

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

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Criteria2Teaching-Learning and Evaluation350

Indra Gane COLLEGE OF ENGINE Madural Main Road (NH-45B), Manikandam, Tiruchir Addural Main Road (NH-45B), Manikandam, Tiruchir

## **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** 

Cia

350

## **KeyIndicator-2.3.Teaching-Learning Process(40)**

## 2022-2023

## **CIVIL AND AGRICULTURAL**

## ENGINEERING

## **PARTICIPATIVE LEARNING**

## **VALUE ADDED COURSE**





#### Ref: IGCE/AGRI/2022-23/VAC/01

DATE: 22.07.2022

## Department of Agricultural Engineering

NAAC Accredited, 2(F) Status Institution by UGC

#### Academic year 2022-2023 odd semesters

### **DEPARTMENT CIRCULAR**

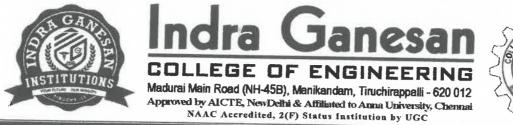
Department of Agricultural Engineering and IQAC, IGCE in association with Sri Enterprise Agro Industries Corporation is going to organize Value Added Course for all second, third year students on "VERTICAL FARMING" from 01.08.2022 to 05.08.2022 .Certificates will be issued to the eligible participants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

<b>Resource person Details:</b>	Mr.R.Sankar, CEO,
	N.Ramachandran, HR,
	Sri Enterprise Agro industries corporation
	Trichy
Venue:	Civil Seminar Hall
Bintont	
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., Frincipal Indra Ganesan ( pilege of Engineering 16 Valley madule Main Reed Matilita 08 Trichy-620 017.





### 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)	-

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**D/AGRI** 

Dr. G. Balakrishnan, M.E., Ph.D., Principal Indra Ganesan College of Engineering IG Valley, Wadurai Main Read Manikaridam, Trichy-620 012.





### STUDENTS PARTICIPATION LIST

Indra Gane

### 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
	811220103046	Vishwa S	III/CIVIL
	811221225002	Abinaya R	II/AGRI
	811221225007	Charulatha V	II/AGRI
	811221225011	Hariharan M	II/AGRI
	811221225013	Ilayaraja E	II/AGRI
	811221225014	Jayasoundarya M	II/AGRI
	811221225016	KalpanaPriya R	II/AGRI
	811221225019	Kaviya T	II/AGRI
	811221225022	Kowsalya I	II/AGRI
	811221225025	Ponniyammal B	II/AGRI
	311221225028	Rajabunisha M	II/AGRI
	811221225029	Rajesg K	II/AGRI
	311221225030	Rajeshwari D	II/AGRI
	11221225031	Sairam M	II/AGRI
	11221225040	Vijayakrishna G	II/AGRI
24 8	11221225301	Rishi Krishna A	II/AGRI

Coordinator

D/AGRI

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





#### Name of the Student :

Year/Sem:

#### **AU Register Number:**

### Value Added Course on "VERTICAL FARMING""

( ]

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#### MCO 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

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6. Why is Traditional Farming bad

'a ( î

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- 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

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13. Principles of mercury barometers was discovered by

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- (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

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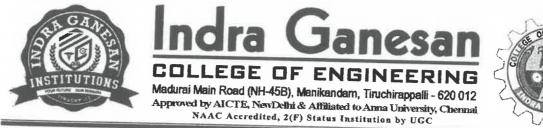


- (C) Greek
- (D) Italic
- 20. New seed police was launched in \_\_\_\_\_

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- (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

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### Value Added Course on "VERTICAL FARMING"

