversity Authority is located at _____
(A) Chennai
(B) New Delhi
(C) Nagpur
(D) Gurgaon
17. International Potato Research Centre at _____
(A) Shimla
(B) Peru
(C) Rome
(D) USA
18. Father of Horticulture
(A) Thomas Andrew Knight
(B) Liberty Hyde Bailey
(C) John Lindley
(D) All of the above
19. Word "Horticulture" is derived from _____
(A) Latin
(B) English

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

(C) Greek

(D) Italic

20. New seed police was launched in _____

(A) 1982

(B) 1992

(C) 1988

(D) 1986

21. Pomology is derived from _____

(A) Latin

(B) French

(C) English

(D) Greek

22. The germplasm theory was proposed by _____

(A) Weisman

(B) Mendel

(C) Darwin

(D) Hugo de vries

23. Which of the following bases is not present in DNA?

(A) Adenine

(B) Thymine

(C) Uracil

(D) Cytosine

24. Balbiani rings are found in which of the following

(A) Lampbrush chromosomes

(B) Sex chromosomes

(C) Polytene chromosomes

(D) B chromosomes

25. The term 'genotype' and 'phenotype' were introduced by _____

(A) W.L. Johannsen

(B) W.Bateson

(C) G.J. Mendel

(D) R.C. Punnet

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

Indra Ganesan
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 on **"VERTICAL FARMING"**

ANSWER KEY

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

VAC Coordinator

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

Indra Ganesan
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

	REPORT ON VALUE ADDED COURSE				
Title:	**VERTICAL FARMING**				
Resource Person:	**Mr.R.Sankar,N.Ramachandran,** Sri Enterprise Agro Industries Corporation ,Trichy				
Date of conduct from :	01.08.2022	To:	05.08.2022	Duration:	30 Hours
Organized Department :	Agricultural Engineering				
Participant Year:	2, 3		No. of Students Registered :		124
Venue:	Agri Seminar Hall				

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

- Know real-world importance of software in Agricultural engineering students
- Know how to perform in Agriin industries.
- Study about vertical farmingof Agricultural.
- Students are expected to learn and practice the skills they will need in the workplace.
- Develop a foundational understanding Agricultural engineering.

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	**HoD/AGRI**	**PRINCIPAL**

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

REPORT ON VALUE ADDED COURSE

SAMPLE PHOTO:

VAC Coordinator | HoD/AGRI | PRINCIPAL

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

Indra Ganesan
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

Department of AGRICULTURAL ENGINEERING

Academic Year 2022-2023 – Odd Semester

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

STUDENTS PARTICIPATION LIST

MARK SHEET FOR VALUE ADDED COURSE PROGRAM - VERTICAL FARMING

S.No.	Reg.No	Student's Name	Year/ Branch	Attendance Details		VAC-MCQ TEST		OVERALL MARK(100) (50% of A + 50% of B)
				No. of Session Attended	Attendance Mark(100) (A)	No of Correct Answers	MCQ Mark(100) (B)	
1.	811220103011	Dharun Kumar R	III/CIVIL	30	100	22	88	94
2.	811220103020	Gunaseelan G	III/CIVIL	30	100	20	80	90
3.	811220103024	Iyyapan Mani A	III/CIVIL	30	100	21	84	92
4.	811220103025	KalanchiyaMuniyaraj B	III/CIVIL	27	90	20	80	85
5.	811220103029	ManiKandan M	III/CIVIL	30	100	22	88	94
6.	811220103030	Mohanapriya S	III/CIVIL	30	100	22	88	94
7.	811220103032	MuthuSelvam A	III/CIVIL	30	100	22	88	94
8.	811220103041	Sudhakar R	III/CIVIL	27	90	20	80	85
9.	811220103046	Vishwa S	III/CIVIL	30	100	22	88	94

10.	811221225002	ABINAYA R	II/AGRI	30	100	22	88	94
11.	811221225007	CHARULATHA V	II/AGRI	30	100	20	80	90
12.	811221225011	HARIHARAN M	II/AGRI	30	100	21	84	92
13.	811221225013	ILAYARAJA E	II/AGRI	27	90	20	80	85
14.	811221225014	JAYASOUNDARYA M	II/AGRI	30	100	22	88	94
15.	811221225016	KALPANA PRIYA R	II/AGRI	30	100	22	88	94
16.	811221225019	KAVIYA T	II/AGRI	30	100	22	88	94
17.	811221225022	KOWSALYA I	II/AGRI	27	90	20	80	85
18.	811221225025	PONNIYAMMAL B	II/AGRI	30	100	22	88	94
19.	811221225028	RAJABUNISHA M	II/AGRI	30	100	22	88	94
20.	811221225029	RAJESH K	II/AGRI	30	100	22	88	94
21.	811221225030	RAJESHWARI D	II/AGRI	27	90	20	80	85
22.	811221225031	SAIRAM M	II/AGRI	30	100	22	88	94
23.	811221225040	VIJAYAKRISHNA G	II/AGRI	30	100	22	88	94
24.	811221225301	RISHI KRISHNA A	II/AGRI	18	60	16	64	75

IQAC Coordinator

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

HoD/AGRI

Indra Ganesan
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

Department of AGRICULTURAL ENGINEERING

Academic Year 2022-2023 – Odd Semester

STUDENTS PARTICIPATION LIST

VAC PROGRAM-"VERTICAL FARMING"

S.No.	Reg.No	Student's Name	Year/ Branch	DATE: 01.08.22		DATE: 02.08.22		DATE: 03.08.22		DATE: 04.08.22		DATE: 05.08.22		NO OF SESSIONS ATTENDED	SIGNATURE OF THE STUDENT
				FN	AN	FN	AN	FN	AN	FN	AN	FN	AN		
1.	811220103011	Dharun Kumar R	III/CIVIL	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	10	R.D
2.	811220103020	Gunaseelan G	III/CIVIL	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	10	G.
3.	811220103024	Iyyapan Mani A	III/CIVIL	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	10	A.
4.	811220103025	Kalanchiya Muniyaraj B	III/CIVIL	✓	✓	✓	a	✓	✓	✓	✓	✓	✓	9	K
5.	811220103029	ManiKandan M	III/CIVIL	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	10	M
6.	811220103030	Mohanapriya S	III/CIVIL	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	10	S
7.	811220103032	MuthuSelvam A	III/CIVIL	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	10	A
8.	811220103041	Sudhakar R	III/CIVIL	✓	a	✓	✓	✓	✓	✓	✓	✓	✓	9	R.

