

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

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

NAAC DOCUMENTS

QUALITY INDICATOR FRAME WORK

CRITERION – 1

CURRICULAR ASPECTS

SUBMITTED BY

IQAC

INTERNAL QUALITY ASSURANCE CELL INDRA GANESAN COLLEGE OF ENGINEERING





DEPARTMENT OF AGRICULTURAL ENGINEERING

ACADEMIC YEAR 2022-2023 / EVEN SEMESTER

1.2 Academic Flexibility (30)

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

AND

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

VAC Title:	HY	DROPC	ONICS							
Resource Pe	rson:		Guntur Mr.A.Jay Technical	rise Agr araj, Assista	ro Indu	r, astries Corpor astries Corpor	·			
Date of cond	uct f	rom:	01.08.2023		To:	05.08.2023		Duration:	30 Hours	
Organized D	epar	tment:	DEPARTN ENGINEE		OF CI	VIL AND A	GRIC	CULTURAL		
Participant Year:		CIVIL II ,III	& AGRI	Semes	ster:	EVEN	No.	of Students	Registered:	24
Venue:	CAD	LAB, 2 ⁿ	d Floor, IGC	Е						



Table of Content

S. No	Document	Page No
1.	VAC Circular	3-3
2.	VAC Schedule	4-4
3.	List of the Students Participation	5-6
4.	VAC Report	7-8
5.	VAC Test Paper	9-13
6.	VAC Answer Key	14-17
7.	VAC Test Answer Sheet- Sample	18-27
8.	VAC Mark Statement	28-30
9	Course Completion Certificates	31-32



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

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. Agro Sri Enterprise

Industries Corporation, Guntur

2. Mr.A.Jayaraj, Technical Assistant,

Industries Enterprise Agro Corporation, Guntur

Venue

CAD LAB. 2nd Floor, IGCE

Cc:

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

Principal

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

• HoD/Agri

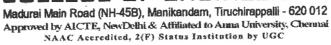
• Principal Table

IQAC Co-Ordinator

- Class In charges II, & III -Year
- II, III & IV-Year Civil and Agri Students
- Office File
- Notice Board



COLLEGE OF ENGINEERING





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.



OF TANADAS

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

VAC Coordinator
Value Added Course

HOD/CIVIL

"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-628 812.



COLLEGE OF ENGINEERING



Madurai Main Road (NH-45B), Manikandam, Tiruchirappalli - 620 012 Approved by AICTE, NewDellii & Athiliated to Anna University, Chemnal 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 Callege of Engineering IG Valley, Madurai Main Road

Manikandam, Trichy-629 012.

VAC Coordinator

HOD/AGRI



COLLEGE OF ENGINEERING





		RE	PORT ON VA	ALU	E ADI	DED C	OURSE			
Title:					"Hydr	oponic	es"			
Resource	Person:	Direct Sri Et	nterprise Agro aration,		ıstries		1	al Assistant, erprise Agro	Indust	tries
Date of c	onduct fro	m:	01.08.2023		To:	05.08	.2023	Duration:	30 H	Iours
Organize	d Departm	ent:	AGRICULTU	RAI	ENGI	NEER	ING		1	
Participa	nt Year:	2, 3	Semester:	EV	EN		No. of Stu	dents Registe	red:	24
Venue:	CAD LA	B, 2 nd]	Floor, IGCE							
Outcom	e of Value	e Adde	d Course (VA	C):	At the	end of	the Course	, Students ca	an ab	le to
		ide kno	miliar with cal wledge about			-				8
			ion of this cou							
			nation of build			_			_	
			and apply vari	lous :	method	is of qu	iantity estim	ation measur	emen	t in
			i projects. bricks calculat	tions	and co	et for	lifferent met	toriale		
	- ESUI	naung,			ent Pro		miterent illai	CHAIS.		

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

Dr. G. Balakrishnan, M.E., Ph.D.,
Principal
Indra Ganesan College of Engineering
IG Valley, Madurai Main Road
Manikandam, Trichy-629 012.

