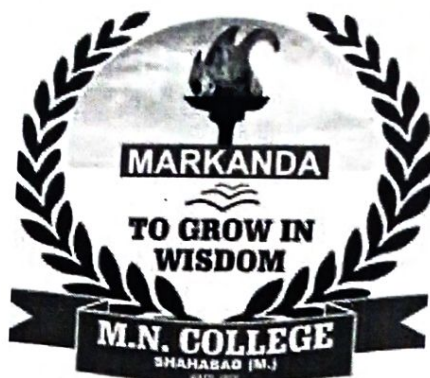


# Markanda National College

Ladwa Road Shahabad Markanda



## Value Added Course

Session: 2021-22

<b>Title</b>	:	<b>Hydroponics: Soil less Farming</b>
<b>Code</b>	:	<b>HS21</b>
<b>Certification</b>	:	<b>Grading Pattern</b>
<b>Duration</b>	:	<b>30 Hours</b>
<b>Mode of Assessment</b>	:	<b>Pen and Paper</b>
<b>Offered By</b>	:	<b>Department of Chemistry Markanda National College Shahabad</b>

Course Coordinator: Sh. Suresh Kumar

Principal  
Markanda National College  
Shahabad Markanda (Haryana)

## VALUE ADDED COURSE

<b>Course Name</b> <b>Session-2021-22</b>	<b>HYDROPONICS: SOIL LESS FARMING</b>
<b>Training cum practicum Period</b>	<b>Maximum Marks</b>
<b>30 Hours with Hands on training and practice</b>	<b>40 + 10= 50 (Theory + *Practical)</b> <b>(*Vice-voce only)</b>
<b>Evaluation and Grading: After completion of Course and contact hours</b>	
<b><u>OBJECTIVES:</u></b>	
<ul style="list-style-type: none"> <li>• To provide an understanding of modern technology and its application to growing plants, with emphasis being placed on hydroponics production of commercially valuable plants.</li> <li>• Completing the deficiency of fulfillment of vegetables through this technique.</li> <li>• Through this technique, the students move towards a scientific method of farming.</li> <li>• Through this technique, a lot of interest should be generated among the people due to reforms and results of agriculture.</li> <li>• To assist students in setting up various start-ups.</li> </ul>	
<b><u>AIMS</u></b>	
<ul style="list-style-type: none"> <li>➤ Identify the nutritional requirements of plants and how these can be met hydroponically</li> <li>➤ Discuss the effects of temperature and plant growing strategies for different temperature conditions</li> <li>➤ Design and conduct a trial to evaluate the commercial prospect of growing a chosen hydroponic crop</li> <li>➤ Investigate the varieties and properties of different growing media</li> <li>➤ Identify chemical requirements for different plants/crops</li> </ul>	



### Syllabus

<b>UNIT-1</b>	Introduction: Hydroponics Technique, for adopting of Hydroponic water based agricultural modern and advanced technique, objectives, applications, Advantages, disadvantages
<b>UNIT-2</b>	Plant Growth Requirements – Light, pesticides, nutrition's and manure, nutrition's management
<b>UNIT-3</b>	Chemical fertilizers, water consumption, Role of TDS meter, P <sub>H</sub> meter, conductivity/ EC meter, atmospheric and climatic conditions
<b>UNIT-4</b>	Hydroponics methods-Types (Kratky, Wick, DWC, DFT, NFT etc.), Advantages and disadvantages

**Practicals: Hands on training on some types of Hydroponics systems. Students will grow plants hydroponically (Leafy plants, vegetables and flowers etc.)**





# MARKANDA NATIONAL COLLEGE

Shahabad Markanda - 136135 (Kurukshetra)

Ref. No.

Date 08.11.2021

## नोटिस

सभी विद्यार्थियों को सूचित किया जाता है कि रसायन विज्ञान विभाग द्वारा HYDROPONICS : SOIL LESS FARMING से संबंधित एक Value Added Course का शुभारंभ किया जाएगा जिसका समय 30 घंटे रहेगा। इस कोर्स में प्रैक्टिकल के माध्यम से पानी में पौधे कैसे उगाए जायेंगे, के बारे में सिखलाई होगी। अतः इच्छुक कैडेट अपना नाम प्रो. सुरेश कुमार के पास 10 नवंबर 2021 तक नोट करवाये ताकि कक्षाएं समय पर प्रारंभ हो सके।

**नोट : No Free Registration**

  
Incharge

Prof. Suresh Kumar (HOD-Chemistry)





Principal  
Markanda National College  
Shahabad Markanda (Haryana)