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

Indra Ganesan
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

9.	811220103046	Vishwa S	III/CIVIL	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	10	
10.	811221225002	AbinayaR	II/AGRI	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	10	
11.	811221225007	ChanulathaV	II/AGRI	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	10	
12.	811221225011	HariharanM	II/AGRI	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	10	
13.	811221225013	IlayarajaE	II/AGRI	✓	✓	✓	a	✓	✓	✓	✓	✓	✓	9	
14.	811221225014	JayasoundaryaM	II/AGRI	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	10	
15.	811221225016	KalpanaPriya R	II/AGRI	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	10	
16.	811221225019	KaviyaT	II/AGRI	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	10	
17.	811221225022	Kowsalya I	II/AGRI	✓	✓	✓	✓	✓	a	✓	✓	✓	✓	9	
18.	811221225025	PonniyammalB	II/AGRI	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	10	
19.	811221225028	RajabunishaM	II/AGRI	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	10	
20.	811221225029	RajeshK	II/AGRI	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	10	
21.	811221225030	RajeshwariD	II/AGRI	✓	✓	✓	a	✓	✓	✓	✓	✓		9	

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

22.	811221225031	SairamM	II/AGRI	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	10	
23.	811221225040	VijayakrishnaG	II/AGRI	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	10	
24.	811221225301	Rishi Krishna A	II/AGRI	✓	✓	a	a	✓	✓	a	a	✓	✓	6	

VAC Coordinator

HoD/AGRI

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

Indra Ganesan
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

Name of the Student: Charulatha V **Year/Sem:** II AGRI

AU Register Number: 811221225007

Value Added Course on **"VERTICAL FARMING""**

MCQ QUESTIONS (25X4 = 100 Marks)

20/25

1. What is one advantage to vertical farming?

   a) Its fast
   b) Year round
   c) Increases jobs
   d) Makes food taste like candy

2. What is the global population in 2050?

   a) 10 million
   b) 15 billion
   c) 10 billion
   d) 15 trillion

3. How much of earth's land is being used for crop production

   a) 11%
   b) 5%
   c) 20%
   d) 100%

4. Disadvantage of Vertical Farming

   a) seasonal growth
   b) Less jobs
   c) Weather impacts plant production
   d) creates runoff

5. What is needed in order to create a vertical farm

   a) Be a pro gardener
   b) Have to be a botanist
   c) Have LED lights
   d) Have Quick Maf skills

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

6. Why is Traditional Farming bad
   a) Creates better soil
   b) Uses pesticides
   c) Destroys local businesses
   d) Damages the atmosphere
7. Agriculture is a _____
   a) Greek word
   b) Latin word
   c) German word
   d) Spanish
8. The term agronomy is derived from _____
(A) German word
(B) Latin word
(C) Spanish
(D) Greek word
9. Primary resource for agriculture
(A) Land, air and water
(B) Seed, Fertilizer and Pesticide
(C) Seed, air and water
(D) Land, Fertilizer and water
10. Cultivation of rice begins in _____
(A) 2200 BC
(B) 5700 BC
(C) 7700 BC
(D) 8700 BC
11. The book 'Horse hoeing husbandry' was published by _____
(A) Van Helmont
(B) Gregor Johann Mendel
(C) Jethrotull
(D) None
12. Kharif, Rabi and Zaid word belong to _____
(A) Urdu
(B) French
(C) Persian
(D) Arabic

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

13. Principles of mercury barometers was discovered by
(A) Torricelli
(B) Aristotle
(C) Pliny
(D) Galileo
14. The term PET was coined by _____
(A) Sarkar and Biswas
(B) Haigreaves
(C) Thornthwaite
(D) Mendel
15. National Research Centre for Litchi (NRCL) is located at
(A) Pune
(B) Muzaffarpur
(C) Lucknow
(D) Kolkata
16. National Biodiversity Authority is located at _____
(A) Chennai
(B) New Delhi
(C) Nagpur
(D) Gurgaon
17. International Potato Research Centre at _____
(A) Shimla
(B) Peru
(C) Rome
(D) USA
18. Father of Horticulture
(A) Thomas Andrew Knight
(B) Liberty Hyde Bailey
(C) John Lindley
(D) All of the above
19. Word "Horticulture" is derived from _____
(A) Latin
(B) English

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

(C) Greek

(D) Italic

20. New seed police was launched in _____

(A) 1982

(B) 1992

(C) 1988

(D) 1986

21. Pomology is derived from _____

(A) Latin

(B) French

(C) English

(D) Greek

22. The germplasm theory was proposed by _____

(A) Weisman

(B) Mendel

(C) Darwin

(D) Hugo de vries

23. Which of the following bases is not present in DNA?

(A) Adenine

(B) Thymine

(C) Uracil

(D) Cytosine

24. Balbiani rings are found in which of the following

(A) Lampbrush chromosomes

(B) Sex chromosomes

(C) Polytene chromosomes

(D) B chromosomes

25. The term 'genotype' and 'phenotype' were introduced by _____

(A) W.L. Johannsen

(B) W.Bateson

(C) G.J. Mendel

(D) R.C. Punnet

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

Indra Ganesan
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

Name of the Student : Dhanu Kumar **Year/Sem:** III / civil

AU Register Number: 811220103011

Value Added Course on **"VERTICAL FARMING""**

MCQ QUESTIONS (25X1 = 25 Marks)

22/25

1. What is one advantage to vertical farming?

   a) Its fast
   b) Year round
   c) Increases jobs
   d) Makes food taste like candy