VAC Coordinator

VAC out of 100 marks)

HOD/AGRI

Principal



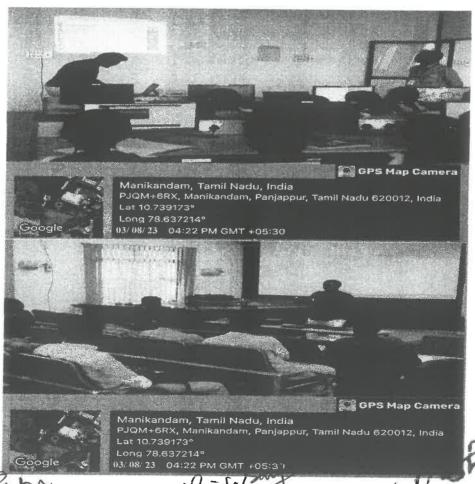
COLLEGE OF ENGINEERING

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



		R	EPORT ON V	ALU	E AD	DED C	COURSE (S	Sample Phot	os)	
Title:					"Hydı	roponic	cs"			
Resource		Dire Sri F Corp Gun	Enterprise Agre paration,		ıstries			eal Assistant, erprise Agro	Indust	ries
Date of co	nduct from	n:	01.08.2023		To:	05.08	.2023	Duration:	30 H	ours
Organized	Departme	ent:	AGRICULTU	RAL I	ENGIN	EERIN	G			
Participan	t Year:	2, 3	Semester:	EV	EN		No. of Stud	ents Registere	d:	24
Venue:	CAD LA	B, 2 nd F	Floor, IGCE				1			

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





Madurai Main Road (NH-45B), Manikandam, Tiruchirappalli - 620 012 Approved by AlCTE, 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 "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
- (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-620 612.

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



(c) Necrosis

Indra Ganesan



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

(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 Dr. G. Balakrishnan, M.E., Ph.D., Principal
(c) Wallace Indra Ganesan College of Engineering IG Valley, Madurai Main Road
(d) Webster Manikandam, Trichy-620 012.
8. Deficiency of mineral nutrition does not cause which of these
(a) Chlorosis
(b) Etiolation





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

(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
- 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?

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

Principal
Indra Ganesan College of Engineering
IG Valley, Madurai Main Road
Manikandam, Trichy-628 012.



COLLEGE OF ENGINEERING



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

- (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.

Indra Ganesan College of Engineering

IG Valley, Madurai Main Read Manikandam, Trichy-628 012.

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

Principal

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?



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



- (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.

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

Indra Ganesan College of Engineering IG Valley, Madurai Main Road

Manikandam, Trichy-620 012.





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

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	a	19	a	24	С
5	d	10	d	15	b	20	d	25	d

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

Principal

Indra Genesan College of Engineering

IG Valley, Madurai Main Road

Manikandam, Trichy-629 912.

VAC Coordinator

HoD/AGRI



GOLLEGE OF ENGINEERING
Madurai Main Road (NH-45B), Manikandam, Tiruchirappalli - 620 012
Approved by AlCTE, NewDelbi & Affiliated to Arma University, Chemnal
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/	01.08.23	02.08.23	03.08.23	04.08.23	05.08.23	SIGN OF	
			Branch	NO NO	NO NI	N.G. N.L.	NOZU	ZÚ	STUDENTS	
10	811221225028	RAJABUNISHA M	II/AGRI	>	>					
11	811221225029	RAJESH K	II/AGRI		. \		>	> ,	t ε	
12	811221225030	RAJESHWARI D	II/AGRI		>	> \	> ,	> `	1000	
13	811221225031	SAIRAM M	II/AGRI	> 0	> \	>	> \ > \	> \	3	1
14	811221225040	VIJAYAKRISHNA G	II/AGRI	} \	> \	>	> '	> \	James J.	1
15	811221225301	RISHI KRISHNA A	II/AGRI	> >	> \	3	> ,	> ,	Sold Sold Sold Sold Sold Sold Sold Sold	ತ್ತ
-	811220103011	DHARUN KUMAR R	III/CIVIL,		> ;	> \	> '	> ,	KSNAMA.	
2	811220103020	GUNASEELAN G	III/CIVII	A.	> >	> !	7 7	7;	P.O.A.	
6	811220103024	IYYAPAN MANI A	III/CIVIL	3	> >	3	> ')	P. V.	
4	811220103025	811220103025 KALANCHIYA MUNIYARAJ B	Dr. G. Balakrishman V. P. Dr.	Krishman		> \	> >	>	- Lear Mily	
5	811220103029	811220103029 MANIKANDAN M	III/CIVIL Principal India Ganesax/colling of Chains from	Principal	Shainsding	> >	> >	>>	Kerter	
			IG Valley,	IG Valley, Madural Main Road	III Koae				M-Man Cendar	

Manikandam, Trichy-620 012.



