

# Energy Management and Renewable Energy Intervention for Industrial Drying

(A course under *Global Initiative of Academic Networks -GIAN*)

## Overview

Drying is the most common, and perhaps the oldest operation of thermal removal of water and is common to almost all industries. There is a direct correlation between the amount of water thermally removed in industrial operations and the GDP of the country. Thus, as the developing economies of the world raise their GDPs there is an increase in the energy needs for drying and the resulting increase in environmental concerns.


Estimates of energy consumption for industrial drying in the developed countries range from 11% (e.g., Canada, France, Sweden, USA) to more than 20% (e.g., Denmark, Germany). Most of this energy comes from combustion of fossil fuels. Most industrial dryers operate at thermal efficiencies ranging from a low of 20% to 80% with a median value of about 50%. Consumption of large amounts of energy in drying - both thermal and electrical - leading to high emission of greenhouse gases as a result of fossil fuel consumption has triggered the development of new sustainable technologies with the use of renewable energies. The scheduled course aims at giving an exposure to the issues and progresses in the field and providing updated knowledge to equip to address the emerging need of evolving, adopting, and implementing energy smart industrial drying practices.

## Major topics to be covered

- Industrial drying systems
- Advances in drying process analysis
- Processes of drying of paper and pulp, tea, low rank coals and biomass
- Energy assessment for typical industrial drying practices
- Waste heat recovery for drying
- Drying practices based on solar energy and energy from biomass
- Opportunities and challenges of renewable energy application in drying operations
- Economic and Environmental analysis of renewable energy applications in drying operations

  
Head  
Department of Energy  
Tezpur University

<b>Duration</b>	13/06/2016 to 24/06/2016 <b>Number of participants for the course will be limited to fifty.</b>
<b>You Should attend If...</b>	<ul style="list-style-type: none"> <li>▪ you are a student or faculty from academic institution or one working in industry interested to learn about <i>industrial drying , recent advances in drying and dryers</i></li> <li>▪ you are interested to learn the fundamentals of <i>drying principles its relationship with energy conservation</i></li> <li>▪ you are a college/university teacher interested to have an exposure to some specified topics of industrial drying, that are not usually covered in a usual college /university course.</li> <li>▪ you are interested to pursue a career as researcher or as industrial consultant in the areas of industrial drying</li> </ul>
<b>Fees</b>	<p>The participation fees for taking the course are as follows:</p> <p><b>Participants from abroad: US \$500</b></p> <p><b>Industry/ Research Organizations: Rs. 10,000.00</b></p> <p><b>Faculty from Academic Institutions: Rs. 5,000.00</b></p> <p><b>Research Scholars: Rs. 3,000.00</b></p> <p><b>PG Students: Rs. 1,000.00</b></p> <p>The above fee includes all instructional materials, computer use for tutorials and assignments, laboratory equipment usage charges, 24-hour free internet facility. The participants will be provided with accommodation on payment basis in the University Guest House (current official rate is Rs.500/- per day for single occupancy; Rs.400/- per day for double occupancy and Rs.300/- per day in the dormitory of the guest house) and outstation research scholars/PG students will be accommodated in the University hostels (current official rate is Rs. 150/- per day with bed roll).</p>

  
 - Head  
 Department of Energy  
 Tezpur University

## The Faculties



Dr. Bilash Kanti Bala is a Professor in the Department of Agro Product Processing Technology, Jessore University of Science and Technology, Jessore, Bangladesh. Professor Bala, a PhD from the University of Newcastle upon Tyne, UK, has started his carrier as an Assistant Professor at the Faculty of Agricultural Engineering and Technology, Bangladesh Agricultural University, Mymensingh, Bangladesh, in 1970 and then served the University in different positions including Professor, Dean. He also worked as a Researcher at the Agricultural and Food Policy Studies Institute, Universiti Putra Malaysia (UPM).

Professor Bala has taught subjects on agricultural process engineering, rural electrification and electrical machinery at the undergraduate levels and system dynamics, bio-resources modelling and advanced agricultural process engineering. His research topics and consultancies include agriculture and food policy, modelling of agricultural, biological, aquacultural, environmental and socio-economic systems, drying and storage of agricultural products, energy and environment and climate change. He has completed many research and consultancy projects of national and international organizations including World Bank, German Energy Foundation, DFID, GTZ and FAO.

Besides numerous research publications, Prof Bala has authored Eight Books in the areas of Drying and storage, energy and environment, system dynamics, Renewable energy, energy transmission, and electrical machineries. He has also served as Associate Editor of Energy-An International Journal from 1991-1996; Founding Editor, Bangladesh Journal of Agricultural Engineering from 1987-1990 and member of the editorial board, International Journal of System Dynamics and Policy Planning since 1990.