2. What is the global population in 2050?

   a) 10 million
   b) 15 billion
   c) 10 billion
   d) 15 trillion

3. How much of earth's land is being used for crop production

   a) 11%
   b) 5%
   c) 20%
   d) 100%

4. Disadvantage of Vertical Farming

   a) seasonal growth
   b) Less jobs
   c) Weather impacts plant production
   d) creates runoff

5. What is needed in order to create a vertical farm

   a) Be a pro gardener
   b) Have to be a botanist
   c) Have LED lights
   d) Have Quick Maf skills

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

6. Why is Traditional Farming bad
   a) Creates better soil
   b) Uses pesticides
   c) Destroys local businesses
   d) Damages the atmosphere
7. Agriculture is a _____
   a) Greek word
   b) Latin word
   c) German word
   d) Spanish
8. The term agronomy is derived from _____
(A) German word
(B) Latin word
(C) Spanish
(D) Greek word
9. Primary resource for agriculture
(A) Land, air and water
(B) Seed, Fertilizer and Pesticide
(C) Seed, air and water
(D) Land, Fertilizer and water
10. Cultivation of rice begins in _____
(A) 2200 BC
(B) 5700 BC
(C) 7700 BC
(D) 8700 BC
11. The book 'Horse hoeing husbandry' was published by _____
(A) Van Helmont
(B) Gregor Johann Mendel
(C) Jethrotull
(D) None
12. Kharif, Rabi and Zaid word belong to _____
(A) Urdu
(B) French
(C) Persian
(D) Arabic

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

13. Principles of mercury barometers was discovered by
(A) Torricelli
(B) Aristotle
(C) Pliny
(D) Galileo
14. The term PET was coined by _____
(A) Sarkar and Biswas
(B) Haigreaves
(C) Thornthwaite
(D) Mendel
15. National Research Centre for Litchi (NRCL) is located at
(A) Pune
(B) Muzaffarpur
(C) Lucknow
(D) Kolkata
16. National Biodiversity Authority is located at _____
(A) Chennai
(B) New Delhi
(C) Nagpur
(D) Gurgaon
17. International Potato Research Centre at _____
(A) Shimla
(B) Peru
(C) Rome
(D) USA
18. Father of Horticulture
(A) Thomas Andrew Knight
(B) Liberty Hyde Bailey
(C) John Lindley
(D) All of the above
19. Word "Horticulture" is derived from _____
(A) Latin
(B) English

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

(C) Greek
(D) Italic
20. New seed police was launched in _____
(A) 1982
(B) 1992
(C) 1988
(D) 1986
21. Pomology is derived from _____
(A) Latin
(B) French
(C) English
(D) Greek
22. The germplasm theory was proposed by _____
(A) Weisman
(B) Mendel
(C) Darwin
(D) Hugo de vries
23. Which of the following bases is not present in DNA?
(A) Adenine
(B) Thymine
(C) Uracil
(D) Cytosine
24. Balbiani rings are found in which of the following
(A) Lampbrush chromosomes
(B) Sex chromosomes
(C) Polytene chromosomes
(D) B chromosomes
25. The term 'genotype' and 'phenotype' were introduced by _____
(A) W.L. Johannsen
(B) W.Bateson
(C) G.J. Mendel
(D) R.C. Punnet

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

Indra Ganesan
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

CERTIFICATE

OF PARTICIPATION

This is to certify that Ms.ABINAYA.R of II Year B.TECH- AGRI Indra Ganesan College of Engineering has successfully completed the Value Added course "VERTICAL FARMING"organised By Department Of Agricultural Engineering in association with Sri Enterprise Agro Industries Corporation conducted from 07.03.2021 to 11.03.2021.(5days) during Academic year 2022-2023.

Managing Director
Sri Enterprise Agro Industries Corporation

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

Principal
Indra Ganesan Engineering college

Indra Ganesan
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

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

CERTIFICATE

OF PARTICIPATION

This is to certify that Mr.DHARUN KUMAR.R of III Year B.E- CIVIL Indra Ganesan College of Engineering has successfully completed the Value Added course "VERTICAL FARMING"organised By Department Of Agricultural Engineering in association with Sri Enterprise Agro Industries Corporation conducted from 07.03.2021 to 11.03.2021.(5days) during Academic year 2022-2023.

Managing Director
Sri Enterprise Agro Industries Corporation

Principal
Indra Ganesan Engineering college

Indra Ganesan
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

Department of AGRICULTURAL ENGINEERING

Academic Year 2022-2023 – Even Semester

26.07.23

DEPARTMENT CIRCULAR

Department of Agricultural Engineering and IQAC of IGCE in association with "**SRI ENTERPRISE AGRO INDUSTRIES CORPARATION**" is going to organize Value Added Course for all Second, Third and Final year students on "**Hydroponics**" from 01.08.23 to 05.08.23. Certificates will be issued to the eligible participants at the end of the Course. This training is to be provided in our campus.

Resource Person Detail	1. **Mr. K. Ramesh Kumar, Director,** Sri Enterprise Agro Industries Corporation, Guntur 2. **Mr.A.Jayaraj, Technical Assistant,** Sri Enterprise Agro Industries Corporation, Guntur
Venue	CAD LAB, 2nd Floor, IGCE

HOD/CIVIL

Principal

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

Cc:

- Principal Table
- IQAC Co-Ordinator
- HoD/ Agri
- Class In charges - II, & III -Year
- II, III & IV-Year Civil and Agri Students
- Office File
- Notice Board

Indra Ganesan
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 on **"HYDROPHONICS"**

SYLLABUS

S.NO	TOPIC COVERED	DURATION (in hours)	DATE
1	Introduction of Hydroponics technology	3	01.08.23
2	Scope and Importance of Hydroponics technology	3	01.08.23
3	Plant Growth Requirements, Importance of light, temperature and humidity	3	01.08.23
4	Nutrient requirements, deficiencies and toxicities	3	02.08.23
5	Plant structure, photosynthesis, characteristics of different root-zone factors and their application	3	02.08.23
6	Hydroponic Growing Systems - basic concepts and designs, Nutrient film technique (NFT)	3	02.08.23
7	Deep water culture, Ebb & Flow	3	03.08.23
8	Other Techniques - wick systems, drip and aeroponics	3	03.08.23
9	Familiarize with the electrical equipment available in a hydroponic unit	3	04.08.23
10	Identify the crops and their suitability to hydroponics system (Exam)	3	05.08.23
	Total Hours	30	-