#### **ANSWER KEY**

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

bordinator

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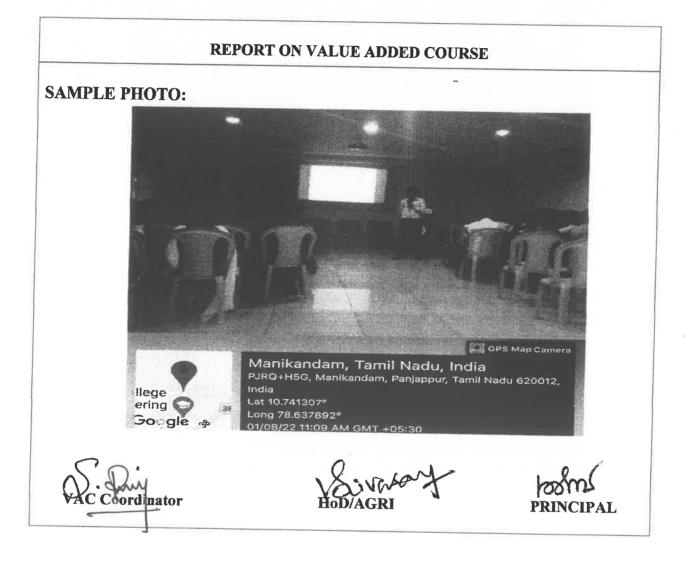
	REPORT ON VALUE ADDED COURSE											
Title:	VERTICAL FARMING											
Resource F	1	Mr.R.Sankar,N.R Sri Enterprise A		,	n,Trichy							
Date of cor	nduct from	: 01.08.2022	1.08.2022 To: 05.08.2022 Duration: 30 Hours									
Organized	Departmer	nt: Agricultural I	Agricultural Engineering									
Participant	Year: 2,	Year:2,3No. of Students Registered :1724										
Venue:	Agri Semin	ar Hall										
• Dev	elop a four	spected to learn an ndational understa	nding Agric	ultural engineerin	З.	1						
<ul> <li>Students attendand</li> </ul>	ce is eligib	securing <b>more t</b> le to receive the ce	han 70% ortificate for	on total score at the VAC course of	onducted	ore than 75% i						
Total Sco 100 mark	(0.5 (s)		C out of 10	0 percentage + 0.5	i *Test mark i	n VAC out of						

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## **Department of AGRICULTURAL ENGINEERING**

### Academic Year 2022-2023 – Odd Semester

### STUDENTS PARTICIPATION LIST

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

## MARK SHEET FOR VALUE ADDED COURSE PROGRAM - VERTICAL FARMING

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

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11	. 811221225007	CHARULATHA V			100	22	88	94
		UTANULATHA V	II/AGRI	30	100	20	00	
12.	. 811221225011	HARIHARAN M	II/AGRI	30		20	80	90
13.	811221225013	ILAYARAJA E	II/ACDI		100	21	84	92
14	811221225014		II/AGRI	27	90	20	80	0.7
		JAYASOUNDARYA M	II/AGRI	30	100			85
15.	811221225016	KALPANA PRIYA R	II/AGRI	30	100	22	88	94
16.	811221225019	KAVIYA T			100	22	88	94
			II/AGRI	30	100	22	00	
17.	811221225022	KOWSALYA I	II/AGRI	27	90	20	88	94
18.	811221225025	PONNIYAMMAL B	U/ACDI			20	80	85
10	811221225028		II/AGRI	30	100	22	88	0.4
		RAJABUNISHA M	II/AGRI	30	100			94
20.	811221225029	RAJESH K	II/AGRI	30	100	22	88	94
21.	01100100500			50	100	22	88	94
\$1.	811221225030	RAJESHWARI D	II/AGRI	27	90	20		
22.	811221225031	SAIRAM M	II/AGRI	20		20	80	85
3.	811221225040			30	100	22	88	94
-		VIJAYAKRISHNA G	II/AGRI	30	100	22		74
4.	811221225301	RISHI KRISHNA A	II/AGRI	18	100	22	88	94
	((		TVP	10	60	16	64	75



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



### 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/	DATE: 01.08.22			DATE: 02.08.22		DATE: 03.08.22		NTE: 08.22	DATE: 05.08.22		NO OF SESSIONS	SIGNATURE OF THE
			Branch	FN	AN	FN	AN	FN	AN	FN	AN	FN	AN	ATTENDED	STUDENT
1.	811220103011	Dharun Kumar R	III/CIVIL	V	1		1	V	1	1			V	10	RDL
2.	811220103020	Gunaseelan G	III/CIVIL	V	V	1	V	1	V	1	V		~	10	Q. QUA
3.	811220103024	lyyapan Mani A	IILCIVIL	V	V	1	1	V	V	V	V	V	~	lo	A. Typi
4.	811220103025	Kalanchiya Muniyaraj B	III/CIVIL	~	V	V	a	1	V	Ĵ	V		4		2 valoting
5.	811220103029	ManiKandon M	III/CIVIL	V	V	~	V	V	~	V	V	V	V	10	
6.	811220103030	Mohanapriya S	III/CIVIL	~	1	V	1	V	V	~	1	V		10	norminana -
7.	811220103032	MuthuSelvam A	III/CIVII,	~	1	~	1	~	V	V	V	V	L	10	
8.	811220103041	Sudhakar R	III/CIVIL	inden alt	0	.V.	v		V	V	V	V	uite one	C. P. Musicanter	D. Jart