**Prof. Debendra Chandra Baruah** is in the Department of Energy, Tezpur University, Assam. His research interest includes applications of renewable energy and energy conservation in different facilities including farming and industries. Prof. Baruah has published more than 50 research papers and guided/guiding 14 PhD Scholars and more than 32 M Tech students. Prof Baruah has experiences of handling National and International collaborative research projects and also visits countries including USA, UK, Bangladesh and Thailand on academic and research purposes.




**Dr. Manuj Kumar Hazarika** is an Associate Professor in the Department of Food Engineering and Technology, Tezpur University, Assam. A PhD from IIT Kharagpur on Modelling of Drying, his current research interests include drying of agricultural and food products, process modelling, and transport processes in biomaterials. Dr. Hazarika has guided M Tech project work of 11 students, currently guiding 03 research scholars and has 15 publications to his credit including one book chapter on energy conservation in food processing.

**Travel Information:** The University campus is located about 15 km east of Tezpur, the headquarters of Sonitpur District of Assam, INDIA. It is well connected with Guwahati, the capital city of Assam, which is about 200 km from Tezpur. Guwahati is also well connected by air and train with the rest of the country.

**Registration:** Interested participants will have to first register with the GIAN website (<http://www.gian.iitkgp.ac.in>) for a one-time registration fees of Rs. 500.00 which will enable them to enrol for any number of courses being offered. Subsequent registration will have to be done with Tezpur University by paying the requisite fees and filling up the Registration form attached with this brochure. Duly filled in registration form can be sent to the coordinator both by online and offline mode.

## Course Coordinators

- 1. Prof. Debendra Chandra Baruah**  
Department of Energy  
Tezpur University, Napaam-784028,  
Sonitpur Assam, INDIA  
Phone: (+91)-3712-275307,  
09435508563(M)  
E-mail: [baruahd@tezu.ernet.in](mailto:baruahd@tezu.ernet.in)
- 2. Prof. Manuj Kumar Hazarika**  
Department of Food Engineering  
Technology  
Tezpur University, Napaam-784028,  
Sonitpur Assam, INDIA  
E-mail: [mkhazarika@tezu.ernet.in](mailto:mkhazarika@tezu.ernet.in)  
.....  
<http://www.gian.iitkgp.ac.in/GREGN>

  
Head  
Department of Energy  
Tezpur University

**A GIAN Course on**  
**Energy Management and Renewable Energy Intervention for Industrial Drying**  
**June 13 - June 24, 2016**

**Department of Energy in collaboration with**  
**Department of Food Engineering and Technology**  
Tezpur University  
Napaam-784028, Sonitpur, Assam, INDIA

**REGISTRATION CUM ACCOMODATION REQUEST FORM**

**(To reach electronically by April 25, 2016 and hard copy by June 6, 2016)**

Name (Block Letters): ..... M/F: .....

Designation/ Professional Title: .....

Organization: .....

Address: .....

Tel.: ..... Mobile: .....

E- mail: .....


Accommodation Required (Yes/ No): .....

Single Accommodation (Yes/ NO) : .....

Double Accommodation (Yes/ NO):.....

The Registration fee of Rupees .....has been paid via Demand Draft No.....in favour of The Registrar, Tezpur University/Through SBI online/offline banking bearing Transaction No. .... to SBI Tezpur Main Branch (RTGS/IFSC code: SBIN0000195, Bank MICR Code: 784002002) A/C No. 30448821505 of Tezpur University. Demand Draft/ Fee Receipt have been enclosed herewith.

Date:


  
- Head  
Department of Energy  
Tezpur University

Signature



Energy Management and Renewable Energy Intervention for Industrial Drying  
A Two- Week GIAN Course: June 13 – June 24, 2016  
Department of Energy in collaboration with Department of Food Engineering and  
Technology  
Tezpur University, Tezpur, Assam  
(President of India's Best Central University & Government of India's 5<sup>th</sup> NIRF  
ranked in 2016)

Schedule	10:00 – 11:00 (Lecture)	11:00 – 12:00 (Lecture)	12:00 – 13:00 (Lecture)	14:00 – 16:00 (Tutorial)
<b>Module A: Energy Assessment for Industrial Drying</b>				
13.6.2016 (Monday)	Inauguration and Course Introduction	Drying fundamental	Thin layer drying performance evaluation	Drying kinetics
14.6.2016 (Tuesday)	Deep bed and continuous flow drying – modeling and simulation	Psychrometry I	Psychrometry II	Modeling/Simulation of drying
15.6.2016 (Wednesday)	Drying: grains/seed/fruits/vegetables	Withering/drying of tea	Drying of paper/pulp	Drying of products
16.6.2016 (Thursday)	Drying of low rank coals and biomass	Drying systems	Dryers: Classification and selection	Selection of Dryer
17.6.2016 (Friday)	Energy/exergy analysis	Dryers: Recent developments and innovation	Industrial drying: Recent advances in drying process	Efficiency assessment /exergy analysis

  
Head  
Department of Energy  
Tezpur University

Contd.