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

Indra Ganesan
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

HOD/CIVIL

VAC Coordinator

Value Added Course

"HYDROPHONICS"

STUDENTS PARTICIPATION LIST

S.No.	Reg No	Name	Year/ Branch
1	811221225002	ABINAYA R	II YEAR/ AGRI
2	811221225007	CHARULATHA V	II YEAR/ AGRI
3	811221225011	HARIHARAN M	II YEAR/ AGRI
4	811221225013	ILAYARAJA E	II YEAR/ AGRI
5	811221225014	JAYASOUNDARYA M	II YEAR/ AGRI
6	811221225016	KALPANA PRIYA R	II YEAR/ AGRI
7	811221225019	KAVIYA T	II YEAR/ AGRI
8	811221225022	KOWSALYA I	II YEAR/ AGRI
9	811221225025	PONNIYAMMAL B	II YEAR/ AGRI
10	811221225028	RAJABUNISHA M	II YEAR/ AGRI
11	811221225029	RAJESH K	II YEAR/ AGRI
12	811221225030	RAJESHWARI D	II YEAR/ AGRI
13	811221225031	SAIRAM M	II YEAR/ AGRI
14	811221225040	VIJAYAKRISHNA G	II YEAR/ AGRI
15	811221225301	RISHI KRISHNA A	II YEAR/ AGRI

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

Indra Ganesan
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

S.No.	Reg No	Name	Year/ Branch
1	811220103011	DHARUN KUMAR R	III YEAR/CIVIL
2	811220103020	GUNASEELAN G	III YEAR/CIVIL
3	811220103024	IYYAPAN MANI A	III YEAR/CIVIL
4	811220103025	KALANCHIYA MUNIYARAJ B	III YEAR/CIVIL
5	811220103029	MANIKANDAN M	III YEAR/CIVIL
6.	811220103030	MOHANA PIRIYA S	III YEAR/CIVIL
7	811220103032	MUTHUSELVAM A	III YEAR/CIVIL
8	811220103041	SUDHAKAR R	III YEAR/CIVIL
9	811220103046	VISHWA S	III YEAR/CIVIL

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

VAC Coordinator

HOD/AGRI

Indra Ganesan
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

	REPORT ON VALUE ADDED COURSE					
Title:	**"Hydroponics"**					
Resource Person:	Mr.K. Ramesh Kumar, Director, Sri Enterprise Agro Industries Corparation, Guntur			Mr.A. Jayaraj, Technical Assistant, Sri Enterprise Agro Industries Corparation, Guntur		
Date of conduct from :	01.08.2023	To:	05.08.2023	Duration:	30 Hours	
Organized Department :	AGRICULTURAL ENGINEERING					
Participant Year:	2, 3	Semester:	EVEN	No. of Students Registered:	24	
Venue:	CAD LAB, 2nd Floor, IGCE					

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

- To make familiar with calculation of quantities for different items of works & provide knowledge about estimation of buildings through estimator-2.0 software
- On completion of this course the students will be able to know the process of making animation of building, sketch up the building plan and building model.
- Understand and apply various methods of quantity estimation measurement in construction projects.
- Estimating, bricks calculations and cost for different materials.

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)

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

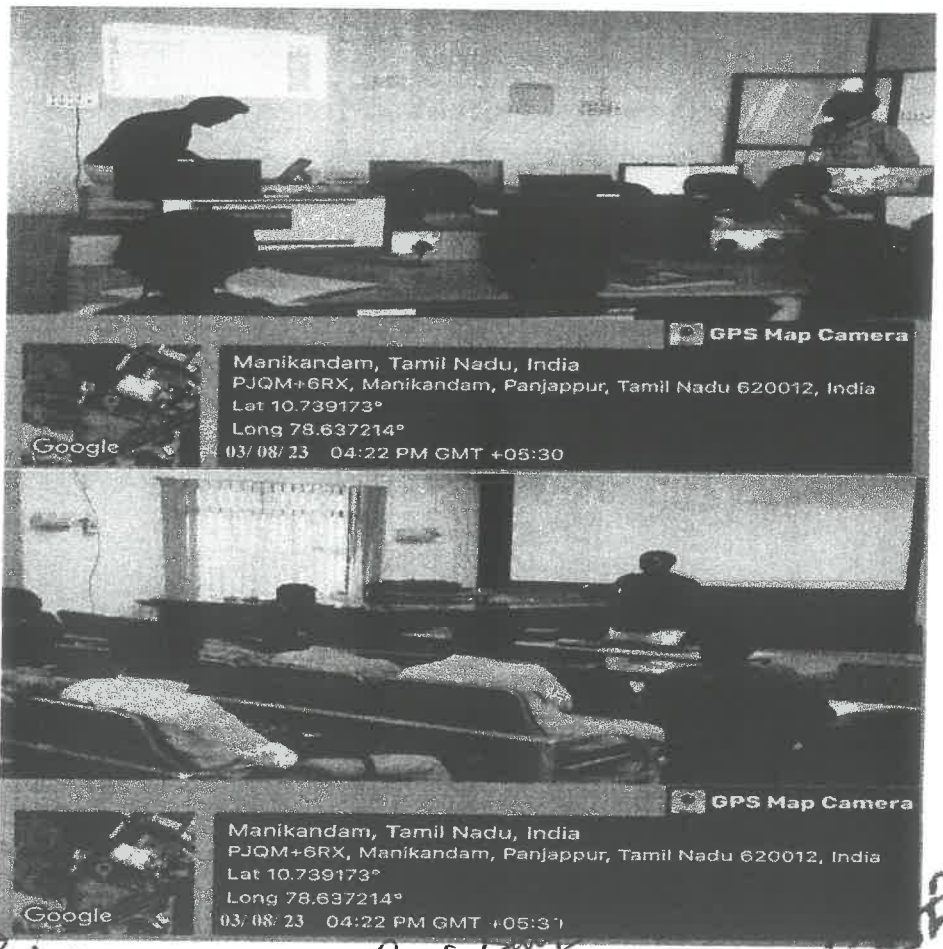
VAC Coordinator **HOD/AGRI** **Principal**

