CRITERION 5	Faculty Information and Contributions	200
	Marks Claimed	146.11

Current Academic Year (CAY): 2020-2021

Name of the Faculty Member	Qualification			Association with the Institution	Designation	Date on which Designated as Professor/ Associate Professor	Date of Joining the Institution	Department	Specialization	Academic Research			Currently Associated (Y/N) Date of Leaving (In case Currently Associated is "No"	Nature of Association (Regular/Contract)
	Degree (highest degree)	University	Year of attaining higher qualification							Research Paper Publications	Ph.D. Guidance	Faculty Receiving Ph.D. during the Assessment Years		
Dr. Mohd. Noor Salam Khan	Ph.D	IIT Roorkee	2005	Permanent	Professor	8-09-2013	16-05-1989	Chemical	Biochemical	01	03	No	Y	Regular
Dr. Fasil Qayoom Mir	Ph.D	IIT Delhi	2015	Permanent	Associate Professor	9-10-2018	8-03-2002	Chemical	Membrane Science	06	03	No	Y	Regular
Dr. Mushtaq Ahmad Rather	Ph.D	NIT Srinagar	2017	Permanent	Associate Professor	9-10-2018	30-12-2006	Chemical	Energy, Environment	06	04	Yes	Y	Regular
Dr. Tanveer Rasool Dar	Ph.D	NIT Srinagar	2018	Permanent	Asstt. Professor	-	8-03-2002	Chemical	Biomass conversion	04	05	Yes	Y	Regular
Dr. Malik Parvez Ahmad	Ph.D	NIT Srinagar	2018	Permanent	Asstt. Professor	-	30-12-2006	Chemical	CFD	0	03	Yes	Y	Regular
Dr. B. Krishna Srihari	Ph.D	IGCAR	2016	Permanent	Asstt. Professor	-	05-11-2018	Chemical	Micro Channels & CFD	01	0	No	Y	Regular
Dr. Kurella Swamy	Ph.D	IIT Kharagpur	2017	Permanent	Asstt. Professor	-	31-10-2018	Chemical	Industrial Pollution Control	01	01	No	Y	Regular
Dr. Shashikant Kumar	Ph.D	(ISM) Dhanbad	2016	Permanent	Asstt. Professor	-	18-10-2018	Chemical	Membrane Science	03	01	No	Y	Regular
Dr. Fatima Jalid	Ph.D	NIT Srinagar	2020	Permanent	Asstt. Professor	-	08-01-2016	Chemical	Catalysis	04	0	Yes	Y	Regular
Dr. Leela Manohar Aeshala	Ph.D	IIT Guwahati	2014	Permanent	Asstt. Professor	-	15-03-2021	Chemical	Electrochemical synthesis	01	0	No	Y	Regular
Dr. Asma Iqbal	Ph.D	AMU	2019	Permanent	Asstt. Professor	-	15-03-2021	Chemical	Distillation, Modelling & Simulation	04	0	No	Y	Regular
Dr. Brajesh Kumar	Ph.D	IIT Roorkee	2018	Permanent	Asstt. Professor	-	15-03-2021	Chemical	Thermodynamic Analysis, Modelling & Simulation	01	0	No	Y	Regular
Dr. Tanveer Jalal	Ph.D	AMU	1993	Permanent	Professor	8-3-2021	3-7-1998	Mathematics	Sequence spaces	05	01	No	Y	Regular

Dr. Zamrooda Jabeen	Ph.D	University of Kashmir	2007	Permanent	Associate Professor	-	6-03-1996	Mathematics	Operations Research	0	02	No	Y	Regular
Dr. Iqra Akbar	Ph.D	IIUM Malaysia	2019	Contractual	Contractual faculty	-	05-09-2017	Chemical	Nanotechnology	0	0	Yes	N	Contract
Dr. Afkham Mir	Ph.D	NIT Jalandhar	2018	Contractual	Contractual faculty	-	05-03-2018	Chemical	Graphene, 2D materials	0	0	No	N	Contract
Dr. Sameena Naaz Malik	Ph.D	IIT Mumbai	2019	Contractual	Contractual faculty	-	18-03-2019	Chemical	Waste Water Treatment	1	0	No	N	Contract

Table B.5a

(CAYm1): 2019-2020

Name of the Faculty Member	Qualification			Association with the Institution	Designation	Date on which Designated as Professor/ Associate Professor	Date of Joining the Institution	Department	Specialization	Academic Research			Currently Associated (Y/N) Date of Leaving (In case Currently Associated is "No"	Nature of Association (Regular/Contract)
	Degree (highest degree)	University	Year of attaining higher qualification							Research Paper Publications	Ph.D. Guidance	Faculty Receiving Ph.D. during the Assessment Years		
Dr. Mohd. Noor Salam Khan	Ph.D	IIT Roorkee	2005	Permanent	Professor	8-09-2013	16-05-1989	Chemical	Biochemical	01	03	No	Y	Regular
Dr. Fasil Qayoom Mir	Ph.D	IIT Delhi	2015	Permanent	Associate Professor	9-10-2018	8-03-2002	Chemical	Membrane Science	02	02	No	Y	Regular
Dr. Mushtaq Ahmad Rather	Ph.D	NIT Srinagar	2017	Permanent	Associate Professor	9-10-2018	30-12-2006	Chemical	Energy, Environment	04	05	Yes	Y	Regular
Dr. Tanveer Rasool Dar	Ph.D	NIT Srinagar	2018	Permanent	Asstt. Professor	-	8-03-2002	Chemical	Biomass conversion	04	05	Yes	Y	Regular
Dr. Malik Parvez Ahmad	Ph.D	NIT Srinagar	2018	Permanent	Asstt. Professor	-	30-12-2006	Chemical	CFD	0	03	Yes	Y	Regular
Dr. B. Krishna Srihari	Ph.D	IGCAR	2016	Permanent	Asstt. Professor	-	05-11-2018	Chemical	Micro Channels & CFD	01	0	No	Y	Regular
Dr. Kurella Swamy	Ph.D	IIT Kharagpur	2017	Permanent	Asstt. Professor	-	31-10-2018	Chemical	Industrial Pollution Control	0	01	No	Y	Regular
Dr. Shashikant Kumar	Ph.D	(ISM) Dhanbad	2016	Permanent	Asstt. Professor	-	18-10-2018	Chemical	Membrane Science	01	01	No	Y	Regular
Miss Fatima Jalid	Ph.D	NIT Srinagar	2020	Permanent	Asstt. Professor	-	08-01-2016	Chemical	Catalysis	04	0	Yes	Y	Regular
Dr. Tanveer Jalal	Ph.D	AMU	1993	Permanent	Associate Professor	-	3-7-1998	Mathematics	Sequence spaces	04	02	No	Y	Regular