Energy Management and Renewable Energy Intervention for Industrial Drying

A Two- Week GIAN Course: June 13 – June 24, 2016

Department of Energy in collaboration with Department of Food Engineering and Technology  
Tezpur University, Tezpur, Assam

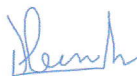
(President of India's Best Central University & Government of India's 5<sup>th</sup> NIRF ranked in 2016)

Schedule	10:00 – 11:00 (Lecture)	11:00 – 12:00 (Lecture)	12:00 – 13:00 (Lecture)	14:00 – 16:00 (Tutorial)
<b>Module B: Energy management and RE intervention in Industrial drying</b>				
20.6.2016 (Monday)	Energy requirement/energy conservation principles	Thermal energy transmission: Source to heating medium	Thermal energy transmission: Heating medium to process material	Assessment of heat transfer and heat loss
21.6.2016 (Tuesday)	Waste heat recovery	Heat pump	Energy conservation in industrial drying: state of the art	Solar hot air generators for drying
22.6.2016 (Wednesday)	Life Cycle Analysis (LCA) of drying	Solar thermal energy generation	Solar drying systems and industrial drying for fruits and vegetables	Solar drying systems
23.6.2016 (Thursday)	Thermal energy generation from biomass: Fundamentals	Biomass based thermal energy generation: Practices	Renewable Energy and energy conservation in industrial drying	Biomass gasifier and anaerobic digester as RE sources for drying
24.6.2016 (Friday)	Economics of Energy conservaton	Economics of renewable energy applications	Assessment and feedback	Wrap-up

**Total Duration: 10 days (~50 Hours): daily 10:00 to 16:00 Hr on working days with one hour break at 14:00 Hr**

**Textbooks:** (1) Bala B K, Drying and Storage of Cereal Grains – Wiley; (2) Bala B K, Renewable Energy–Agrotech Publishing Academy; (3) Bala. B K, Solar Drying Systems – Agrotech Publishing Academy; (4) Short Walter, P J Daniel, Holt Thomas, A Manual for Economic Evaluation of Energy Efficiency and Renewable Energy Technologies, NREL Publication, USDE, University Press of the Pacific Hawali

**Faculties:** Prof B K Bala (Foreign Faculty)/Prof D C Baruah/Dr M K Hazarika (Local Faculties)



(D C Baruah) 2 June 2016

**Head**  
**Department of Energy**  
**Tezpur University**



## Energy Management and Renewable Energy Intervention for Industrial Drying

*A Two- Week GIAN Course: June 13 – June 24, 2016*

Department of Energy in collaboration with Department of Food Engineering and Technology  
Tezpur University, Tezpur, Assam  
(President of India's Best Central University & Government of India's 5<sup>th</sup> NIRF ranked in 2016)

### Schedule of Inaugural Function (10:00 am to 11:00 am), June 13, 2016

Venue Seminar Room, Department of Energy

Time	Item
10:05 am	Guests take the Dias on request (Hon'ble Vice Chancellor, Prof B K Bala, Resource Person, Prof C L Mahanta, Dean, SoE, Prof N Deka Baruah, Local Coordinator GIAN, Prof D C Baruah, Course Coordinator of GIAN Course Dr M K Hazarika, Course Coordinator of GIAN Course)
10:08 am	Lighting of Lamp
10:10 am:	Felicitation of Guests
10:13 am	Welcome address by Coordinator of the GIAN Course
10:17 am	About GIAN by Local Coordinator GIAN, Prof. N Deka Baruah
10:20 am	Inaugural address by the Hon'ble Vice Chancellor, Tezpur University
10:30 am	Introduction of the Resource Person Co-coordinator,
10:33 am	Address by the Resource Person, Prof. B K Bala
10:40 am	10:40 am: Address by the Dean, SoE, Prof. C L Mahanta
10:43 am	Proposing vote of Thanks by Dr. Nabin Sarma, Asst. Prof. Dept. of Energy
10:47 am	High Tea

*201*  
Head  
Department of Energy  
Tezpur University

Signature sheet (13<sup>th</sup> june 2016)