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



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

STUDENTS ATTENDANCE LIST-"Hydroponics" Academic Year 2022-2023 - Even Semester

Indra Ganesan Cellege of Engineering IG Valley, Madurai Main Road Principal

			1						Ja de		- A	
Jy-620 012.	SIGN OF	STUDENTS	Jan C	1 Salar	J. How		L'A ONE Y		K-Pakpar	- Aller	The state of the s	6
Manikandam, Trichy-620 012.	05.08.23	ZGZL	>	9		5		7	>	3	7 7	>
Mani	04.08.23	THE THE THE	>	>	1	7	1		7		7/	9
	03.08.23	ZC	>	\	> 5		5)		1	>
	02.08.23	TA PA	>	>	>))))	3	>
	01.08.23	NO ZI	>	>	>	3	7	7	>	>	>	>
	Year/	branco	II/AGRI	II/AGRI	II/AGRI	II/AGRI	II/AGRI	II/AGRI	II/AGRI	II/AGRI	II/AGRI	II/AGRI
	Student's Name		ABINAYA R	CHARULATHA V	HARIHARAN M	ILAYARAJA E	JAYASOUNDARYA M	KALPANA PRIYA R	KAVIYA T	KOWSALYA I	PONNIYAMMAL B	RAJABUNISHA M
	Reg.No		811221225002	811221225007	811221225011	811221225013	811221225014	811221225016	811221225019	811221225022	811221225025	811221225028
	S.No.		-	2	m	4	2	9	7	00	6	10



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



Department of AGRICULTURAL ENGINEERING

Academic Year 2022-2023 - Even Semester

S.No.	Reg.No	Student's Name	Year/	01.08	3.23	01.08.23 02.08.23		03.08.23		04.0	04.08.23 05.08.23	02.0	8.23	SIGN OF
			Branch	Z	Z	Z	Z	FN BN FN FN FN FN FN FN FN	Z	Z	Z	Z	Z	STUDENTS
9	811220103030	811220103030 MOHANAPRIYA S	III/CIVIL	>	1	>	1	1		1				S. med Long Day
7	011720102020	A A A A TO TOTAL THE TANK	III/CIV/II	,		,		>	1	>	>	>	S	
	011220103032	OTIZZUIUSUSZ MUIHUSELVAM A	THE CIAM	Ś	\	>	>	7	\	>	>	5	>	A .myten Solicom
∞	811220103041 SUDHAKAR R	SUDHAKAR R	III/CIVIL	\	1			1			. (1	Sudhallar
0					,	,	>	>	>	>	3	>	>	
	811220103046 VISHWA S	VISHWA S	III/CIVIL	>	>	Ś	/	$\frac{1}{2}$	/	>	C	>	>	A LINEW

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

VAC Coordinator







Name of the Student: J	ayaSoundarya. MayaSoundarya. McQ QUESTIONS (25X4 = 100 Marks)	Year/Sem: II
The technique of cultive known as Hydroponics methodologies and is fa	ating plants in a nutrient solution without the . Hydroponics is an alternative to the traditi	ne use of soil is onal cultivation
1. Which of these is the	e fibre obtained from the coconut's husk	
(a) Perlite (b) Vermiculture (c) Coir (d) Rockwoo	Dr. G. Balak	rishnan, M.E., Ph.D., Principal n College of Engineering , Madurai Main Road dam, Trichy-628 912.
2. The form of hydrop	onics that does not require a growing mediu	m at all is
(a) Aquaculture (b) Static solution culture (c) Medium culture		
(d) Aeroponics		
•	oots can be cultivated with which of the follo	owing types of
(a) Ebb and flow system	m	
(b) Drip system		
(c) Nutrient Film techn	nique	
(d) None of these	/ 1	
4. Hydroponics is a n	nethod of cultivation of plants without the us	e of









(a) water
(b) air
(e) 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
(A) Plants through hydroponics cannot be cultivated everywhere
6. Salts and water in hydroponic plants are absorbed by
6. Salts and water in hydroponic plants are absorbed by (a) Leaves Dr. C. Balthrichten, M.B., Ph.D. On Stem Dr. C. Balthrichten, M.B., Ph.D. On Stem On Old
(a) Leaves (b) Stem (c) Roots (d) Roots (e) Roots (f) Engineering Indra Control Main Road Indra Control Main Road
(c) Roots Indra Garage Main Road Indra Garage Main Road Indra Garage Main Road Indra Garage Main Road Manikandam, Trichy-620 012 Manikandam, Trichy-620 012
(d) Outer Layer of plants
7. The scientist who used nutrient culture solution in hydroponic cultures was
(a) Knop
(b) Sachs
(Ø)Wallace
(d) Webster
8. Deficiency of mineral nutrition does not cause which of these
(a) Chlorosis
b) Etiolation
Necrosis Necrosis