Dr. Zamrooda Jabeen	Ph.D	University of Kashmir	2007	Permanent	Associate Professor	-	6-03-1996	Mathematics	Operations Research	02	0	No	Y	Regular
Dr. Iqra Akbar	Ph.D	IIUM Malaysia	2019	Contractual	Contractual faculty	-	05-09-2017	Chemical	Nanotechnology	0	0	Yes	N	Contract
Dr. Afkham Mir	Ph.D	NIT Jalandhar	2018	Contractual	Contractual faculty	-	05-03-2018	Chemical	Graphene, 2D materials	01	0	No	N	Contract
Dr. Sameena Naaz Malik	Ph.D	IIT Mumbai	2019	Contractual	Contractual faculty	-	18-03-2019	Chemical	Waste Water Treatment	03	0	No	N	Contract

Table B.5b

(CAYm2): 2018-2019

Name of the Faculty Member	Qualification			Association with the Institution	Designation	Date on which Designated as Professor/ Associate Professor	Date of Joining the Institution	Department	Specialization	Academic Research			Currently Associated (Y/N) Date of Leaving (In case Currently Associated is "No"	Nature of Association (Regular/Contract)
	Degree (highest degree)	University	Year of attaining higher qualification							Research Paper Publications	Ph.D. Guidance	Faculty Receiving Ph.D. during the Assessment Years		
Dr. Mohd. Noor Salam Khan	Ph.D	IIT Roorkee	2005	Permanent	Professor	8-09-2013	16-05-1989	Chemical	Biochemical	03	03	No	Y	Regular
Dr. Fasil Qayoom Mir	Ph.D	IIT Delhi	2015	Permanent	Associate Professor	9-10-2018	8-03-2002	Chemical	Membrane Science	07	03	No	Y	Regular
Dr. Mushtaq Ahmad Rather	Ph.D	NIT Srinagar	2017	Permanent	Associate Professor	9-10-2018	30-12-2006	Chemical	Energy, Environment	12	03	Yes	Y	Regular
Dr. Tanveer Rasool Dar	Ph.D	NIT Srinagar	2018	Permanent	Asstt. Professor	-	8-03-2002	Chemical	Biomass conversion	04	0	Yes	Y	Regular
Dr. Malik Parvez Ahmad	Ph.D	NIT Srinagar	2018	Permanent	Asstt. Professor	-	30-12-2006	Chemical	CFD	02	0	Yes	Y	Regular
Dr. B. Krishna Srihari	Ph.D	IGCAR	2016	Permanent	Asstt. Professor	-	05-11-2018	Chemical	Micro Channels & CFD	0	0	No	Y	Regular
Dr. Kurella Swamy	Ph.D	IIT Kharagpur	2017	Permanent	Asstt. Professor	-	31-10-2018	Chemical	Industrial Pollution Control	0	0	No	Y	Regular
Dr. Shashikant Kumar	Ph.D	(ISM) Dhanbad	2016	Permanent	Asstt. Professor	-	18-10-2018	Chemical	Membrane Science	0	01	No	Y	Regular
Miss Fatima Jalid	Ph.D	NIT Srinagar	2020	Permanent	Asstt. Professor	-	08-01-2016	Chemical	Catalysis	01	0	Yes	Y	Regular
Dr. Mohammad Farooq Lala	Ph.D	Jamia Millia Islamia (Central University)	2002	Permanent	Professor	-	18-03-1982	Humanities	Marketing & Finance	0	0	No	N	Regular

Dr. Tanveer Jalal	Ph.D	AMU	1993	Permanent	Associate Professor	-	3-7-1998	Mathematics	Sequence spaces	07	0	No	Y	Regular
Dr. Zamrooda Jabeen	Ph.D	University of Kashmir	2007	Permanent	Associate Professor	-	6-03-1996	Mathematics	Operations Research	0	0	No	Y	Regular
Mr. Rupak Kumar Singh	M.Tech	IIT-BHU	2013	Contractual	Contractual faculty	-	07-09-2015	Chemical	Microfluidic fuel cells	0	0	No	N	Contract
Dr. Iqra Akbar	M.S	IIUM Malaysia	2013	Contractual	Contractual faculty	-	05-09-2017	Chemical	Nanotechnology	0	0	No	N	Contract
Dr. Afkham Mir	Ph.D	IIT Delhi	2018	Contractual	Contractual faculty	-	05-03-2018	Chemical	Graphene, 2D materials	03	0	Yes	N	Contract
Dr. Saptak Rarotra	Ph.D	IIT Guwahati	2018	Contractual	Contractual faculty	-	05-03-2018	Chemical	Micro & Nanotechnology	NA	NA	No	N	Contract
Dr. Sameena Naaz Malik	Ph.D	IIT Mumbai	2019	Contractual	Contractual faculty	-	18-03-2019	Chemical	Waste Water Treatment	01	0	No	N	Contract