#	Name	Morning	Afternoon
1	ABDUL HAMID LASKAR	Abdul Hamid Laskar	Abdul Hamid Laskar
2	ABHAY LINGAYAT	Abhay	Abhay
3	ASHUTOSH DAS	Asas	Asas
4	BARKHANG BRAHMA	Barkhang Brahma	Barkhang Brahma
5	BHASKARJIT BARUAH GOGOI	Bhaskarjit	Bhaskarjit
6	BIRAJ DAS	Biraj Das	Biraj Das
7	BISWAJIT GOGOI	Biswas	Biswas
8	DEBRAJ PRADHAN	Pradhan	Pradhan
9	DEEP BURAGOHAIN	Deep Buragohain	Deep Buragohain
10	DIPAL BARUAH	Dipal	Dipal
11	DIPAM PATOWARY	Dipam Patowary	Dipam Patowary
12	DOLJIT BORAH	Doljith	Doljith
13	GUNAJIT DEV SARMA	G.Sarma	G.Sarma
14	HEMANTA CHUTIA	Hemanta Chutia	Hemanta Chutia
15	KANDARPA SAMUA	Kandarpa Samua	Kandarpa Samua
16	MAMIN UDDIN AHMED	Mamin Uddin Ahmed	Mamin Uddin Ahmed
17	MUSHARAB KHAN	Musharab Khan	Musharab Khan
18	NABAB FAZLUL ISLAM	Nabab Fazlul Islam	Nabab Fazlul Islam
19	PARVINDER SINGH	Parvinder Singh	Parvinder Singh
20	PRANJAL PRATIM DAS	Pranjal Pratim Das	Pranjal Pratim Das
21	PREETISAGAR TALUKDAR	Preetisagar	Preetisagar
22	PURBA PRASAD BORAH	Purba Prasad Borah	Purba Prasad Borah
23	RITURAJ DUTTA	R. Dutta	R. Dutta
24	RUPAM PATOWARY	Rupam Patowary	Rupam Patowary
25	SAMARJIT GOGOI	Samarjit Gogoi	Samarjit Gogoi
26	SAMPRITI KATAKI	Samprihi Katakai	Samprihi Katakai
27	SANDEEP KUMAR	Sandeep Kumar	Sandeep Kumar
28	SAURAV BORUAH	Saurav Boruah	Saurav Boruah
29	SOURAV CHAKRABORTY	Sourav Chakraborty	Sourav Chakraborty
30	TANMAY JYOTI DEKA	Tanmay J. DeKa	Tanmay J. DeKa
31	SANGEETA GOPE	Sangeeta	Sangeeta
32	TARI GHOSH	Tari Ghosh	Tari Ghosh
33	DIPANNITA DAS	Dipannita Das	Dipannita
34	NUMAN SIDDIQUI	Ns	Ns

Head  
Department of Energy  
Tezpur University

## List of participants for GIAN course

#	App No	Name	Signature
✓ 1	2015150119105	ABDUL HAMID LASKAR	Abdul Hamid Laskar
2	2015150614763	ABHAY LINGAYAT	Abhay Lingayat
3	2015150123370	ASHUTOSH DAS	Ashutosh Das
4	2015150116325	BARKHANG BRAHMA	Barkhang Brahma
5	2015150223537	BHASKARJIT BARUAH GOGOI	Bhaskarjit Baruah Gogoi
6	2015150623644	BIRAJ DAS	Biraj Das
7	2015150523606	BISWAJIT GOGOI	Biswajit Gogoi
8	2015150513564	DEBNATH PAHARI ✗	
9	2015150723287	DEBRAJ PRADHAN	Debraj Pradhan
10	2015150523567	DEEP BURAGOHAIN	
11	2015150623635	DIPAL BARUAH	
12	2015150623492	DIPAM PATOWARY	
13	2015150923494	DOLJIT BORAH	Doljit Borah
14	2015150223514	GUNAJIT DEV SARMA	
15	2015150523413	HEMANTA CHUTIA	Hemanta Chutia
16	2015150423664	KANDARPA SAMUA	Kandarpa Samua
17	2015150319391	MAMIN UDDIN AHMED	Mamin Uddin Ahmed
18	2015150323399	MUSHARAB KHAN	Musharab Khan
19	2015150319380	NABAB FAZLUL ISLAM	Nabab Fazlul Islam
20	2015150923592	PARVINDER SINGH	Parvinder Singh
21	2015150223272	PRANJAL PRATIM DAS	Pranjal Pratim Das
22	2015150223335	PREETISAGAR TALUKDAR	Preetisagar Talukdar
23	2015150323571	PURBA PRASAD BORAH	Purba Prasad Borah
24	2015150523674	RITURAJ DUTTA	Rituraj Dutta
25	2015150023493	RUPAM PATOWARY	
26	2015150223580	SAMARJIT GOGOI	
27	2015150123428	SAMPRITI KATAKI	
28	2015150821999	SANDEEP KUMAR	Sandeep Kumar
29	2015150623577	SAURAV BORUAH	
30	2015150423559	SOURAV CHAKRABORTY	
31	2015150023679	TANMAY JYOTI DEKA	Tanmay Jyoti Deka
32	2015150316271	VUDUKU BALAJI ✗	

33 Indusroy 31 Sangeeta Gope No file (1 notebook, 1 pen, 1 card)   
 34 32 Tabli Ghosh No file (1 notebook, 1 pen)   
 35 33 Dipamita Das No file (   
 36. 34 Numan Siddiqui - NB (No file, pen, 1 card)