Dr. Ashok Kumar

# MARKANDA NATIONAL COLLEGE SHAHABAD MARKANDA

## Department of Chemistry

### RESULT SHEET

Value Added Certificate Course: **HYDROPONICS: SOIL LESS FARMING**


Session: 2021-22

Maximum Marks: Theory + Practical: 40 + 10

S. No	Name	Class	Roll No.	Marks Obtained		Total Marks	Grading
				Theory	Practical		
1	PRITI	B.Sc. 1 <sup>st</sup> Year	1212112015002	32	8	40	A
2	MUSKAN	B.Sc. 1 <sup>st</sup> Year	1212112015003	-	-	-	-
3	ANKIT RAI	B.Sc. 1 <sup>st</sup> Year	1212112015012	33	9	42	A
4	NEELAKSHI TANWAR	B.Sc. 1 <sup>st</sup> Year	1212112002004	25	8	33	B
5	KAMAL SINGH	B.Sc. 1 <sup>st</sup> Year	1212112015005	35	9	44	A <sup>+</sup>
6	LAKSHITA	B.A. 1 <sup>st</sup> Year	1222112002007	30	9	39	A
7	GURJOT	B.Sc. 1 <sup>st</sup> Year	12021100215011	26	7	33	B
8	SHRUTI	B.Sc. 3 <sup>rd</sup> Year	317260002	28	5	33	B
9	HARPREET KAUR	B.Sc. 3 <sup>rd</sup> Year	317260005	37	9	46	A <sup>+</sup>
10	GARIMA	B.Sc. 3 <sup>rd</sup> Year	317260006	26	7	33	B
11	MUSKAN	B.Sc. 3 <sup>rd</sup> Year	317260007	26	5	31	C
12.	KESHAV SAINI	B.Sc. 2 <sup>nd</sup> Year	120211015013	25	5	30	C
13.	ABHIJEET KUMAR	B.Sc. 1 <sup>st</sup> Year	1212112015016	28	8	36	B

  
Suresh Kumar  
Course Coordinator



  
Dr. Ashok Kumar  
Principal  
Markanda National College  
Shahabad Markanda (Haryana)

# MARKANDA NATIONAL COLLEGE SHAHABAD MARKANDA

Department of Chemistry

ATTENDANCE SHEET

1

Value Added Certificate Course: HYDROPONICS: SOLI LESS FARMING

Session: 2021-22

S. No	Name	Class	Roll No.	DATES																			
				11.11.21	12.11.21	18.11.21	20.11.21	24.11.21	1.12.21	2.12.21	7.12.21	8.12.21	14.12.21	15.12.21	20.12.21	27.12.21	28.12.21	6.01.22	7.01.22	8.01.22	25.01.22	26.01.22	
1	PRITI	B.Sc. 1 <sup>st</sup> Year	1212112015002	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
2	MUSKAN	B.Sc. 1 <sup>st</sup> Year	1212112015003	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
3	ANKIT RAJ	B.Sc. 1 <sup>st</sup> Year	1212112015012	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
4	NEELAKSHI TANWAR	B.Sc. 1 <sup>st</sup> Year	1212112002004	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
5	KAMAL SINGH	B.Sc. 1 <sup>st</sup> Year	1212112015005	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
6	LAKSHITA	B.A. 1 <sup>st</sup> Year	1222112002007	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
7	GURJOT	B.Sc. 1 <sup>st</sup> Year	12021100215011	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
8	SHRUTI	B.Sc. 2 <sup>nd</sup> Year	317260002	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
9	HARPREET KAUR	B.Sc. 2 <sup>nd</sup> Year	317260005	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P



**MARKANDA NATIONAL COLLEGE SHAHABAD MARKANDA**

Department of Chemistry  
ATTANDANCE SHEET

10	GARIMA	B.Sc. 2 <sup>nd</sup> Year	317260006	A	P	A	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
11	MUSKAN	B.Sc. 2 <sup>nd</sup> Year	317260007	P	P	P	P	A	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
12.	KESHAV SAINI	B.Sc. 2 <sup>nd</sup> Year	317260009	P	P	A	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
13.	Abhijeet Kr	B.Sc. I <sup>st</sup> Year	12-12-112015016	P	P	P	P	A	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P

*Sr*  
**Suresh Kumar**  
Course Coordinator

*Ashok Kumar*

**Dr. Ashok Kumar**  
Principal  
Markanda National College  
Shahabad Markanda (Haryana)





# MARKANDA NATIONAL COLLEGE

Ph.: - 01744-240152

Shahabad – Markanda -136135 (Kurukshetra)

Ref. No. MNC/22/.....