Table B.5c

(CAYm3): 2017-2018

Name of the Faculty Member	Qualification			Association with the Institution	Designation	Date on which Designated as Professor/ Associate Professor	Date of Joining the Institution	Department	Specialization	Academic Research			Currently Associated (Y/N) Date of Leaving (In case Currently Associated is "No"	Nature of Association (Regular/Contract)
	Degree (highest degree)	University	Year of attaining higher qualification							Research Paper Publications	Ph.D. Guidance	Faculty Receiving Ph.D. during the Assessment Years		
Dr. Mohd. Noor Salam Khan	Ph.D	IIT Roorkee	2005	Permanent	Professor	8-09-2013	16-05-1989	Chemical	Biochemical	02	03	No	Y	Regular
Dr. Fasil Qayoom Mir	Ph.D	IIT Delhi	2015	Permanent	Associate Professor	9-10-2018	8-03-2002	Chemical	Membrane Science	03	01	No	Y	Regular
Dr. Mushtaq Ahmad Rather	Ph.D	NIT Srinagar	2017	Permanent	Asstt. Professor	-	30-12-2006	Chemical	Energy, Environment	08	0	Yes	Y	Regular
Dr. Tanveer Rasool Dar	Ph.D	NIT Srinagar	2018	Permanent	Asstt. Professor	-	8-03-2002	Chemical	Biomass conversion	05	0	Yes	Y	Regular
Dr. Malik Parvez Ahmad	Ph.D	NIT Srinagar	2018	Permanent	Asstt. Professor	-	30-12-2006	Chemical	CFD	02	0	Yes	Y	Regular
Miss Fatima Jalid	Ph.D	NIT Srinagar	2020	Permanent	Asstt. Professor	-	08-01-2016	Chemical	Catalysis	01	0	No	Y	Regular
Dr. Mohammad Farooq Lala	Ph.D	Jamia Millia Islamia (Central University)	2002	Permanent	Professor	-	18-03-1982	Humanities	Marketing & Finance	01	02	No	N	Regular

Dr. Tanveer Jalal	Ph.D	AMU	1993	Permanent	Associate Professor	-	3-7-1998	Mathematics	Sequence spaces	08	01	No	Y	Regular
Dr. Zamrooda Jabeen	Ph.D	University of Kashmir	2007	Permanent	Associate Professor	-	6-03-1996	Mathematics	Operations Research	0	0	No	Y	Regular
Mr. Rupak Kumar Singh	M.Tech	IIT-BHU	2013	Contractual	Contractual faculty	-	07-09-2015	Chemical	Microfluidic fuel cells	0	0	No	N	Contract
Miss. Iqra Akbar	M.S	IIUM Malaysia	2013	Contractual	Contractual faculty	-	05-09-2017	Chemical	Nanotechnology	02	0	No	N	Contract
Miss Afkham Mir	M.Tech	NIT Jalandhar	2014	Contractual	Contractual faculty	-	05-03-2018	Chemical	Graphene, 2D materials	01	0	No	N	Contract
Dr. Saptak Rarotra	Ph.D	IIT Guwahati	2018	Contractual	Contractual faculty	-	05-03-2018	Chemical	Micro & Nanotechnology	NA	NA	No	N	Contract
Dr. Shashikant Kumar	Ph.D	(ISM) Dhanbad	2016	Contractual	Contractual faculty	-	20-03-2017	Chemical	Membrane Science	0	0	No	N	Contract
Miss Parul Singh	M.Tech	AMU	NA	Contractual	Contractual faculty	-	20-03-2017	Chemical	NA	0	0	No	N	Contract
Miss Iqra	M.Tech	NIT Srinagar	2017	Contractual	Contractual faculty	-	05-09-2017	Chemical	Ion-Exchange Membranes	0	0	No	N	Contract

Table B.5d

5.1. Student-Faculty Ratio (SFR) (20)

Claimed 14

(To be calculated at Department Level)
No. of UG Programs in the Department (n):**01**
No. of PG Programs in the Department (m):**01**
No. of Students in UG 2nd Year=**u1**
No. of Students in UG 3rd Year= **u2**
No. of Students in UG 4th Year= **u3**
No. of Students in PG 1st Year= **p1**
No. of Students in PG 2nd Year=**p2**

No. of Students = Sanctioned Intake + Actual admitted lateral entry students

(The above data to be provided considering all the UG and PG programs of the department)
***S**=Number of Students in the Department = UG1+UG2+UG3+PG1+PG2*
***F** = Total Number of Faculty Members in the Department (excluding first year faculty)*

Student Faculty Ratio (SFR) = S / F

Year	CAY (2020-21)	CAYm1 (2019-20)	CAYm2 (2018-19)
u1.1	103	92	79
u1.2	92	79	77
u1.3	79	77	77
UG1	**274**	**248**	**233**
p1.1	22	22	18
p1.2	22	18	18
PG1	**44**	**40**	**36**
Total No. of Students in the Department **(S)**	**318**	**288**	**269**
No. of Faculty in the Department **(F)**	**14**	**14**	**16**
Student Faculty Ratio (SFR)	**22.71**	**20.57**	**16.81**
Average SFR	**20.03**		

Table B.5.1

Assessment	14

Marks to be given proportionally from a maximum of 20 to a minimum of 10 for average SFR between 15:1 to 25:1, and zero for average SFR higher than 25:1. Marks distribution is given as below:

= 15 - 20 Marks
< = 17 - 18 Marks
< = 19 - 16 Marks
< = 21 - 14 Marks< = 23 - 12 Marks

< = 25 - 10 Marks
> 25.0 - 0 Marks
Note:
Minimum 75% should be Regular/ full time faculty and the remaining shall be Contractual Faculty/Adjunct Faculty/Resource persons from industry as per AICTE norms and standards. The contractual Faculty will be considered for assessment only if a faculty is drawing a salary as prescribed by the concerned State Government for the contractual faculty in the respective cadre and who have taught over consecutive 4 semesters.