Indra Ganesan
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

	REPORT ON VALUE ADDED COURSE (Sample Photos)				
Title:	**"Hydroponics"**				
Resource Person:	Mr.K. Ramesh Kumar, Director, Sri Enterprise Agro Industries Corparation, Guntur		Mr.A. Jayaraj, Technical Assistant, Sri Enterprise Agro Industries Corparation, Guntur		
Date of conduct from :	01.08.2023	To:	05.08.2023	Duration:	30 Hours
Organized Department :	AGRICULTURAL ENGINEERING				
Participant Year:	2, 3	Semester:	EVEN	No. of Students Registered:	24
Venue:	CAD LAB, 2nd Floor, IGCE				

SAMPLE PHOTOS



VAC Coordinator | HoD/AGRI | Principal

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

Name of the Student: **Year/Sem:**

AU Register Number:

Value Added Course on **"Hydroponics"**

MCQ QUESTIONS (25X4 = 100 Marks)

The technique of cultivating plants in a nutrient solution without the use of soil is known as Hydroponics. Hydroponics is an alternative to the traditional cultivation methodologies and is fast replacing them.

1. **Which of these is the fibre obtained from the coconut's husk**

(a) Perlite

(b) Vermiculture

(c) Coir

(d) Rockwoo

2. **The form of hydroponics that does not require a growing medium at all is**

(a) Aquaculture

(b) Static solution culture

(c) Medium culture

(d) Aeroponics

3. **Plants with larger roots can be cultivated with which of the following types of hydroponics**

(a) Ebb and flow system

(b) Drip system

(c) Nutrient Film technique

(d) None of these

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

4. **Hydroponics is a method of cultivation of plants without the use of**

(a) water

(b) air

(c) soil

(d) sunlight

5. **Which of the following is not true about hydroponics?**

(a) Requires high investment

(b) Technical knowledge required

(c) Can be misused to cultivate banned crops

(d) Plants through hydroponics cannot be cultivated everywhere

6. **Salts and water in hydroponic plants are absorbed by**

(a) Leaves

(b) Stem

(c) Roots

(d) Outer Layer of plants

7. **The scientist who used nutrient culture solution in hydroponic cultures was**

(a) Knop

(b) Sachs

(c) Wallace

(d) Webster

8. **Deficiency of mineral nutrition does not cause which of these**

(a) Chlorosis

(b) Etiolation

(c) Necrosis

(d) Shortening internode

9. **Roots of a plant in hydroponics are submerged in a solution of dissolved _____**

(a) fertilizers

(b) oxygen

(c) mineral salts

(d) chemicals

10. **Which of these plants may not be suitable for cultivation through hydroponics**

(a) Tomatoes

(b) Carrot

(c) Cucumber

(d) Strawberries

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

11. **Hydroponics is the major topic of which field?**

(a). Agriculture.
(b). Horticulture.
(c). Fish farming or fisheries.
(d). Dairy farming.

12. **Which one is the main field of this topic?**

(a). Aquaculture.
(b). Aquaponics.
(c). Hydrology.
(d). All of the above.

13. **Which is an ideal horticultural fruit crop for HP?**

(a). Strawberry.
(b). Lemon.
(c). Sapota.
(d). Pineapple.

14. **What is the main advantage of Hydroponics?**

(a). Decrease in nutrient use.
(b). Decrease in soil use.
(c). Decrease in water use.
(d). All of the above.

15. **Which of the following books describe this technique?**

(a). History of Agriculture.
(b). A Natural History.
(c). Horticulture: A Review.
(d). None of the above.

16. **Who wrote *Sylva Sylvarum?***

(a). Benjamin Peary Pal.
(b). George Washing Carver.
(c). Norman Ernest Borlaug.
(d). Francis Bacon.

17. **Who developed soilless culture?**

(a). Julius von Sachs.
(b). Wilhelm Knop.
(c). Both a and b.
(d). Justus von Liebig.

18. **What is the term for the growth of terrestrial plants without soil in mineral nutrient solutions?**

(a). Solution culture.
(b). Soilless culture.
(c). Aquaculture.
(d). Nutrient culture.

19. **Who introduced the term hydroponics?**

(a). W. A. Setchell.
(b). William Frederick Gericke.
(c). Dennis Robert Hoagland.
(d). None of the above.

20. **Who introduced the term water culture?**

(a). Arnon.
(b). John Woodward.
(c). Francis Bacon.
(d). William Frederick Gericke.

21. **Who is the writer of *Guide to Soilless Gardening?***

(a). William Frederick Gericke.
(b). Vishwa Gopal Jhingran.
(c). Dr. B.R. Pillai.
(d). John Woodward.

22. **Who is the writer of *The Water Culture Method for Growing Plants Without Soil?***

(a). George C. Clerk.
(b). Arnon.
(c). Sir Albert Howard.
(d). Luther Burbank.

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

23. **Consider about sub-irrigation.**

(a). Artificial raising of the water table is necessary.
(b). It is used in commercial greenhouses.
(c). Water is reusable.

24. **Why is it necessary to exclude light from the containers**?

(a). To prevent algal growth in the nutrient solution.
(b). To prevent fungal growth in the nutrient solution.
(c). Both a and b.
(d). To prevent drying of the nutrient solution.

25. **Consider about the Static solution culture:**

(a). Plants are grown in containers of nutrient solution.
(b). If there is no aeration, then solution level should high.
(c). If there is no aeration, then solution level should low.
(d).A float valve automatically regulate the amount of solution.