Date: 24/01/2022

## महत्वपूर्ण सूचना

सभी रसायन विज्ञान विभाग द्वारा संचालित वैल्यू एडेड कोर्स में रजिस्टर्ड विद्यार्थियों को सूचित किया जाता है कि रसायन विज्ञान विभाग द्वारा संचालित "Hydroponics: Soil Less Farming" अवधि 30 घंटे, Value Added Course (सत्र 2021-22) संपन्न हुआ है, उसकी परीक्षा तिथि 30 जनवरी, 2022 है। अतः रजिस्टर्ड विद्यार्थी दोपहर 2:00 बजे केमेस्ट्री lab में परीक्षा देने के लिए उपस्थित हों।

  
प्रो. सुरेश कुमार

विभागाध्यक्ष, रसायन विज्ञान

  
Principar डॉ. अशोक कुमार  
Markanda National College-  
Shahabad Markanda प्राचार्य (Haryana)





12:02 PM | 4.9KB/s

4G 84



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Tue, 11 Oct, 2022 • 2:24 pm

Add a caption...

Details



Xiaomi POCO M2 Pro  
f/1.8 • 1/100 • 4.74 mm • ISO108



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12.0MP • 4000 x 3000



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Tue, 18 Jan, 2022 • 2:30 pm


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### Details

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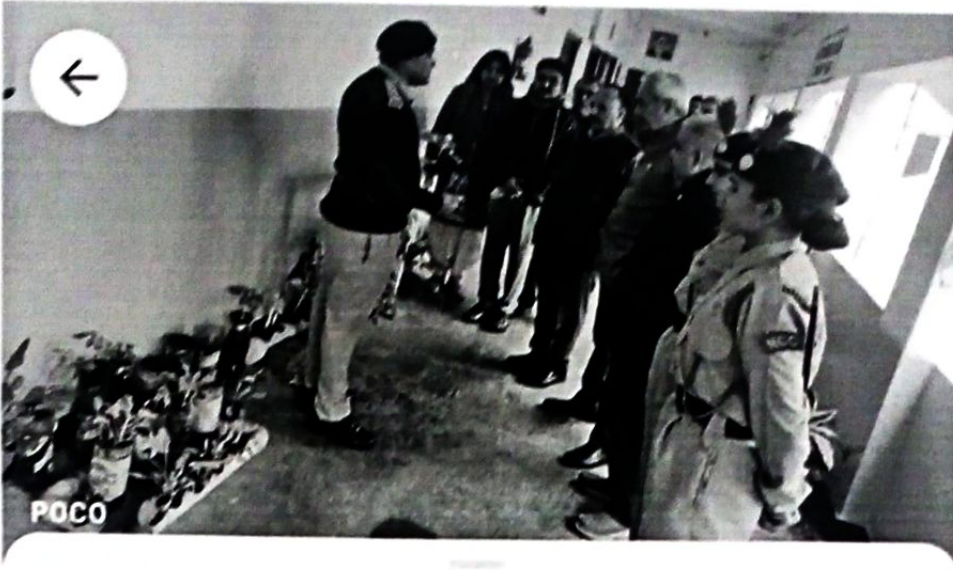
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 12.0MP • 3000 x 4000

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 **Backed up (3.1 MB)**  
 Original quality. [Learn more](#)

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Wed, 26 Jan, 2022 • 10:21 am

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### Details



Xiaomi POCO M2 Pro  
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Add a location



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Sat, 8 Jan, 2022 • 10:54 am

Add a caption...

Details



Xiaomi POCO M2 Pro  
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Tue, 11 Oct, 2022 • 2:23 pm

Add a caption...

### Details



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# MARKANDA NATIONAL COLLEGE

SHAHABAD MARKANDA, DIST. KURUKSHETRA, HARYANA (INDIA)

(Affiliated to Kurukshetra University, Kurukshetra)

<https://mncs.ac.in>

email:mncshahabad@yahoo.co.in

Ph: +91-01744-240152

Sr. No. 01

Dated: 11 / 02 / 2022

## CERTIFICATE

This is to certify that Mr./Miss Poiti

S/D/O Gurmej

has completed the value Added Certificate course titled

HYDROPONICS: SOIL LESS FARMING

conducted by DEPARTMENT OF CHEMISTRY

from 2021 to 2022 for 30 hours.

He/She secured grade A.