5.1.1. Provide the information about the regular and contractual faculty as per the format mentioned below:

	Total number of regular faculty in the department	**Total number of contractual faculty in the department**
CAY (2020-21)	14	03
CAYm1 (2019-20)	11	03
CAYm2 (2018-19)	12	05

Table 5.1.1

5.2. Faculty Cadre Proportion (20)

Claimed 20

The reference Faculty cadre proportion is 1(F1):2(F2):6(F3)

F1: Number of Professors required = 1/9 x Number of Faculty required to comply with 20:1 Student-Faculty ratio based on no. of students (N) as per 5.1

F2: Number of Associate Professors required = 2/9 x Number of Faculty required to comply with 20:1 Student-Faculty ratio based on no. of students (N) as per 5.1

F3: Number of Assistant Professors required = 6/9 x Number of Faculty required to comply with 20:1 Student-Faculty ratio based on no. of students (N) as per 5.1

Year	**Professors**		**Associate Professors**		**Assistant Professors**	
	Required F1	Available	Required F2	Available	Required F3	Available
CAY (2020-21)	1.77	2	3.54	3	10.62	9
CAYm1 (2019-20)	1.6	1	3.2	4	9.6	9
CAY*m*2 (2018-19)	1.49	2	2.98	4	8.94	10
Average Numbers	RF1=1.62	AF1=1.66	RF2=3.24	AF2=3.67	RF3=9.72	AF3=9.33

Table B.5.2

Cadre Ratio marks = $\left[\left(\frac{AF1}{RF1}\right)+\left(\frac{AF2}{RF2}\times 0.6\right)+\left(\frac{AF3}{RF3}\times 0.4\right)\right]\times 10 = 20.84$ **(limited to 20)**

5.3. Faculty Qualification (20)

Claimed 14.70

FQ =2.0 x [(10X +4Y)/F)] where x is no. of regular faculty with Ph.D., Y is no. of regular faculty with M. Tech., F is no. of regular faculty required to comply 20:1 Faculty Student ratio (no. of faculty and no. of students required are to be calculated as per 5.1)

	X	Y	F	FQ=2.0 x [(10X +4Y)/F)]
CAY (2020-21)	11	0	15.9	13.84
CAYm1 (2019-20)	10	0	14.4	13.89
CAY*m2* (2018-19)	11	0	13.45	16.36
Average Assessment				**14.7**

Table B.5.3

5.4 Faculty Retention (10)

Claimed 10

No. of regular faculty members in CAYm1=10 CAY = 11

Item (% of faculty retained during the period of assessment keeping CAYm2 as base year)	**Marks**
>=90% of required Faculty members retained during the period of three academic years keeping CAY*m2* as base year	10
>=75% of required Faculty members retained during the period of three academic years keeping CAY*m2* as base year	08
>=60% of required Faculty members retained during the period of three academic years keeping CAY*m2* as base year	06
>=50% of required Faculty members retained during the period of three academic years keeping CAY*m2* as base year	04
<50% of required Faculty members retained during the period of three academic years keeping CAY*m2* as base year	0

Table B.5.4

FACULTY RETENTION			
DESCRIPTION	**CAY (2020-21)**	**CAYm1 (2019-20)**	**CAYm2 (2018-19)**
No of Faculty Retained	14	14	16
Required Faculty	15.9	14.4	13.45
% Of Faculty Retained	88.05	97.2	118.9
AVERAGE ASSESSMENT			**101.4**

Assessment	**10**

5.5 Faculty competencies in correlation to Program Specific Criteria (10)

Claimed 10

Faculty members of Chemical Engineering Department are specialized in diversified areas of Chemical Engineering. They have good research exposure and have published research papers in journals of repute (American Chemical Society (ACS), Springer, Elsevier, Taylor and Francis, etc.) and presented several papers in national and international conferences in India as well as abroad. Faculty has got the provision for going for higher studies sponsored by the Institute under QIP. The faculty members participate in FDPs, STCs, and Workshops to upgrade their knowledge in latest field of research. Faculty is involved in developing working models for laboratories for the effective teaching-learning process. Faculty members are also actively involved in conducting events such as STCs and Workshops. Faculty shows keen interest in developing central library facility by recommending latest books for the benefit of students and faculty. Faculty members also take keen interest in developing research facilities

for the benefit of B.Tech., M.Tech. and Ph.D students. The Department of Chemical Engineering has faculty expertise available in the domains of Transport Processes, Biochemical Engineering, Membrane science & Engineering, Energy & Environment, Modeling and Simulation, CFD, Catalysis, Nanotechnology, Mathematics, Management, etc. The Faculty in each domain and their research areas are given below:

Name of Faculty	Qualification	Area of Specialization/ Research Area
Dr. Mohd. Noor Salam Khan	Ph.D	Fermentation, Bioseparation, Modeling and Simulation, Energy from Biomass and Pollution Abatement.
Dr. Fasil Qayoom Mir	Ph.D	Membranes, Electrochemical systems, Electrodialysis, Fuel cells, Heat Transfer and Fluid Mechanics.
Dr. Mushtaq Ahmad Rather	Ph.D	Energy, Environment, Nanotechnology, Waste water Treatment, Biomass Conversion, Photo-catalysis, Biofuels.
Dr. Tanveer Rasool Dar	Ph.D	Biomass conversion Technology, Industrial Pollution Abatement, Modeling and Simulation, Material Science & Technology, Environment Technology.
Dr. Malik Parvez Ahmad	Ph.D	CFD, Heat and Mass Transfer, Fluid flow, nanotechnology, Multiphase flow.
Dr. B. Krishna Srihari	Ph.D	Micro Channels, Liquid-Liquid Slug Flow, Fluid Mechanics, Carbon dioxide reduction, CFD, Microfluidics, Waste Water Treatment, Solid Waste Management, Heat, Mass and Fluid Flow Simulations using COMSOL Multiphysics.
Dr. Kurella Swamy	Ph.D	Industrial Pollution Control, Phase Transfer Catalysis, Coal Gasification, Separation and Purification Processes.
Dr. Shashikant Kumar	Ph.D	Membrane Separation, Waste water treatment.
Dr. Fatima Jalid	Ph.D	Computational Catalysis, Microkinetic Modelling, Heterogeneous Catalysis, Electrodialysis.
Dr. Mohammad Farooq Lala	Ph.D	Marketing & Finance
Dr. Tanveer Jalal	Ph.D	Sequence spaces, Summability theory
Dr. Zamrooda Jabeen	Ph.D	Operations Research.
Dr. Leela Manohar Aeshala	Ph.D	Electrochemical Reduction of Carbon Dioixde, Solid Polymer Electrolyte.
Dr. Asma Iqbal	Ph.D	Distillation based separation processes, Conceptual process flowsheet design, Modeling and Simulation
Dr. Brajesh Kumar	Ph.D	Thermodynamic Analysis, Chemical Reaction Engineering, Renewable Energy, Modeling And Simulation.
Dr. Iqra Akbar	Ph.D	Nanotechnology, Environmental Engineering, Pharmaceuticals, Nutraceuticals
Dr. Afkham Mir	Ph.D	Synthesis and applications of 2D materials (graphene) • Advanced functional energy materials (membranes) • Energy storage devices (graphene supercapacitors, FETs).
Dr. Sameena Naaz Malik	Ph.D	Waste Water Treatment.