  
 Head  
 Department of Energy  
 Tezpur University

Signature sheet (14<sup>th</sup> June, 2016)

#	Name	Morning	Afternoon
1	ABDUL HAMID LASKAR	Abdul Hamid Laskar	Abdul Hamid Laskar
2	ABHAY LINGAYAI	Abhay Lingayat	Abhay Lingayat
3	ASHUTOSH DAS	Asutosh Das	Asutosh Das
4	BARKHANG BRAHMA	Barkhang Brahma	Barkhang Brahma
5	BHASKARJIT BARUAH GOGOI	Bhaskarjit Baruah Gogoi	Bhaskarjit Baruah Gogoi
6	BIRAJ DAS	Biraj Das	Biraj Das
7	BISWAJIT GOGOI	Biswajit Gogoi	Biswajit Gogoi
8	DEBRAJ PRADHAN	Debraj Pradhan	Debraj Pradhan
9	DEEP BURAGOHAIN	Deep Buragohain	Deep Buragohain
10	DIPAL BARUAH	Dipal Baruah	Dipal Baruah
11	DIPAM PATOWARY	Dipam Patowary	Dipam Patowary
12	DOLJIT BORAH	Doljit Borah	Doljit Borah
13	GUNAJIT DEV SARMA	Gunajit Dev Sarma	Gunajit Dev Sarma
14	HEMANTA CHUTIA	Hemanta Chutia	Hemanta Chutia
15	HEMANTA SAMUA	Hemanta Samua	Hemanta Samua
16	MAMIN UDDIN AHMED	Mamin Uddin Ahmed	Mamin Uddin Ahmed
17	MUSHARAB KHAN	Musharab Khan	Musharab Khan
18	NABAB FAZLUL ISLAM	Nabab Fazlul Islam	Nabab Fazlul Islam
19	PARVINDER SINGH	Parvinder Singh	Parvinder Singh
20	PRANJAY PRATIM DAS	Pranjay Pratim Das	Pranjay Pratim Das
21	PREETISAGAR TALUKDAR	Preetisagar Talukdar	Preetisagar Talukdar
22	PURBA PRASAD BORAH	Purba Prasad Borah	Purba Prasad Borah
23	RUPAM PATOWARY	Rupam Patowary	Rupam Patowary
24	RUPAM PATOWARY	Rupam Patowary	Rupam Patowary
25	SAMARJIT GOGOI	Samarjit Gogoi	Samarjit Gogoi
26	SAMPRITI KATAKI	Sampriti Katarki	Sampriti Katarki
27	SANDEEP KUMAR	Sandeep Kumar	Sandeep Kumar
28	SANJAY BORTHAKUR	Sanjay Borthakur	Sanjay Borthakur
29	SOURAV CHAKRABORTY	Sourav Chakraborty	Sourav Chakraborty
30	TANMAY JYOTI DEKA	Tanmay Jyoti Deka	Tanmay Jyoti Deka
31	TANMAY JYOTI DEKA	Tanmay Jyoti Deka	Tanmay Jyoti Deka
32	TABLI GHOSH	Tabli Ghosh	Tabli Ghosh
33	DIPANNITA DAS	Dipannita Das	Dipannita Das
34	NUMAN SIDDIQUI	Numan Siddiqui	Numan Siddiqui


Head  
Department of Energy  
Tezpur University

## Signature sheet (15<sup>th</sup> June, 2016)

#	Name	Morning	Afternoon
1	ABDUL HAMID LASKAR	Abdul Hamid Laskar	Abdul Hamid Laskar
2	ABHAY LINGAYAT	ABhay	ABhay
3	ASHUTOSH DAS	ASas	ASas
4	BARKHANG BRAHMA	Barkhang Brahma	Barkhang Brahma
5	BHASKARJIT BARUAH GOGOI	BG	BG
6	BIRAJ DAS	Biraj Das	BG
7	BISWAJIT GOGOI	BG	BG
8	DEBRAJ PRADHAN	L	L
9	DEEP BURAGOHAIN	L	L
10	DIPAL BARUAH	D	D
11	DIPAM PATOWARY	Dipam Patowary	Dipam Patowary
12	DOLJIT BORAH	Doljit Borah	Doljit Borah
13	GUNAJIT DEV SARMA		
14	HEMANTA CHUTIA	Hemanta Chutia	Hemanta Chutia
15	KANDARPA SAMUA	Kandarpa Samua	Kandarpa Samua
16	MAMIN UDDIN AHMED	Mamin Uddin Ahmed	Mamin Uddin Ahmed
17	MUSHARAB KHAN	Musharab Khan	Musharab Khan
18	NABAB FAZLUL ISLAM	Nabab Fazlul Islam	Nabab Fazlul Islam
19	PARVINDER SINGH	Parvinder Singh	Parvinder Singh
20	PRANJAL PRATIM DAS	Pranjali Pratim Das	Pranjali Pratim Das
21	PREETISAGAR TALUKDAR	Preetisagar Talukdar	Preetisagar Talukdar
22	PURBA PRASAD BORAH	Purba Prasad Borah	Purba Prasad Borah
23	RITURAJ DUTTA	R. Dutta	R. Dutta
24	RUPAM PATOWARY	Rupam Patowary	Rupam Patowary
25	SAMARJIT GOGOI	Samarjit Gogoi	Samarjit Gogoi
26	SAMPRITI KATAKI	Sampriti Kataki	Sampriti Kataki
27	SANDEEP KUMAR	Sandeep Kumar	Sandeep Kumar
28	SAURAV BORUAH	Saurav Boruah	Saurav Boruah
29	SOURAV CHAKRABORTY		
30	TANMAY JYOTI DEKA	Tanmay J. Deka	Tanmay J. Deka
31	SANGEETA GOPE	Sangeeta Gope	Sangeeta Gope
32	TABLI GHOSH	Tabli Ghosh	Tabli Ghosh
33	DIPANNITA DAS	Dipannita Das	
34	NUMAN SIDDIQUI	N	N