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

Approved by AICTE, New Delm & Annual Control of the NAAC Accredited, 2(F) Status Ins	titution by UGC
(d) Shortening internode	
9. Roots of a plant in hydroponics are submerged i	n a solution of dissolved
9. Roots of a plant in nyuropoints are substituted	
(2) fertilizers	
(b) oxygen	
(c) mineral salts	
(d) chemicals	
10. Which of these plants may not be suitable for	cultivation through hydroponics
(a) Tomatoes	Ca/
(b) Carrot	Dr. G. Balakrishnan, M.E., Ph.D., Principal
(e)Cucumber X	Indra Ganesan College of Engineering IG Valley, Madurai Main Road
(d) Strawberries	Manikandam, Trichy-620 012.
11. Hydroponics is the major topic of which field	1?
(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?



COLLEGE OF ENGINEERI

Madurai Main Road (NH-45B), Manikandam, Tiruchirappelli - 620 012





(a) Decrease in nutrient use.	(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.

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

Principal

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

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

- (a). Solution culture.
- (b). Soilless culture.
- (2)! Aquaculture.
- (d). Nutrient culture.

19. Who introduced the term hydroponics?

(2)? W. A. Setchell.

- (b). William Frederick Gericke.
- (c). Dennis Robert Hoagland.
- (d). None of the above.

20. Who introduced the term water culture?





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



- (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.
- (A). A float valve automatically regulate the amount of solution.

VAC Coordinate

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

Principal Indra Ganesan College of Engineering IG Valley, Madurai Main Road

Manikandam, Trichy-629 812.

r Leigh

191



(c) Nutrient Film technique

(2) None of these

Indra Ganesan

COLLEGE OF ENGINEERING

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



Name of the Student:	SUDHARAKIK	2	Year/Sem: TTT
AU Register Number:	8112210304	.1	
	Value Added Course o	n "Hydroponics"	491
	MCQ QUESTIONS (2	25X4 = 100 Marks)	(2
The technique of cultiv	ating plants in a nutrie	nt solution without th	e use of soil is
known as Hydroponics	. Hydroponics is an alte	rnative to the tradition	onal cultivation
methodologies and is fa	st replacing them.		
	fibre obtained from the	e coconut's husk	D'.
(a) Perlite			A de B
(b) Vermiculture		Dr. G. Balaki	rishnan, M.E., Ph.D., Principal
(c) Coir		Indra Ganesan	College of Engineering
(d) Rockwoo		IG Valley, Manikand	am, Trichy-620 012.
2. The form of hydropo	nics that does not requi	re a growing mediun	n at all is
(a) Aquaculture			
(b) Static solution culture	e		
(e) Medium culture	- /		
(d) Aeroponics			
3. Plants with larger rohydroponics	ots can be cultivated wi	th which of the follow	ing types of
(a) Ebb and flow system			
(b) Drip system			

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







(a) water	
(b) air	
(ø) 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. Balakrishnan, M.E., P. Indra Gara	m.
(a) Leaves IG Valley Almain College of Engineer	ring
(b) Stem Manikandam, Trichy-620 012.	
(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	
(A) Necrosis	



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





(d)	Shortening	internode
-----	------------	-----------

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

- (2) 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.B.,

Principal

Indra Ganesan College of Engineering IG Valley, Madurai Main Road Manikandam, Trichy-629 912.

11. Hydroponics is the major topic of which field?

- (a). Agriculture.
- (b). Horticulture.
- (A). 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?





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

- (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.
- (2)? 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., Ph.D.,
 Principal
 Indra Ganesan College of Engineering
 IG Valley, Madurai Main Road
 Manikandam, Trichy-620 012.
- 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?



LEGE OF ENGINEERING





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

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

- (a). William Frederick Gericke.
- (by. 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.
- (e). Sir Albert Howard.
- (d). Luther Burbank.

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

Principal

Indra Ganesan College of Engineering IG Valley, Madurai Main Read 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.
- (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 Coordinator



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

Approved by AICTE, NewDelhi & Affiliated to Arma University, Chemral 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

				Attendan	Attendance Details	VAC-MCQ TEST	Q TEST	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)
-	811221225002	ABINAYAR	II/AGRI	30	100	20	80	06
7	811221225007	CHARULATHA V	II/AGRI	27	06	21	84	87
m	811221225011	HARIHARAN M	II/AGRI	30	100	21	84	92
4	811221225013	ILAYARAJA E	II/AGRI	27	06	20	80	85
5	811221225014	JAYASOUNDARYA M	II/AGRI	30	100	21	84	92
9	811221225016	811221225016 KALPANA PRIYA R	II/AGRI	30	100	22	88	94
7	811221225019 KAVIYA T	KAVIYA T	II/AGRI	30	100	20	08	06
∞	811221225022	811221225022 KOWSALYA I	II/AGRI	27	06	21	84 .	87
6	811221225025	811221225025 PONNIYAMMAL B	II/AGRI	27	06	19	92	83
					Dr	. G. Balakrish	Dr. G. Balakrishnan, M.E., Ph.D.	