Assessment	10

5.6 Innovations by the Faculty in Teaching and Learning (10)

Claimed 10

Instructional materials

Each classroom is equipped with overhead projectors and some are equipped with the state-of-the-art smart boards. Study material prepared by teachers using standard text books and

reference books are used for instruction of the students. Other instruction tools are whiteboard, charts and diagrams and laboratory demonstration models.

Working models/charts/monograms:

Apart from the test rigs and experimental set-ups, the labs of the Chemical Engineering Department are equipped with different high end equipment such as CHNS analyzer, Capillary Flow Porometer, Potentiostat, HPLC, FTIR, BET analyzer, Spectrophotometers, Bioreactor, Digital Bomb Calorimeter and working models for the effective teaching-learning process.
Faculty members of the Department are also using different software's, organizing industrial visits and conducting different short term courses/workshops related to the emerging areas of chemical engineering for the improvement of students learning.

Assessment	10

5.7 Faculty as participants in faculty development/training activities/STTPs (15)

Claimed 7.41

- A Faculty scores maximum five points for participation
- Participation in 2 to 5 days Faculty/faculty development program: 3 Points
- Participation>5 days Faculty/faculty development program:5 points

List of STTPs attended by faculty members for CAY*m*1 (2019-20):

Name of the Faculty	CAY*m*1 (2019-20)			
	Type of STTP	Title	Duration	Place where organized
Dr. Mohd. Noor Salam Khan	-	-	-	-
Dr. Fasil Qayoom Mir	-	-	-	-
Dr. Mushtaq Ahmad Rather	-	-	-	-
Dr. Tanveer Rasool Dar	-	-	-	-
Dr. Malik Parvez Ahmad	-	-	-	-
Dr. B. Krishna Srihari	-	-	-	-
Dr. Kurella Swamy	-	-	-	-
Dr. Shashikant Kumar	STC	Digital Transformation in Teaching Learning Process	16 Mar-30 Mar, 2020 (15 Days)	IIT Bombay
Miss Fatima Jalid	-	-	-	-
Dr. Mohammad Farooq Lala	-	-	-	-
Dr. Tanveer Jalal	-	-	-	-
Dr. Zamrooda Jabeen	-	-	-	-

List of STTPs attended by faculty members for CAY*m*2 (2018-19):

Name of the Faculty	CAYm2 (2018-19)			
	Type of STTP	Title	Duration	Place where organized
Dr. Mohd. Noor Salam Khan	-	-	-	-
Dr. Fasil Qayoom Mir	-	-	-	-
Dr. Mushtaq Ahmad Rather	FDP	FDP on Outcome Based Education	18 – 22nd May 2019 (5 Days)	NIT Srinagar
Dr. Tanveer Rasool Dar	FDP	FDP on Outcome Based Education	18 – 22nd May 2019 (5 Days)	NIT Srinagar
Dr. Malik Parvez Ahmad				
Dr. B. Krishna Srihari	FDP	FDP on Outcome Based Education	18 – 22nd May 2019 (5 Days)	NIT Srinagar
	FDP	FDP on Pedagogy	1st – 5th April 2019 (5 Days)	NIT Srinagar
Dr. Kurella Swamy	FDP	FDP on Outcome Based Education	18– 22nd May 2019 (5 Days)	NIT Srinagar
	FDP	FDP on Pedagogy	1st – 5th April 2019 (5 Days)	NIT Srinagar
Dr. Shashikant Kumar	FDP	FDP on Outcome Based Education	18 – 22nd May 2019 (5 Days)	NIT Srinagar
	FDP	FDP on Pedagogy	1st – 5th April 2019 (5 Days)	NIT Srinagar
Miss Fatima Jalid	FDP	FDP on Outcome Based Education	18 – 22nd May 2019 (5 Days)	NIT Srinagar
Dr. Mohammad Farooq Lala	-	-	-	-
Dr. Tanveer Jalal	-	-	-	-
Dr. Zamrooda Jabeen	-	-	-	-

List of STTPs attended by faculty members for CAY*m*3 (2017-18):

Name of the Faculty	CAYm3 (2017-18)			
	Type of STTP	Title	Duration	Place where organized
Dr. Mohd. Noor Salam Khan	Workshop	Outcome bases Accreditation	17th-18 March 2018 (3 Days)	NIT Srinagar
Dr. Fasil Qayoom Mir	FDP	Faculty Development Program	02-06 July 2018 (5 Days)	IIT Madras
	FDP	Management Capacity Enhancement Programme	28 Jan.- 01st Feb. 2018 (5 Days)	ESCI Hyderabad
	STC	Air Pollution Monitoring and Modeling using software applications-Theory and Practicals	28-30 November 2017 (3 Days)	ESCI Hyderabad
Dr. Mushtaq Ahmad Rather	-	-	-	-
Dr. Tanveer Rasool Dar	Workshop	TEQIP-III Teachers Training Workshop on Induction Program for NER Institutes	13-15 October 2017 (3 Days)	IIT Guwahati
	Workshop	Outcome based Accreditation	17th-18 March 2018 (2 Days)	NIT Srinagar
	FDP	Faculty Development Program	02-06 July 2018 (5 Days)	IIT Madras