VAC Coordinator **HoD/AGRI**

Indra Ganesan
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 on **HYDROPHONICS**

ANSWER KEY

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

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

VAC Coordinator

HoD/AGRI

Indra Ganesan
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

Department of AGRICULTURAL ENGINEERING

Academic Year 2022-2023 – Even Semester

S.No.	Reg.No	Student's Name	Year/ Branch	01.08.23		02.08.23		03.08.23		04.08.23		05.08.23		SIGN OF THE STUDENTS
				FN	AN	FN	AN	FN	AN	FN	AN	FN	AN	
10	811221225028	RAJABUNISHA M	II/AGRI	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	M.
11	811221225029	RAJESH K	II/AGRI	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Rajesh
12	811221225030	RAJESHWARI D	II/AGRI	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	D.
13	811221225031	SAIRAM M	II/AGRI	✓	a	✓	✓	✓	✓	✓	✓	✓	✓	M. Sairam
14	811221225040	VIJAYAKRISHNA G	II/AGRI	✓	✓	✓	✓	a	✓	✓	✓	✓	✓	
15	811221225301	RISHI KRISHNA A	II/AGRI	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Rishikrishna
1	811220103011	DHARUN KUMAR R	III/CIVIL	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	R.D
2	811220103020	GUNASEELAN G	III/CIVIL	a	✓	✓	✓	✓	✓	✓	✓	✓	✓	
3	811220103024	IYYAPAN MANI A	III/CIVIL	✓	✓	✓	✓	✓	✓	✓	✓	✓		
4	811220103025	KALANCHIYA MUNIYARAJ B	III/CIVIL	✓	a	✓	✓	✓	✓	✓	✓	✓	✓	Kalanchiya
5	811220103029	MANIKANDAN M	III/CIVIL	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	M. Manikandan

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

Indra Ganesan
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

Department of AGRICULTURAL ENGINEERING

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

Academic Year 2022-2023 – Even Semester

STUDENTS ATTENDANCE LIST- "Hydroponics"

S.No.	Reg.No	Student's Name	Year/ Branch	01.08.23		02.08.23		03.08.23		04.08.23		05.08.23		SIGN OF THE STUDENTS
				FN	AN	FN	AN	FN	AN	FN	AN	FN	AN	
1	811221225002	ABINAYA R	II/AGRI	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	R. Abi
2	811221225007	CHARULATHA V	II/AGRI	✓	✓	✓	✓	✓	✓	✓	✓	a	✓	charulatha.V
3	811221225011	HARIHARAN M	II/AGRI	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	M. Hari
4	811221225013	ILAYARAJA E	II/AGRI	✓	a	✓	✓	✓	✓	✓	✓	✓	✓	[illegible]
5	811221225014	JAYASOUNDARYA M	II/AGRI	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	M. Jaya
6	811221225016	KALPANA PRIYA R	II/AGRI	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	R. kalpanapriya
7	811221225019	KAVIYA T	II/AGRI	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	T. kaviya
8	811221225022	KOWSALYA I	II/AGRI	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	I. Kowsalya
9	811221225025	PONNIYAMMAL B	II/AGRI	✓	✓	✓	a	✓	✓	✓	✓	✓	✓	ponniyammal.B
10	811221225028	RAJABUNISHA M	II/AGRI	✓	✓	✓	✓	✓	✓	a	✓	✓	✓	M. [illegible]

Indra Ganesan
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

Department of AGRICULTURAL ENGINEERING

Academic Year 2022-2023 – Even Semester

S.No.	Reg.No	Student's Name	Year/ Branch	01.08.23		02.08.23		03.08.23		04.08.23		05.08.23		SIGN OF THE STUDENTS
				FN	AN	FN	AN	FN	AN	FN	AN	FN	AN	
6	811220103030	MOHANAPRIYA S	III/CIVIL	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	S. mohanapriya
7	811220103032	MUTHUSELVAM A	III/CIVIL	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	A. muthu Selvam
8	811220103041	SUDHAKAR R	III/CIVIL	✓	✓	✓	✓	✓	✓	✓	a	✓	✓	R. Sudhakar
9	811220103046	VISHWA S	III/CIVIL	✓	✓	✓	✓	✓	✓	✓	a	✓	✓	S. Vishwa

VAC Coordinator

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

HoD/AGRI

Indra Ganesan
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

Name of the Student: Jayasoundarya.M **Year/Sem:** II / IV

AU Register Number: 811221225014

21/25

Value Added Course on **"Hydroponics"**

MCQ QUESTIONS (25X4 = 100 Marks)

The technique of cultivating plants in a nutrient solution without the use of soil is known as Hydroponics. Hydroponics is an alternative to the traditional cultivation methodologies and is fast replacing them.

1. **Which of these is the fibre obtained from the coconut's husk**

(a) Perlite

(b) Vermiculture

(c) Coir

(d) Rockwoo

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

2. **The form of hydroponics that does not require a growing medium at all is**

(a) Aquaculture

(b) Static solution culture

(c) Medium culture

(d) Aeroponics

3. **Plants with larger roots can be cultivated with which of the following types of hydroponics**

(a) Ebb and flow system

(b) Drip system

(c) Nutrient Film technique

(d) None of these

4. **Hydroponics is a method of cultivation of plants without the use of**

(a) water

(b) air

(c) soil

(d) sunlight

5. **Which of the following is not true about hydroponics?**

(a) Requires high investment

(b) Technical knowledge required

(c) Can be misused to cultivate banned crops

(d) Plants through hydroponics cannot be cultivated everywhere

6. **Salts and water in hydroponic plants are absorbed by**

(a) Leaves

(b) Stem

(c) Roots

(d) Outer Layer of plants

7. **The scientist who used nutrient culture solution in hydroponic cultures was**

(a) Knop

(b) Sachs

(c) Wallace

(d) Webster

8. **Deficiency of mineral nutrition does not cause which of these**

(a) Chlorosis

(b) Etiolation

(c) Necrosis

(d) Shortening internode

9. **Roots of a plant in hydroponics are submerged in a solution of dissolved _____**

(a) fertilizers

(b) oxygen

(c) mineral salts

(d) chemicals

10. **Which of these plants may not be suitable for cultivation through hydroponics**

(a) Tomatoes

(b) Carrot

(c) Cucumber

(d) Strawberries

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

11. **Hydroponics is the major topic of which field?**

(a). Agriculture.
(b). Horticulture.
(c). Fish farming or fisheries.
(d). Dairy farming.