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9.	811220103046	Vishwa S	III/CIVIL	V	V	11	V	V	V	10	V	V	V	10	Ruch
10	811221225002	AbinayaR	II/AGRI	V	V	1	V		V		V		1	1.0	Autor R
11	811221225007	CharulathaV	IVAGRI	V	V	V	TV.	V	1	V		V		10	Chamberry V
12	811221225011	HariharanM	II/AGRI	V	~	~		V	V	v	~	~		10	Hailow
13.	811221225013	IlayarajaE	II/AGRI	1	~	~	a	~	V		V	V		a	- Timperia
14	811221225014	Jayasoundary aM	II/AGRI		-	V	~	V	~	~	V			Lo	Jauralaura
15	811221225016	KalpanaPnya R	II/AGRI	~	V	V	~	V	~	~	~			animen min transmite and an	man open anorally
16.	811221225019	KaviyaT	WAGRI	1	V	V	~	V	V	~	~	~	~	Lo.	Rialpamp
17.	811221225022	Kowsalyal	WAGRI		V	~	V	~	on	V			2	9	7 Kang-
18,	811221225025	Ponoiyammalli	II/AGRE	V	V	~	V	1	v	~	V			10	ponnigamal p
19.	811221225028	RajabunishaM	II/AGRI	~	10-10-10-10-10-10-10-10-10-10-10-10-10-1	~	V	V	~				~	10	
20	811221225029	RajesaK	H/AGRI	1	~	~	~	1	~	~	* 3F ~ .			10	MOST -
23	811221225030	Rajeshwaril)	H/AGRÌ	-	v	V	01	~	V	1	~	V		a	Paymonded

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22.	811221223031	SairamM	II/AGR]	1	1	~	1~	1	17	12	1	1	J	10 -	Indaina
23	811221225040	VijayakrishnaG	II/AGR1	V		2	17	17	1	Ť	Ŭ		1		hub. et 7
24	811221225301	Rishi Krishna A	IL/AGRI	1,	-	a	a	1.		-	0			10	Ween Kour G

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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)

- 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%
- **Ъ** 5%
- -c) 20%
- d) 100%

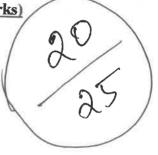
4. Disadvantage of Vertical Farming

- a) seasonal growth
- b) Less jobs
- () 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. Belakrishnan, M.E., Ph.D., Principai 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 fro	om	
(A) German word		
(B) Latin word		
Spanish		
(D) Greek word		
9. Primary resource for agriculture		
(A) Land, air and water		
(B) Seed, Fertilizer and Pesticide		
(C) Seed, air and water	V	
(D) Land, Fertilizer and water	Dr. G. Balakrishnan, M.E	., Ph. <b>D.</b> ,
10. Cultivation of rice begins in	Principal Indra Ganesan College of Engl	ineering
(A) 2200 BC	IG Valley, Madurai Main R	load
(B) 5700 BC	Manikandam, Trichy-620	012.
(C) 7700 BC	$\bigcirc$	
(D) 8700 BC		
11. The book 'Horse hoeing husbandi	V' was published by	
(A) Van Helmont		
(B) Gregor Johann Mendel		
(C) Jethrotutt		
DNone V		
12. Kharif, Rabi and Zaid word belong	g to	
(A) Urdu		
(B) French	. /	
(C) Persian (D) Arabic		

Indra Ga

COLLEGE OF ENGINEERING

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D. D. I I C I I
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
BPeru
(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

Indra Ga

COLLEGE OF ENGINEERING

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- (C) Greek
- (D) Italic
- 20. New seed police was launched in

-

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COLLEGE OF ENGINEER

- (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 \_\_\_\_\_
- W.L. Johannsen
- (B) W.Bateson
- (C) G.J. Mendel
- (D) R.C. Punnet

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Name of the Student : Dhaum kuman

Year/Sem: II / Civil

AU Register Number: 81122019301

Value Added Course on "VERTICAL FARMING""

MCO QUESTIONS (25X) = 20 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
  - billion
  - A) 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
- Weather impacts plant production
- d) creates runoff

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

- a) Be a progardener
- b) Have to be a botanist
- (c) Have LED lights
- d) Have Quick Maf skills



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6. Why is Traditional Farming bad