Signature sheet (16<sup>th</sup> June, 2016)

#	Name	Morning	Afternoon
1	ABDUL HAMID LASKAR	Abdul Hamid Laskar	Abdul Hamid Laskar
2	ABHAY LINGAYAT	Abhay	Abhay
3	ASHUTOSH DAS	AS	
4	BARKHANG BRAHMA	Barkhang Brahma	Barkhang Brahma
6	BIRAJ DAS	Biraj Das	Biraj Das
7	BISWAJIT COGOI	Biswajit	Biswajit
9	DEEP BURAGOHAIR	Deep Buragochair	Deep Buragochair
10	DIPAL BARUAH	Dipal Baruah	Dipal Baruah
11	DIPAM PATOWARY	Dipam Patowary	Dipam Patowary
12	DOLJIT BORAH	Doljit Borah	Doljit Borah
14	HEMANTA CHUTIA	Hemanta Chutia	Hemanta Chutia
15	KANDARPA SAMUA	Kandarpa Samua	Kandarpa Samua
17	MUSHARAB KHAN	Musharab Khan	Musharab Khan
19	PARVINDER SINGH	Parvinder Singh	Parvinder Singh
20	PRANJAL PRATIM DAS	Pranjal Pratim Das	Pranjal Pratim Das
22	PURBA PRASAD BORAH	Purba Prasad Borah	Purba Prasad Borah
23	RITURAJ DUTTA	R. Dutta	Rituraj Dutta
24			
25	SAMARJIT GOGOI	Samarjit Gogoi	Samarjit Gogoi
27	SANDEEP KUMAR	Sandeep Kumar	Sandeep Kumar
28	SAURAV BORUAH	Saurav Boruah	Saurav Boruah
30	TANMAY JYOTI DEKA	Tanmay Jyoti Deka	Tanmay Jyoti Deka
31	SANGEETA COPE	Sangeeta Cope	Sangeeta Cope
33	DIPANNITA DAS	Dipannita Das	

  
 Head  
 Department of Energy  
 Tezpur University

## Signature sheet (17<sup>th</sup> June, 2016)


#	Name	Morning	Afternoon
1	ABDUL HAMID LASKAR	Abdul Hamid Laskar	Abdul Hamid Laskar
2	ABHAY LINGAYAT	ABlingay	ABlingay
3	ASHUTOSH DAS		
4	BARKHANG BRAHMA	Barkhang Brahma	B.B.
5	BHASKARJIT BARUAH GOGOI	Biraj Das	Biraj Das
6	BIRAJ DAS		
7	BISWAJIT GOGOI		
8	DEBRAJ PRADHAN	Debraj Pradhan	Debraj Pradhan
9	DEEP BURAGOHAIN	Deep Buragohain	Deep Buragohain
10	DIPAL BARUAH	D.	
11	DIPAM PATOWARY		
12	DOLJIT BORAH	Dol Borah	
14	HEMANTA CHUTIA	Hemanta Chutia	
15	KANDARPA SAMUA	Kandarpa Samua	Mamin Uddin Ahmed
17	MUSNARAB KHAN		
18	NABAB FAZLUL ISLAM	Nabab Fazlul Islam	Nabab Fazlul Islam
20	PRANJAL PRATHI DAS		
21	PREETISAGAR TALUKDAR	Preetisagar Talukdar	
23	RITURAJ DUTTA		
24	RIPAM PATOWARY	Ripam Patowary	
26	SAMPRITI KATAKI		
27	SANDEEP KUMAR	Sandeep Kumar	Sandeep Kumar
29	SOURAV CHAKRABORTY		
30	TANMAY IVOTI DEKA	Tanmay T. Deka	Tanmay T. Deka
32	TABLI GHOSH	Tabli Ghosh	Tabli Ghosh
	SIBANNITA DAS		Sibannita Das