12. **Which one is the main field of this topic?**

(a). Aquaculture.
(b). Aquaponics.
(c). Hydrology.
(d). All of the above.

13. **Which is an ideal horticultural fruit crop for HP?**

(a). Strawberry.
(b). Lemon.
(c). Sapota.
(d). Pineapple.

14. **What is the main advantage of Hydroponics?**

(a). Decrease in nutrient use.
(b). Decrease in soil use.
(c). Decrease in water use.
(d). All of the above.

15. **Which of the following books describe this technique?**

(a). History of Agriculture.
(b). A Natural History.
(c). Horticulture: A Review.
(d). None of the above.

16. **Who wrote *Sylva Sylvarum?***

(a). Benjamin Peary Pal.
(b). George Washing Carver.
(c). Norman Ernest Borlaug.
(d). Francis Bacon.

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

17. **Who developed soilless culture?**

(a). Julius von Sachs.
(b). Wilhelm Knop.
(c). Both a and b.
(d). Justus von Liebig.

18. **What is the term for the growth of terrestrial plants without soil in mineral nutrient solutions?**

(a). Solution culture.
(b). Soilless culture.
(c). Aquaculture.
(d). Nutrient culture.

19. **Who introduced the term hydroponics?**

(a). W. A. Setchell.
(b). William Frederick Gericke.
(c). Dennis Robert Hoagland.
(d). None of the above.

20. **Who introduced the term water culture?**

(a). Arnon.
(b). John Woodward.
(c). Francis Bacon.
(d). William Frederick Gericke.

21. **Who is the writer of *Guide to Soilless Gardening?***

(a). William Frederick Gericke.
(b). Vishwa Gopal Jhingran.
(c). Dr. B.R. Pillai.
(d). John Woodward.

22. **Who is the writer of *The Water Culture Method for Growing Plants Without Soil?***

(a). George C. Clerk.
(b). Arnon.
(c). Sir Albert Howard.
(d). Luther Burbank.

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

23. **Consider about sub-irrigation.**

(a). Artificial raising of the water table is necessary.
(b). It is used in commercial greenhouses.
(c). Water is reusable.

24. **Why is it necessary to exclude light from the containers?**

(a). To prevent algal growth in the nutrient solution.
(b). To prevent fungal growth in the nutrient solution.
(c). Both a and b.
(d). To prevent drying of the nutrient solution.

25. **Consider about the Static solution culture:**

(a). Plants are grown in containers of nutrient solution.
(b). If there is no aeration, then solution level should high.
(c). If there is no aeration, then solution level should low.
(d).A float valve automatically regulate the amount of solution.

VAC Coordinator **HoD/AGRI**

Indra Ganesan
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

Name of the Student: SUDHAKAR . R **Year/Sem:** III VI

AU Register Number: 811221030 41

21/25

Value Added Course on **"Hydroponics"**

MCQ QUESTIONS (25X4 = 100 Marks)

The technique of cultivating plants in a nutrient solution without the use of soil is known as Hydroponics. Hydroponics is an alternative to the traditional cultivation methodologies and is fast replacing them.

1. **Which of these is the fibre obtained from the coconut's husk**

(a) Perlite

(b) Vermiculture

(c) Coir

(d) Rockwoo

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

2. **The form of hydroponics that does not require a growing medium at all is**

(a) Aquaculture

(b) Static solution culture

(c) Medium culture

(d) Aeroponics

3. **Plants with larger roots can be cultivated with which of the following types of hydroponics**

(a) Ebb and flow system

(b) Drip system

(c) Nutrient Film technique

(d) None of these

4. **Hydroponics is a method of cultivation of plants without the use of**

(a) water

(b) air

(c) soil

(d) sunlight

5. **Which of the following is not true about hydroponics?**

(a) Requires high investment

(b) Technical knowledge required

(c) Can be misused to cultivate banned crops

(d) Plants through hydroponics cannot be cultivated everywhere

6. **Salts and water in hydroponic plants are absorbed by**

(a) Leaves

(b) Stem

(c) Roots

(d) Outer Layer of plants

7. **The scientist who used nutrient culture solution in hydroponic cultures was**

(a) Knop

(b) Sachs

(c) Wallace

(d) Webster

8. **Deficiency of mineral nutrition does not cause which of these**

(a) Chlorosis

(b) Etiolation

(c) Necrosis

(d) Shortening internode

9. **Roots of a plant in hydroponics are submerged in a solution of dissolved _____**

(a) fertilizers

(b) oxygen

(c) mineral salts

(d) chemicals

10. **Which of these plants may not be suitable for cultivation through hydroponics**

(a) Tomatoes

(b) Carrot

(c) Cucumber

(d) Strawberries

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

11. **Hydroponics is the major topic of which field?**

(a). Agriculture.
(b). Horticulture.
(c). Fish farming or fisheries.
(d). Dairy farming.

12. **Which one is the main field of this topic?**

(a). Aquaculture.
(b). Aquaponics.
(c). Hydrology.
(d). All of the above.

13. **Which is an ideal horticultural fruit crop for HP?**

(a). Strawberry.
(b). Lemon.
(c). Sapota.
(d). Pineapple.

14. **What is the main advantage of Hydroponics?**

(a). Decrease in nutrient use.
(b). Decrease in soil use.
(c). Decrease in water use.
(d). All of the above.

15. **Which of the following books describe this technique?**

(a). History of Agriculture.
(b). A Natural History.
(c). Horticulture: A Review.
(d). None of the above.

16. **Who wrote *Sylva Sylvarum?***

(a). Benjamin Peary Pal.
(b). George Washing Carver.
(c). Norman Ernest Borlaug.
(d). Francis Bacon.

17. **Who developed soilless culture?**

(a). Julius von Sachs.
(b). Wilhelm Knop.
(c). Both a and b.
(d). Justus von Liebig.