Dr. Malik Parvez Ahmad	-	-	-	-
Dr. Shashikant Kumar	Workshop	Outcome bases Accreditation	17th-18 March 2018 (2 Days)	NIT Srinagar
Miss Fatima Jalid	Workshop	Process Control	13-17 November 2017 (5 Days)	NIT Srinagar
	Workshop	Connecting People to Nature (CPTN-2017)	25-29 September 2017 (5 Days)	NIT Srinagar
Dr. Mohammad Farooq Lala	-	-	-	-
Dr. Tanveer Jalal	-	-	-	-
Dr. Zamrooda Jabeen	-	-	-	-

Name of the Faculty	**Max. 5 per Faculty**		
	CAY*m*1 (2019-20)	**CAYm2 (2018-19)**	**CAYm3 (2017-18)**
Dr. Mohd. Noor Salam Khan	-	-	3
Dr. Fasil Qayoom Mir	-	-	5
Dr. Mushtaq Ahmad Rather	-	3	-
Dr. Tanveer Rasool Dar	-	3	5
Dr. Malik Parvez Ahmad	-	-	-
Dr. B. Krishna Srihari	-	5	-
Dr. Kurella Swamy	-	5	-
Dr. Shashikant Kumar	5	5	3
Miss Fatima Jalid	-	3	5
Dr. Mohammad Farooq Lala	-	-	-
Dr. Tanveer Jalal	-	-	-
Dr. Zamrooda Jabeen	-	-	-
Sum	**5**	**24**	**21**
***RF*= Number of Faculty required to comply with 20:1 Student-Faculty ratio as per 5.1**	14.4	13.45	13.35
Assessment = 3 × (Sum/0.5RF) (Marks limited to 15)	2.08	10.71	9.44
Average assessment over three years (Marks limited to 15) =			**7.41**

Table B.5.7

5.8 Research and Development (75)

Claimed 40

5.8.1 Academic research (20)

Claimed 20

Pub: No. of research publications in refereed/SCI Journals, Conferences, Books, Book Chapters, etc.

PhD: No. of Ph. D. Scholars registered/ awarded

Name of the Faculty	CAY (2020-2021)		CAYm1 (2019-20)		CAYm2 (2018-19)	
	Pub	PhD	Pub	PhD	Pub	PhD
Dr. Mohd. Noor Salam Khan	01	1-Awarded 02-Total Reg.	01	0-Awarded 03-Total Reg.	03	0-Awarded 03-Total Reg.
Dr. Fasil Qayoom Mir	06	1-Awarded 02-Total Reg.	02	0-Awarded 02-Total Reg.	07	0-Awarded 03-Total Reg.
Dr. Mushtaq Ahmad Rather	06	0-Awarded 04-Total Reg.	04	0-Awarded 05-Total Reg.	12	0-Awarded 03-Total Reg.
Dr. Tanveer Rasool Dar	04	0-Awarded 05-Total Reg.	04	0-Awarded 05-Total Reg.	04	0-Awarded 0-Total Reg.
Dr. Malik Parvez Ahmad	0	0-Awarded 03-Total Reg.	0	0-Awarded 03-Total Reg.	02	0-Awarded 0-Total Reg.
Dr. B. Krishna Srihari	01	0-Awarded 0-Total Reg.	01	0-Awarded 0-Total Reg.	0	0-Awarded 0-Total Reg.
Dr. Kurella Swamy	01	0-Awarded 1-Total Reg.	0	0-Awarded 01-Total Reg.	0	0-Awarded 0-Total Reg.
Dr. Shashikant Kumar	03	0-Awarded 01-Total Reg.	01	0-Awarded 01-Total Reg.	0	0-Awarded 01-Total Reg.
Miss Fatima Jalid	04	0-Awarded 0-Total Reg.	04	0-Awarded 0-Total Reg.	01	0-Awarded 0-Total Reg.
Dr. Mohammad Farooq Lala	0	0-Awarded 0-Total Reg.	0	0-Awarded 0-Total Reg.	0	0-Awarded 0-Total Reg.
Dr. Tanveer Jalaal	05	0-Awarded 01-Total Reg.	04	01-Awarded 01-Total Reg.	07	0-Awarded 0-Total Reg.
Dr. Zamrooda Jabeen	0	0-Awarded 2-Total Reg	02	0-Awarded 0-Total Reg.	0	0-Awarded 0-Total Reg.
Dr. Afkham Mir	0	0-Awarded 0-Total Reg.	01	0-Awarded 0-Total Reg.	03	0-Awarded 0-Total Reg.
Dr. Iqra Akbar	0	0-Awarded 0-Total Reg.	0	0-Awarded 0-Total Reg.	0	0-Awarded 0-Total Reg.
Dr. Sameena Naaz Malik	02	0-Awarded 0-Total Reg.	03	0-Awarded 0-Total Reg.	01	0-Awarded 0-Total Reg.
Assessment						**20**

List of faculty publications with DOIs (CAY, 2020-2021):