Course Coordinator

Principal  
Markanda National College  
Shahabad Markanda (Haryana)

Principal Signature & Seal

Markanda National College  
Principal

Marks Percentage	85% above	75-84%	65-74%	50-64%	40-50%
Grade	A+	A	B	C	D



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email:mncshahabad@yahoo.co.in

Ph: +91-01744-240152

Sr. No. 03

Dated: 11 / 02 / 2022

## CERTIFICATE

This is to certify that <sup>✓</sup>Mr./Miss ANKIT RAI

<sup>✓</sup>S/D/O Gulab Rani

has completed the value Added Certificate course titled

HYDROPONICS: SOIL LESS FARMING

conducted by DEPARTMENT OF CHEMISTRY

from 2021 to 2022 for 30 hours.

He/She secured grade A.

Principal  
Markanda National College  
Shahabad Markanda (Haryana)

Principal Signature & Seal

Course Coordinator

Marks Percentage	85% above	75-84%	65-74%	50-64%	40-50%
Grade	A+	A	B	C	D



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email:mncshahabad@yahoo.co.in

Ph: +91-01744-240152

Sr. No. 04

Dated: 11 / 02 / 2022

## CERTIFICATE

This is to certify that Mr./Miss NEELAKSHI TANWAR

S/D/O KANWARJEET

has completed the value Added Certificate course titled

HYDROPONICS : SOIL LESS FARMING

conducted by DEPARTMENT OF CHEMISTRY

from 2021 to 2022 for 30 hours.

He/She secured grade B.

  
Course Coordinator



Principal  
Markanda National College,  
Shahabad Markanda, Kurukshetra  
Principal Signature & Seal

Marks Percentage  
Grade

85% above  
A+

75-84%  
A

65-74%  
B

50-64%  
C

40-50%  
D





# MARKANDA NATIONAL COLLEGE

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email:mncshahabad@yahoo.co.in

Ph: +91-01744-240152

Sr. No. 05

Dated: 11 / 02 / 2022

## CERTIFICATE

This is to certify that Mr./Miss KAMAL Singh

✓  
S/D/O PAWAN KUMAR

has completed the value Added Certificate course titled

HYDROPONICS : SOIL LESS FARMING

conducted by DEPARTMENT OF Chemistry

from 2021 to 2022 for 30 hours.

He/She secured grade A+.

Course Coordinator

Principal  
Markanda National College

Shahabad Markanda, Haryana

Principal Signature & Seal

Marks Percentage  
Grade

85% above  
A+

75-84%  
A

65-74%  
B

50-64%  
C

40-50%  
D

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[email:mncshahabad@yahoo.co.in](mailto:mncshahabad@yahoo.co.in)

Ph: +91-01744-240152

Sr. No. 06

Dated: 11 / 02 / 2022

## CERTIFICATE

This is to certify that Mr./Miss LAKSHITA

S/D/O BALDEV

has completed the value Added Certificate course titled


HYDROPONICS: SOIL LESS FARMING

conducted by DEPARTMENT OF CHEMISTRY

from 2021 to 2022 for 30 hours.

He/She secured grade A.

  
Course Coordinator

  
Principal  
Markanda National College  
Shahabad Markanda (Haryana)  
Principal Signature & Seal

Marks Percentage  
Grade

85% above  
A+

75-84%  
A

65-74%  
B

50-64%  
C

40-50%  
D



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email: [mncshahabad@yahoo.co.in](mailto:mncshahabad@yahoo.co.in)

Ph: +91-01744-240152

Sr. No. 07

Dated: 11 / 02 / 2022

## CERTIFICATE

This is to certify that Mr./Miss GURJOT

S/D/O JASWINDER SINGH

has completed the value Added Certificate course titled

HYDROPONICS: SOIL LESS FARMING

conducted by DEPARTMENT OF CHEMISTRY

from 2021 to 2022 for 30 hours.

He/She secured grade B.

Course Coordinator

Principal  
Markanda National College  
Shahabad Markanda (Haryana)

Principal Signature & Seal

Marks Percentage  
Grade

85% above  
A+

75-84%  
A

65-74%  
B

50-64%  
C

40-50%  
D



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Ph: +91-01744-240152

Sr. No. 08

Dated: 11 / 02 / 2022

## CERTIFICATE

This is to certify that Mr./Miss SHRUTI

S/D/O YOGESH SHARMA

has completed the value Added Certificate course titled

HYDROPONICS: SOIL LESS FARMING

conducted by DEPARTMENT OF CHEMISTRY

from 2021 to 2022 for 30 hours.

He/She secured grade B.