  
 Head  
 Department of Energy  
 Tezpur University



# Signature sheet (18<sup>th</sup> June, 2016)

		Morning	Afternoon
1	ABDUL HAMID LASKAR	Abdul Hamid Laskar	Abdul Hamid Laskar
2	ABHAY LINGAVAT	Abhay Lingavat	Abhay Lingavat
3	ASHUTOSH DAS		Barkhang Brahma
4	BARKHANG BRAHMA	Barkhang Brahma	Barkhang Brahma
6	BIPAJ DAS	Bipaj Das	
7	DIPANNITA DAS		
8	DEEPAJ PRADHAN		Deep Buragohain
9	DEEP BURAGOHAIN	Deep Buragohain	Deep Buragohain
11	DIPAM PATOWARY		
12	DOLU BH BORAH		
13	GURWAJI DEV SANWA		Hemanta Chutia
14	HEMANTA CHUTIA	Hemanta Chutia	Hemanta Chutia
16	MAMIN UDDIN AHMED	Mamin Uddin Ahmed	Mamin Uddin Ahmed
17	MUSHAHAD KHAN	Mushahad Khan	
18	PARVINDER SINGH	Parvinder Singh	Parvinder Singh
19	PARVINDER SINGH	Parvinder Singh	Parvinder Singh
21	PURENIDHAR TALUKDAR	Purenidhar Talukdar	Purenidhar Talukdar
22	PURDA PRASAD BORAH	Purda Prasad Borah	Purda Prasad Borah
24	RUPAM PATOWARY	Rupam Patowary	Rupam Patowary
25	SAMARJIT GOOI		
27	SANDEEP KUMAR	Sandeep Kumar	Sandeep Kumar
28	SANDEEP KUMAR	Sandeep Kumar	Sandeep Kumar
29	TANMAY JYOTI DEKA	Tanmay J. Deka	Tanmay J. Deka
30	TANMAY JYOTI DEKA	Tanmay J. Deka	Tanmay J. Deka
32	TANUJ GHOSH	Tanuj Ghosh	
33	DIPANNITA DAS		

  
 Head  
 Department of Energy  
 Tezpur University

Sheet (20<sup>th</sup> June, 2016)

		Morning	Afternoon
2	ABHAY LINGAYAT	<del>Abhay</del>	<del>Abhay</del>
5	BHASKARJIT BARUAH GOGOI	<del>Bhaskarjit</del>	<del>Bhaskarjit</del>
7	BISWAJIT GOGOI	<del>Biswajit</del>	<del>Biswajit</del>
8	DERRAJ PRADHAN	<del>Derraj</del>	<del>Derraj</del>
10	DIPAL BARUAH	Dipal Baruah	
13	GUNAJIT DEV SARMA	Gunajit Dev Sarma	Gunajit Dev Sarma
16	MAMIN UDDIN AHMED	Mamin Uddin Ahmed	Mamin Uddin Ahmed
18	NABAB FAZLUL ISLAM	Nabab Fazlul Islam	Nabab Fazlul Islam
20	PARVINDER SINGH	Parvinder Singh	Parvinder Singh
21	PREETISAGAR TALUKDAR	Preetisagar Talukdar	Preetisagar Talukdar
24	RUPAM PATOWARY	Rupam Patowary	Rupam Patowary
27	SANDEEP KUMAR	Sandeep Kumar	Sandeep Kumar
29	SOURAV CHANMADONTI	Sourav Chanmadonti	
30	TANMAY JYOTI DEKA	Tanmay J. Deke	
32	TABLI GHOSH	Tabli Ghosh	
	DIPANNITA DAS	Dipannita Das	

DPJ

Head  
Department of Energy  
Tezpur University

Signature sheet (21<sup>th</sup> June, 2016)