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- a) Creates better soil
- **Uses pesticides**
- c) / Destroys local businesses
- d) Damages the atmosphere
- 7. Agriculture is a

a) Greek word

DLatin/word

c) German word

d) Spanish

8. The term agronomy is derived from

(A) German word

(B) Latin word

Spanish

(Q) 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

abic

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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 Muzaffarnur (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

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- (C) Greek
- (D) Italic

20. New seed police was launched in \_\_\_\_\_

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(D) R.C. Punnet

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## CERTIFICATE

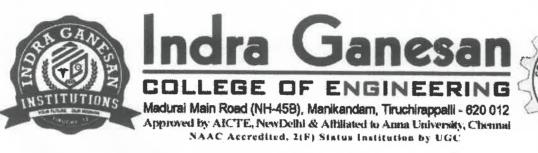
## OF PARTICIPATION

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.

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



## CERTIFICATE

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

## **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.

Sri Enterprise Agro Industries Corporation

Principal Indra Ganesan Engineering college



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### 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 Corporation, Guntur	Industries
Kesource reison Detail	2. Mr.A.Jayaraj, Technical Assistant, Sri Enterprise Agro Corporation, Guntur	Industries
Venue Venue	CAD LAB, 2 <sup>rd</sup> Floor, IGCE	Principal
Cc:	Dr. G. Balakrishnan, M.E., Ph.D.,	
<ul> <li>Principal Table</li> <li>IQAC Co-Ordinator</li> <li>HoD/ Agri</li> </ul>	Principal Indra Ganesan College of Engineering IG Valley, Madurai Main Road Manikandam, Trichy-620 012.	
• Class In charges - II, & III -	-Year Agri Students	
<ul> <li>II, III &amp; IV-Year Civil and</li> <li>Office File</li> </ul>	Agii Students	
Notice Board		





### 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	-	

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#### 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
12	811221225031	SAIRAM M	II YEAR/ AGRI
13	811221225040	VIJAYAKRISHNA G	II YEAR/ AGRI
14	811221225301	RISHI KRISHNA A	II YEAR/ AGRI

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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		

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Silontant HOD/AGRI





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		RE	<b>EPORT ON V</b> A	ALU	E ADI	DED C	OURSE		
Title:	"Hydroponics"								
Resource Person: Direc Sri E Corp Gunt		Direc Sri E	K. Ramesh Kumar, rector, Enterprise Agro Industries rparation,			Mr.A. Jayaraj, Technical Assistant, Sri Enterprise Agro Industries Corparation, Guntur			
Date of conduct from : 01			01.08.2023 To: 05.08.						
Organized	l Departm	nent :	AGRICULTU	RAI	ENGI	NEER	ING	A	1
Participan	t Year:	2, 3	Semester:	EV	EN		No. of Stu	dents Registe	ered: 24
Venue:	CAD LA	B, 2 <sup>nd</sup>	Floor, IGCE						
Outcom	e of Valu	e Adde	ed Course (VA	<b>C):</b>	At the	end of	the Course	, Students c	an able to
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Indra Ganesan

COLLEGE OF ENGINEERING



Indra Ganesan

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Title:	"Hydroponics"								
Resource Person: Dire Sri I Corp		Dire Sri E	nterprise Agro aration,	Mr.A. Jayaraj, Technical Assistant, Sri Enterprise Agro Industries Corparation,			stries		
Date of conduct from :						Guntur 2023	Duration: 30 Ho		Hours
Organized Department :		t:	AGRICULTURAL ENGINE						
- Participant Y					EVEN No. of Stud			ed:	24
Venue: C	AD LAP	3. 2 <sup>nd</sup> F	loor, IGCE						1
		<u>,                                    </u>		MPLE PHO	TOS				
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#### Name of the Student:

Year/Sem:

AU Register Number:

Value Added Course on "Hydroponics"

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#### 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



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





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- (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

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- (d) Shortening internode
- 9. Roots of a plant in hydroponics are submerged in a solution of dissolved \_\_\_\_\_

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- (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

#### 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?

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- (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?

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- (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.

#### 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.

Coordinator

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#### Value Added Course on HYDROPHONICS

#### ANSWER KEY

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

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## Academic Year 2022-2023 – Even Semester

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Manikandam, Trichy-620 012.