  
Course Coordinator



Principal  
Markanda National College

Shahabad Markanda (Haryana)

Principal Signature & Seal

Marks Percentage  
Grade

85% above  
A+

75-84%  
A

65-74%  
B

50-64%  
C

40-50%  
D



# MARKANDA NATIONAL COLLEGE

SHAHABAD MARKANDA, DIST. KURUKSHETRA, HARYANA (INDIA)

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email: [mncshahabad@yahoo.co.in](mailto:mncshahabad@yahoo.co.in)

Ph: +91-01744-240152

Sr. No. 09

Dated: 11 / 02 / 2022

## CERTIFICATE

This is to certify that Mr./Miss HARPREET KAUR

S/D/O Gurpreet Singh

has completed the value Added Certificate course titled

HYDROPONICS: SOIL LESS FARMING

conducted by DEPARTMENT OF CHEMISTRY

from 2021 to 2022 for 30 hours.

He/She secured grade A+.

  
Course Coordinator



Principal  
Markanda National College  
Shahabad Markanda, Haryana  
Principal Signature & Seal

Marks Percentage Grade	85% above A+	75-84% A	65-74% B	50-64% C	40-50% D
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# MARKANDA NATIONAL COLLEGE

SHAHABAD MARKANDA, DIST. KURUKSHETRA, HARYANA (INDIA)

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Ph: +91-01744-240152

Sr. No. 10

Dated: 11 / 02 / 2022

## CERTIFICATE

This is to certify that Mr./Miss GARIMA

S/D/O NEERAJ SHARMA

has completed the value Added Certificate course titled

HYDROPONICS: SOIL LESS FARMING

conducted by DEPARTMENT OF CHEMISTRY

from 2021 to 2022 for 30 hours.

He/She secured grade B.

[Signature]  
Course Coordinator

[Signature]

Principal  
Markanda National College  
Shahabad Markanda, Haryana  
Principal Signature & Seal

Marks Percentage  
Grade

85% above  
A+

75-84%  
A

65-74%  
B

50-64%  
C

40-50%  
D



# MARKANDA NATIONAL COLLEGE

SHAHABAD MARKANDA, DIST. KURUKSHETRA, HARYANA (INDIA)

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https://mnscs.ac.in

email:mncshahabad@yahoo.co.in

Ph: +91-01744-240152

Sr. No. 11

Dated: 11 / 02 / 2022

## CERTIFICATE

This is to certify that Mr./Miss MUSKAN

S/D/O \_\_\_\_\_

has completed the value Added Certificate course titled


HYDROPONICS: Soil less FARMING.

conducted by Department of Chemistry

from 2021 to 2022 for 30 hours.

He/She secured grade C.

  
Course Coordinator

  
Principal  
Markanda National College  
Shahabad Markanda, Dist. Kurukshetra, Haryana  
Principal Signature & Seal

Marks Percentage  
Grade

85% above  
A+

75-84%  
A

65-74%  
B

50-64%  
C

40-50%  
D



# MARKANDA NATIONAL COLLEGE

SHAHABAD MARKANDA, DIST. KURUKSHETRA, HARYANA (INDIA)

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<https://mnscs.ac.in>

email:mncshahabad@yahoo.co.in

Ph: +91-01744-240152

Sr. No. 12

Dated: 11 / 02 / 2022

## CERTIFICATE

This is to certify that Mr./Miss KESHAV Saini

✓  
S/D/O Ghanshyam

has completed the value Added Certificate course titled

HYDROPONICS: SOIL LESS FARMING

conducted by DEPARTMENT OF CHEMISTRY

from 2021 to 2022 for 30 hours.

He/She secured grade C.

**Course Coordinator**

Principal  
Principal Signature & Seal  
Shahabad Markanda (Haryana)

Marks Percentage  
Grade

85% above  
A+

75-84%  
A

65-74%  
B

50-64%  
C

40-50%  
D





# MARKANDA NATIONAL COLLEGE

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email:mncshahabad@yahoo.co.in

Ph: +91-01744-240152

Sr. No. 13

Dated: 11 / 02 / 2022

## CERTIFICATE

This is to certify that Mr./Miss ABHIJEET KUMAR

✓ S/D/O NARESH KUMAR

has completed the value Added Certificate course titled

HYDROPONICS: SOIL LESS FARMING

conducted by DEPARTMENT OF CHEMISTRY

from 2021 to 2022 for 30 hours.

He/She secured grade 'B'.

Course Coordinator

Principal Signature & Seal

Marks Percentage  
Grade

85% above  
A+

75-84%  
A

65-74%  
B

50-64%  
C

40-50%  
D