#	Name	Morning	Afternoon
1	ABDUL HANIF LASKAR		Abdul Hanif Laskar
2	ABHAY LINGAYAT	Abhay	
3	ASHUTOSH DAS		Ashutosh Das
5	BHASKARJIT DARUAH GOGOI	Bhaskarjit Daruah Gogoi	
6	BIRAJ DAS	Biraj Das	Biraj Das
7	BISWAJIT GOGOI		
8	DEBRAJ PRADHAN	Debraj Pradhan	Debraj Pradhan
9	DEEPA DAS		
10	DIPAM PATOWARY	Dipam Patowary	Dipam Patowary
11	DIPAM PATOWARY	Dipam Patowary	Dipam Patowary
12	DIPAM PATOWARY	Dipam Patowary	Dipam Patowary
13	GURAJIT DEB SARMA		
14	HEMANTA CHUTIA	Hemanta Chutia	Hemanta Chutia
15	HEMANTA CHUTIA	Hemanta Chutia	Hemanta Chutia
16	MUSHARAB KHAN	Musharab Khan	Musharab Khan
17	MUSHARAB KHAN	Musharab Khan	Musharab Khan
19	PARVINDER SINGH	Parvinder Singh	Parvinder Singh
20	PRANJAL PRATIM DAS	Pranjal Pratim Das	Pranjal Pratim Das
22	PURBA PRASAD BORAH	Purba Prasad Borah	Purba Prasad Borah
23	RITURAJ DUTTA	Rituraj Dutta	Rituraj Dutta
25	SAMARJIT GOGOI		
26	SAMPRIKI KATAKI	Sampriki Katoki	Sampriki Katoki
28	SAURAV BORUAH	Saurav Boruah	Saurav Boruah
29	SOURAV CHAKRABORTY	Sourav Chakraborty	Sourav Chakraborty
31	SANGEETA GOPE	Sangeeta Gope	Sangeeta Gope
32	TABLI GHOSH	Tabli Ghosh	Tabli Ghosh
34	NUMAN SIDDIQUI		Numan Siddiqui

481 2101  
 Head  
 Department of Energy  
 Tezpur University

Signature sheet (22 June, 2019)

1	ABDUL HAMID LASKAR	Abdul Hamid Laskar	Abdul Hamid Laskar
2	ABHAY...		
4	BARKHANG BRAHMA	Barkhang Brahma	Barkhang Brahma
5	BHASKAR...		
7	BISWAJIT GOGOI	Biswajit Gogoi	
8	BISWAJIT...		
10	DIPAL BARUAH		
11	DIPAL...		
13	GUNAJIT DEV SARMA	Gunajit Dev Sarma	
14	GUNAJIT...		
16	MAMIN UDDIN AHMED	Mamin Uddin Ahmed	Mamin Uddin Ahmed
17	MAMIN...		
19	PARVINDER SINGH	Parvinder Singh	Parvinder Singh
20	PARVINDER...		
22	PURBA PRASAD BORAH	Purba Prasad Borah	Purba Prasad Borah
23	PURBA...		
25	SAMARJIT GOGOI	Samarjit Gogoi	
26	SAMARJIT...		
28	SAURAV BORUAH	Saurav Boruah	Saurav Boruah
29	SAURAV...		
31	SANGEETA GOPE	Sangeeta Gope	
32	SANGEETA...		
34	NUMAN SIDDIQUI	Numan Siddiqui	M

22/6/19  
 Department of Energy  
 Tezpur University

Signature sheet, 23<sup>rd</sup> June 2016

	NAME	Signature	Afternoon
1	ABDUL HAMID LASKAR	Abdul Hamid Laskar	ABUS
2	ARHAY LINGAYAT	ABUS	Dehujosh Das
3	ARHAY LINGAYAT		
4	BARKHANG BRAHMA	Barkhang Brahma	
5	BHASKAR JIT SARMA GOGOI		
6	BIRAJ DAS	Biraj Das	
7	BISWAJIT GOGOI	Biswajit Gogoi	Debruj Pradhan
8	BISWAJIT GOGOI		
9	DEEP BURAGUHAH		
10	DIPAL BARUAH		
11	DIPAL BARUAH		
12	DOLJIT BORAH		
13	GUNAJIT DEV SARMA	Gunajit Dev Sarma	Hemanta Chitra
14	GUNAJIT DEV SARMA		
15	KANDARIYA SAMUA	Kandariya Samua	
16	MAMIN UDDIN AHMED	Mamin Uddin Ahmed	Mamin Uddin Ahmed
17	MAMIN UDDIN AHMED		
18	NASAB FAZLUL ISLAM	Nasab Fazlul Islam	Nasab Fazlul Islam
19	PARVINDER SINGH	Parvinder Singh	Parvinder Singh
20	PARVINDER SINGH		
21	PREETISAGAR TALUKDAR	Preetisagar Talukdar	
22	PURBA PRASAD BORAH	Purba Prasad Borah	
23	PURBA PRASAD BORAH		
24	RUPAM PATOWARY	Rupam Patowary	
25	SAMARJIT GOGOI	Samarjit Gogoi	
26	SAMARJIT GOGOI		
27	SANDEEP KUMAR	Sandeep Kumar	
28	SAURAV BORUAH	Saurav Boruah	
29	SAURAV BORUAH		
30	TANIMAY JYOTI DEKA	Tanimay Jyoti Deka	
31	TANIMAY JYOTI DEKA		
32	TANIMAY JYOTI DEKA		
33	DIPANWITA DAS	Dipanjita Das	
34	MUMAN SIDDIQUI		

  
 Dipanjita Das  
 Head  
 Department of Energy  
 Tezpur University