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



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



Department of AGRICULTURAL ENGINEERING

Academic Year 2022-2023 – Even Semester

LL (100) S.No. Reg.No (78)	84	88 94	06 08		84 8/	76 83		84 92
VAC-MCQ MARK(100) TEST (50% of A + 50% of B)	100 21	100 22	100 20		90 21	10	7	100 21
Attendance Details	30	30	30	00	27		1.7	30
Year/ Branch	II/AGRI	II/AGRI	140 471	II/AGKI	II/AGRI		II/AGRI	II/AGRI
Student's Name	811221225028 RAJABUNISHA M	RAJESH K		811221225030 RAJESHWARI D	SATRAM M	Dinia in in	811221225040 VIJAYAKRISHNA G	DICHI KRISHNA A
S.No. Reg.No	811221225028	811221225029		811221225030	011001005031	811221223031	811221225040	011001005001
S.No.	10		1	12	Ç	13	14	Ļ

Indra Ganesan College of Engineering Dr. G. Balakrishnan, M.E., Ph.9.. IG Valley, Madurai Main Read

Manikandam, Trichy-620 012.



Indra Ganesan OF ENGINEERING COLLEGE

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

							_														
Reg.No		06		87	60		85	0		92		94			87		83		1	D/AGRI	
S.No.		80	08		0.4	40	80	08		84		88			84		76		C	A GO	
OVERALL	MARK(100) (50% of A + 50% of B)			21		21		0.7		17			20	20		21		, 19			
	VAC- MCQ TEST	100	06			100		2	0	100	100		100	1	06		n, M.E.90h.D.		of Engineering	of Engineering Main Road 1y-620 012.	
	Attendance Details		2	27		30		17	30	8	30		30	30		27		III/Gi/VII-Balakr23hnan, M.E.90h.D., Principal		Indra Ganesan College of Engineering IG Valley, Madurai Main Road Manikandam, Trichy-620 012.	
	Year/ Branch		III/CI v III	III/CIVIL		III/CIVIL	_	III/CIVIL		III/CIVIL		III/CIVIE	III/CIL/III	III/CIVIL		III/CIVIL		ii).iS/m		Indra G	
	Student's Name		DHARUN KUMAR R	GUNASEELAN G		IYYAPAN MANI A		KALANCHIYA MUNIYARAJ B		MANIKANDAN M		MOHANAPRIYA S		MUTHUSELVAM A		SUDHAKAR R		VISHWA S		Schinate	
	Reg.No		811220103011 811220103020		811220103024	811220103024			811220103029		811220103030		811220103032		811220103041		811220103046		VAC Coordinate		
	S.No.				7	cr)	4		S		9		7		00		6			



Madurai Main Road (NH-45B), Manikandam, Tiruchirappalli - 620 012 Approved by ALCTE, NewDelhi & Affiliated to Anna University, Chemnal 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 WES CORPARATION" from 1th August 2023 to 5th August 2023 (5Days) during the te Value Added Course on "HYDROPHONICS" organized by Department of Agricultural meering and IQAC of our Institution in Association with "SRI ENTERPRISE AGRO

Academic year 2022-2023.

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

Indra Ganesan Coilege of Engineering IG Velley, Madurai Main Road Manikandam, Trichy-620 812.

Sri Enterprise Agro

Managing Director

Principal

Indra Ganesan College of Engineering



Madural Main Road (NH-45B), Manikandam, Tiruchirappalli - 620 012
Approved by ALCTE, NewDellu & Affiliated to Annu University, Chemnal
Approved by ALCTE, NewDellu & Affiliated to Annu University, Chemnal



CERTIFICATE

OF PARTICIPATION

The following awards are given to

d Course on "HYDROPHONICS" organized by Department of Agricultural Engineering and This is to certify that Mr.S.VISHWA of IIIYear B.E. CIVIL has successfully completed the Value

AC of our Institution in Association with "SRI ENTERPRISE AGRO INDUSTRIES

TION" from 1th August 2023 to 5th August 2023 (5Days) during the Academic year

2022-2023.

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

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

Principal

Indra Ganesan College of Engineering

Managing Director, Sri Enterprise Agro