18. **What is the term for the growth of terrestrial plants without soil in mineral nutrient solutions?**

(a). Solution culture.
(b). Soilless culture.
(c). Aquaculture.
(d). Nutrient culture.

19. **Who introduced the term hydroponics?**

(a). W. A. Setchell.
(b). William Frederick Gericke.
(c). Dennis Robert Hoagland.
(d). None of the above.

20. **Who introduced the term water culture?**

(a). Arnon.
(b). John Woodward.
(c). Francis Bacon.
(d). William Frederick Gericke.

21. **Who is the writer of *Guide to Soilless Gardening?***

(a). William Frederick Gericke.
(b). Vishwa Gopal Jhingran.
(c). Dr. B.R. Pillai.
(d). John Woodward.

22. **Who is the writer of *The Water Culture Method for Growing Plants Without Soil?***

(a). George C. Clerk.
(b). Arnon.
(c). Sir Albert Howard.
(d). Luther Burbank.

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

23. **Consider about sub-irrigation.**

(a). Artificial raising of the water table is necessary.
(b). It is used in commercial greenhouses.
(c). Water is reusable.

24. **Why is it necessary to exclude light from the containers?**

(a). To prevent algal growth in the nutrient solution.
(b). To prevent fungal growth in the nutrient solution.
(c). Both a and b.
(d). To prevent drying of the nutrient solution.

25. **Consider about the Static solution culture:**

(a). Plants are grown in containers of nutrient solution.
(b). If there is no aeration, then solution level should high.
(c). If there is no aeration, then solution level should low.
(d).A float valve automatically regulate the amount of solution.

VAC Coordinator

HoD/AGRI

Indra Ganesan
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

Department of AGRICULTURAL ENGINEERING

Academic Year 2022-2023 – Even Semester

MARK SHEET FOR VALUE ADDED COURSE PROGRAM - HYDROPHONICS

S.No.	Reg.No	Student's Name	Year/ Branch	Attendance Details		VAC-MCQ TEST		OVERALL MARK(100) (50% of A + 50% of B)
				No. of Session Attended	Attendance Mark(100) (A)	No of Correct Answers	MCQ Mark(100) (B)	
1	811221225002	ABINAYA R	II/AGRI	30	100	20	80	90
2	811221225007	CHARULATHA V	II/AGRI	27	90	21	84	87
3	811221225011	HARIHARAN M	II/AGRI	30	100	21	84	92
4	811221225013	ILAYARAJA E	II/AGRI	27	90	20	80	85
5	811221225014	JAYASOUNDARYA M	II/AGRI	30	100	21	84	92
6	811221225016	KALPANA PRIYA R	II/AGRI	30	100	22	88	94
7	811221225019	KAVIYA T	II/AGRI	30	100	20	80	90
8	811221225022	KOWSALYA I	II/AGRI	27	90	21	84	87
9	811221225025	PONNIYAMMAL B	II/AGRI	27	90	19	76	83

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

Indra Ganesan
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

Department of AGRICULTURAL ENGINEERING

Academic Year 2022-2023 – Even Semester

S.No.	Reg.No	Student's Name	Year/ Branch	Attendance Details	VAC-MCQ TEST	OVERALL MARK(100) (50% of A + 50% of B)	S.No.	Reg.No
10	811221225028	RAJABUNISHA M	II/AGRI	30	100	21	84	92
11	811221225029	RAJESH K	II/AGRI	30	100	22	88	94
12	811221225030	RAJESHWARI D	II/AGRI	30	100	20	80	90
13	811221225031	SAIRAM M	II/AGRI	27	90	21	84	87
14	811221225040	VIJAYAKRISHNA G	II/AGRI	27	90	19	76	83
15	811221225301	RISHI KRISHNA A	II/AGRI	30	100	21	84	92

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

Indra Ganesan
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

Department of AGRICULTURAL ENGINEERING

Academic Year 2022-2023 – Even Semester

S.No.	Reg.No	Student's Name	Year/ Branch	Attendance Details	VAC-MCQ TEST	OVERALL MARK(100) (50% of A + 50% of B)	S.No.	Reg.No
1	811220103011	DHARUN KUMAR R	III/CIVIL	30	100	20	80	90
2	811220103020	GUNASEELAN G	III/CIVIL	27	90	21	84	87
3	811220103024	IYYAPAN MANI A	III/CIVIL	30	100	21	84	92
4	811220103025	KALANCHIYA MUNIYARAJ B	III/CIVIL	27	90	20	80	85
5	811220103029	MANIKANDAN M	III/CIVIL	30	100	21	84	92
6	811220103030	MOHANAPRIYA S	III/CIVIL	30	100	22	88	94
7	811220103032	MUTHUSELVAM A	III/CIVIL	30	100	20	80	90
8	811220103041	SUDHAKAR R	III/CIVIL	27	90	21	84	87
9	811220103046	VISHWA S	III/CIVIL	27	90	19	76	83

VAC Coordinator

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

HoD/AGRI

Indra Ganesan

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

CERTIFICATE

OF PARTICIPATION

The following awards are given to

This is to certify that Ms. KALPANA PRIYA of II Year B.Tech- AGRI has successfully completed the Value Added Course on "HYDROPHONICS" organized by Department of Agricultural Engineering and IQAC of our Institution in Association with "SRI ENTERPRISE AGRO INDUSTRIES CORPARATION" from 1th August 2023 to 5th August 2023 (5Days) during the Academic year 2022-2023.

Managing Director
Sri Enterprise Agro Industries Corporation

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

Principal
Indra Ganesan College of Engineering

Indra Ganesan

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

CERTIFICATE

OF PARTICIPATION

The following awards are given to

This is to certify that Mr.S.VISHWA of IIIYear B.E- CIVIL has successfully completed the Value Added Course on "HYDROPHONICS" organized by Department of Agricultural Engineering and IQAC of our Institution in Association with "SRI ENTERPRISE AGRO INDUSTRIES PREPARATION" from 1th August 2023 to 5th August 2023 (5Days) during the Academic year 2022-2023.

Managing Director,
Sri Enterprise Agro Industries Corporation

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

Principal
Indra Ganesan College of Engineering