Department of AGRICULTURAL ENGINEERING Dr. G. Balakrishnan, M.E., Ph.D.,

Academic Year 2022-2023 – Even Semester

STUDENTS ATTENDANCE LIST- "Hydroponics"

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

S.No.	Reg.No	Student's Name	Year/	01.08.23		02.0	02.08.23		03.08.23		04.08.23		08.23	SIGN OF THE	
			Branch	FN	AN	FN	AN	FN	AN	FN	өн	FN	AN	STUDENTS	
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9	811221225025	PONNIYAMMAL B	II/AGRI	$\checkmark$	1	./	a	1	1			/	/	pomi you	l, R
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Academic Year 2022-2023 – Even Semester

S.No.	Reg.No	Student's Name	Year/	01.(	08.23	02.0	08.23	03.0	08.23	04.0	8.23	05.0	08.23	SIGN OF THE
-			Branch	FN	AN	FN	AN	FN	AN	FN	AN	EN	DN	STUDENTS
6	811220103030	MOHANAPRIYA S	III/CIVIL	V	/	~	1	1	./	1	$\checkmark$	1		Sincharyvy .
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**VAC Coordinator** 

Dr. G. Balakrishnan, M.E., Ph.B., Principal Indra Ganesan College of Engineering IG Valley, Madurai Main Read Manikandam, Trichy-628 012.

HoD/AGRI







Year/Sem: 1

IV

	- and arua M
Name of the Student: J	Taya Soundarya. M 811221225014
AU Register Number:	811221225014

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

X (e) Coir

(d) Rockwoo

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

- (a) Aquaculture
- (b) Static solution culture
- (e) 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

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





Indra Gaman Constant of Engineering

IG Vailey, Medural Main Road

Manikandam, Trichy-620 012.



(b) air

(2) 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 Dr. G. Bal-krishnan, M.B. Ph.D.

(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

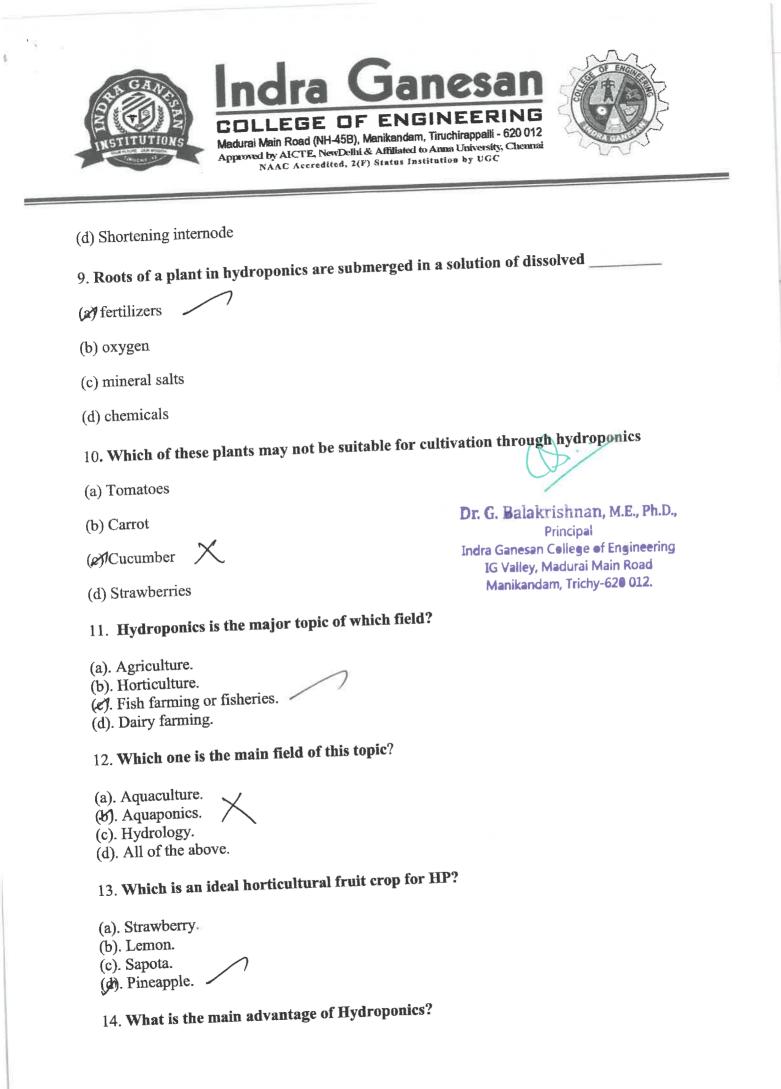
() Wallace

(d) Webster

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

- (a) Chlorosis
- (b) Etiolation

(e) Necrosis -







- (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. X
- (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.