	Title of Publication	Authors	Journal/Conference	Volume and Page No.	DOI	Year	Total No. of Citations
1.	Pyrolysis of walnut shell residues in a fixed bed reactor: Effects of process parameters, chemical and functional properties of bio-oil	Mudasir Akbar Shah, NS Khan, Vimal Kumar, Ahsanulhaq Qurashi	Journal of Environmental Chemical Engineering	9, 105564	https://doi.org/10.1016/j.jece.2021.105564	2021	0
2.	Preparation and characterization of ceramic membrane using waste almond shells as pore forming agent	Nasir Ahmed, Fasil Qayoom Mir	Materials Today: Proceedings		https://doi.org/10.1016/j.matpr.2021.04.329	2021	0
3.	Synthesis and	Diyan Ul	International	46	https://doi.or	2021	04

	characterization of a novel poly (vinyl alcohol)-based zinc oxide (PVA-ZnO) composite proton exchange membrane for DMFC	Imaan, Fasil Qayoom Mir, Babar Ahmad	Journal of Hydrogen Energy	12230-12241	g/10.1016/j.ijhydene.2020.05.008		
4.	Fabrication of a Cost Effective Ceramic Microfiltration Membrane by Utilizing Local Kashmir Clay	Nasir Ahmed, Fasil Qayoom Mir	Transactions of the Indian Ceramic Society	80, 41-46	https://doi.org/10.1080/0371750X.2020.1864663	2021	0
5.	Development of polyvinyl alcohol (PVA) supported zirconium tungstate (ZrW/PVA) composite ion-exchange membrane	Iqra Ahangar, Fasil Qayoom Mir	International Journal of Hydrogen Energy	45, 32433-32441	https://doi.org/10.1016/j.ijhydene.2020.08.216	2020	03
6.	Effusion Cooling In Gas Turbine Combustion Chambers - A Comprehensive Review	KR Yellu Kumar, Adnan Qayoum, Shahid Saleem, Faisal Qayoum	IOP Conference Series: Materials Science and Engineering	804, 012003	https://doi.org/10.1088/1757899X/804/1/012003	2020	0
7.	Fabrication and characterization of poly (vinyl alcohol) – graphene nanoplatelets (GNPs) proton exchange membrane for direct methanol fuel cells	Diyan ul Imaan, Fasil Qayoom Mir, Babar Ahmad	Materials Today: Proceedings	26 2901-2906	https://doi.org/10.1016/j.matpr.2020.02.599	2020	0
8.	Biofilm Signaling-Their Promising role for waste water treatment	Mushtaq Ahmad	RICT-2021			2021	0
9.	Proximate Analysis based on new correlations for HHV of crop residues and aquatic weeds useful in biomass briquetting	Mushtaq Ahmad	ICEE-2021			2021	0
10.	Fumigant toxicity of Artemesia absinthium essential oil to common stored product pests	Asma Sherwani and Sajad Ganie Parveena Bano, Mushtaq Ahmad Rather,Malik Mukhtar	Indian jl. of Entomology	1-21		2021	0
11.	Pharmaceutical residues: New emerging contaminants and their mitigation by nano-photocatalysis	Aarif Hussain Shah, Mushtaq Ahmad Rather	Advances in Nano Research	10, 397-414	http://dx.doi.org/10.12989/anr.2021.10.4.397	2021	0
12.	Effect of Thermal Treatment on the Phase Composition and Surface Properties of WO3-TiO2 Nanocomposites Synthesized via Hydro-Thermal Method	Aarif Hussain Shah, Mushtaq Ahmad Rather	Chemistry Select	6, 987-994	https://doi.org/10.1002/slct.202004160	2021	01
13.	Effect of calcination temperature on the crystallite size, particle size and zeta potential of TiO2 nanoparticles synthesized via polyol-mediated method	Aarif Hussain Shah, Mushtaq Ahmad Rather	Materials Today: Proceedings	44, 482-488	https://doi.org/10.1016/j.matpr.2020.10.199	2021	03
14.	Pyrolysis of Almond (Prunus amygdalus) Shells: Kinetic Analysis, Modelling, Energy Assessment and Technical Feasibility Studies	Tanveer Rasool, Ishfaq Najar, Vimal Chandra Srivastava, Ashok Pandey	Bioresource Technology	337	https://doi.org/10.1016/j.biortech.2021.125466	2021	0

15.	Bioenergy Potential Evaluation of Almond *(Prunus amygdalus*) Shells Through Pyrolysis: Energy Assessment and Technical Feasibility Analysis	Tanveer Rasool, Ishfaq Najar, V. C . Srivastava	BSAEH-2021			2021	0
16.	Removal of Ni (II) and Zn (II) from Aqueous Media Using Algae-Sodium Bentonite Nanocomposite	Tanveer Rasool	Nanotechnology for Energy and Environmental Engineering	561-576		2020	0
17.	Kinetic and thermodynamic evaluation of pyrolysis of plant biomass using TGA	Tanveer Rasool, Shashikant Kumar	Materials Today: Proceedings	21, 2087-2095	https://doi.org/10.1016/j.matpr.2020.01.328	2020	06
18.	Topological and Algebraic Properties of Triple n-normed Spaces	Tanweer Jalal, Ishfaq Ahmad Malik	Proceedings of the Fifth International Conference on Mathematics and Computing	187-196	https://doi.org/10.1007/978-981-15-5411-7_14	2021	0
19.	Existence of solution for system of differential equations in c 0 and ℓ 1 spaces	Ishfaq Ahmad Malik, Tanweer Jalal	Afrika Matematika	31, 1129-1143	https://doi.org/10.1007/s13370-020-00785-2	2020	0
20.	Application of measure of noncompactness to infinite systems of differential equations in ℓp spaces	Ishfaq Ahmad Malik, Tanweer Jalal	Rendiconti del Circolo Matematico di Palermo Series 2	69, 381-392	https://doi.org/10.1007/s12215-019-00411-6	2020	02
21.	Some ideal convergent multiplier sequence spaces using de la Vallee Poussin mean and Zweier operator	Tanweer Jalal	Proyecciones (Antofagasta)	39, 91-105	http://dx.doi.org/10.22199/issn.0717-6279-2020-01-0006	2020	0
22.	Topological properties of some sequences defined over n– normed spaces	Tanweer Jalal	Proyecciones (Antofagasta)	39, 1137-1155	http://dx.doi.org/10.22199/issn.0717-6279-2020-05-0070	2020	0
23.	Three dimensional computational studies on steady-state flow field around a microsphere under laminar flow	Bonasi Krishna Srihari, Ashish Kapoor Sivasamy Balasubramanian, Suresh Krishnan, Magesh Kumar M., Krishna Srihari B., Arkadyuti Chakraborty, Arunachaleshwar K., Sambath P.	AIP Conference	2277,050	https://doi.org/10.1063/5.0025555	2020	0
24.	Optimization of process variables for particulate laden H_2S removal from gasifier syngas in a multistage dual-flow sieve plate scrubber	Kurella Swamy, BC Meikap	ATIPC – 2020	97, 2783-		2020	0