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

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

- (a). Solution culture.
- (b). Soilless culture.
- (e). 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.

#### 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.
- (e). 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 Coordinated

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VI

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Name of the Student: SUDHAKAR R Year/Sem: 81122103041 **AU Register Number:** Value Added Course on "Hydroponics" MCO 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 Dr. G. Balakrishnan, M.E., Ph.D., (b) Vermiculture Principal (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 (e) Medium culture -

(d) Aeroponics

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(d) None of these /

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

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(a) water

(b) air

(ø) soil

(d) sunlight

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

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

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- ( Necrosis

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





- (d) Shortening internode
- 9. Roots of a plant in hydroponics are submerged in a solution of dissolved

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- (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

## 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?

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- (a). Decrease in nutrient use.
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Dr. G. Balakrishnan, M.E., Ph.D., Principal

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VACCoordinator

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## Academic Year 2022-2023 – Even Semester

## MARK SHEET FOR VALUE ADDED COURSE PROGRAM - HYDROPHONICS

			Year/	Attendar	ce Details	VAC-MO	OVERALL MARK(100)	
S.No.	Reg.No	Student's Name	Year/ Branch	No. of Session Attended	Attendance Mark(100) (A)	No of Correct Answers	MCQ Mark(100) (B)	(50% of A + 50% of 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.

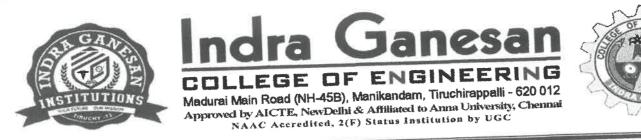




## Academic Year 2022-2023 – Even Semester

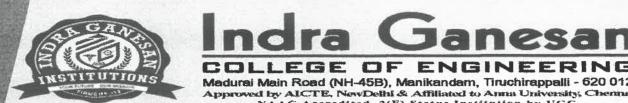
S.No.	Reg.No	Student's Name	Year/ Branch	Attendance Details	VAC-MCQ TEST	OVERALL MARK(100) (50% of A + 50% of B)	S.No.	Reg.No
10	10 811221225028	RAJABUNISHA M	II/AGRI	30	100	21	84	92
10	811221225028		TTAODI	30	100	22	88	94
11	11 811221225029	RAJESH K	II/AGRI	50	100			
		RAJESHWARI D	II/AGRI	30	100	20	80	90
12	811221225030	RAJESHWAND			00	21	84	87
13	811221225031	SAIRAM M	II/AGRI	27	90	21	01	
10			II/AGRI	27	90	19	76	83
14	14 811221225040	VIJAYAKRISHNA G	II/AOICI					
15	811221225301	RISHI KRISHNA A	II/AGRI	30	100	21	84	92

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



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
	811220103029		III/CIVIL	30	100	21	84	92
5			III/CIVIL	30	100	22	88	94
6	811220103030		III/CIVIL	30	100	20	80	90
7	811220103032		III/CIVIL	1)	90	21	84	87
8	811220103041	SUDHAKAR R		-		19	76	83
9	811220103046	5 VISHWA S		Balakr27hnan Principal		• •		Lang.
	VACCO	shordinater	IG	anesan College o Valley, Madurai N anikandam, Trichy	lain koau	9	HoD/A	GRI





# CATE

**OF PARTICIPATION** The following awards are given to

This is to certify that Ms. KALPANA PRIVA of II Year B.Tech-AGRI has successfully completed he Value Added Course on "HYDROPHONICS" organized by Department of Agricultural ineering and IQAC of our Institution in Association with "SRI ENTERPRISE AGRO **IES CORPARATION**" from 1<sup>th</sup> August 2023 to 5<sup>th</sup> August 2023 (5Days) during the

Academic year 2022-2023.

**Indra Ganesan College of Engineering** 

Managing Director Sri Enterprise Agro Dr. G. Balakrishnan, M.E., Ph.D., Principal Indra Ganesan College of Engineering IG Velley, Madurai Main Read Manikandam, Trichy-620 812.





**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 d Course on "HYDROPHONICS" organized by Department of Agricultural Engineering and C of our Institution in Association with "SRI ENTERPRISE AGRO INDUSTRIES TION" from 1<sup>th</sup> August 2023 to 5<sup>th</sup> August 2023 (5Days) during the Academic year

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

Principal Indra Ganesan College of Engineering