25.	Kinetic and thermodynamic evaluation of pyrolysis of plant biomass using TGA	Tanveer Rasool, Shashikant Kumar	Materials Today: Proceedings	21, 2087-2095	https://doi.org/10.1016/j.matpr.2020.01.328	2020	06
26.	Polymer /Carbon nanocomposites for biomedical applications	Jyotendra Nath, Kashma Sharma, Shashikant Kumar, Vijay Kumar, Rakesh Sehgal	Advances in Material Research and Technology		https://doi.org/10.1007/978-3-030-70266-3_4	2021	0
27.	Electrospun nanofibers for waste water treatment	Jyotendra Nath, Kashma Sharma, Shashikant Kumar, Vijay Kumar, Rakesh Sehgal	Polymer and Composite Materials		https://doi.org/10.1007/978-3-030-79979-3_4	2021	0
28.	Exploring bimetallic alloy catalysts of Co, Pd and Cu for CO2 reduction combined with ethane dehydrogenation	Fatima Jalid, Tuhin Suvra Khan, M Ali Haider	Applied Energy	299,	https://doi.org/10.1016/j.apenergy.2021.117284	2021	0
29.	Insights into the activity and selectivity trends in non-oxidative dehydrogenation of primary and secondary alcohols over the copper catalyst	Fatima Jalid, Tuhin S Khan, M Ali Haider	Catalysis Today	370, 151-160	https://doi.org/10.1016/j.cattod.2020.11.021	2021	0
30.	Mechanistic insights into the dominant reaction route and catalyst deactivation in biogas reforming using ab initio microkinetic modeling	Fatima Jalid, M Ali Haider, Md Imteyaz Alam, Tuhin S Khan	Catalysis Science & Technology	11, 2130-2143	https://doi.org/10.1039/D0CY02155E	2021	01
31.	CO_2 reduction and ethane dehydrogenation on transition metal catalysts: mechanistic insights, reactivity trends and rational design of bimetallic alloys	Fatima Jalid, Tuhin Suvra Khan, M Ali Haider	Catalysis Science & Technology	11, 97-115	DOI: 10.1039/D0CY01290D	2021	06
32.	Pretreatment of yard waste using advanced oxidation processes for enhanced biogas production	Sameena N Malik, Krishna Madhu, Vasant A Mhaisalkar, Atul N Vaidya, Sandeep N Mudliar	Biomass and Bioenergy	142, 105780	https://doi.org/10.1016/j.biombioe.2020.105780	2020	01
33.	Hybrid ozonation process for industrial wastewater treatment: Principles and applications: A review	Sameena N Malik, Prakash C Ghosh, Atul N Vaidya, Sandeep N Mudliar	Journal of Water Process Engineering	35, 101193	https://doi.org/10.1016/j.jwpe.2020.101193	2020	40

List of faculty publications with DOIs (CAYm1, 2019-2020):

	Title of Publication	**Authors**	**Journal/ Conference**	**Volume and Page No.**	**DOI**	**Year**	**Total No. of Citations**
1.	Kinetic and thermodynamic analysis of thermal decomposition of deodar (Cedrus Deodara) saw dust and rice husk as	Tanveer Rasool, Vimal Chandra Srivastava, MNS Khan	International Journal of Chemical Reactor Engineering	17	https://doi.org/10.1515/ijcre-2017-0184	2019	04

	potential feedstock for pyrolysis						
2.	Investigation of the thermal behavior of the natural insulation materials for low temperature regions	Ayaz Ahmed, Adnan Qayoum, Fasil Qayoom Mir	Journal of Building Engineering	26, 100849	https://doi.org/10.1016/j.jobe.2019.100849	2019	09
3.	Preparation and characterization of a novel nano-size titanium oxide-PVA (TiO2-PVA) composite ion exchange membrane	Diyan ul Imaan, Fasil Qayoom Mir, Babar Ahmad	Journal of Physics: Conference Series	1240, 012130	https://doi.org/10.1088/1742-6596/1240/1/012130	2019	0
4.	Third Generation Biofuels: A Promising Alternate Energy Source	Mushtaq Ahmad Rather, Parveena Bano	Integrating Green Chemistry and Sustainable Engineering		DOI:10.1002/9781119509868	2019	04
5.	Photo Catalytic Degradation of Pharmaceutical Drugs using TiO2 Nanoparticles. - A Review	Aarif Hussain Shah, Mushtaq Ahmad Rather	Journal of Basic and Applied Engineering Research	6, 327-331	p-ISSN: 2350-0077; e-ISSN: 2350-0255;	2019	0
6.	Nano-photocatalysis: A versatile advanced oxidation process	Mushtaq Ahmad Rather et al.	Applied Science Innovations Pvt. Ltd., India		ISBN:978-81-939516-0-6	2019	0
7.	Removal of pharmaceuticals from waste water using titanium dioxide nanoparticles	Aarif Hussain Shah, Mushtaq Ahmad Rather	Applied Science Innovations Pvt. Ltd., India		ISBN:978-81-939516-0-6	2019	0
8.	Thermo-kinetics and gaseous product analysis of banana peel pyrolysis for its bioenergy potential	Mudassir Hussain Tahir, Zilong Zhao, Jianmin Ren, Tanveer Rasool, Salman Raza Naqvi	Biomass and Bioenergy	122, 193-201	https://doi.org/10.1016/j.biombioe.2019.01.009	2019	36
9.	Extraction and characterization of cellulose nanofibers from waste biomass	Tanveer Rasool	IMMT-2019	-	-	2019	0
10.	Recent trends in extraction of cellulosic nano-fibres from biomass waste: A brief review	Tanveer Rasool, Ruqaiyah Khursheed, Sabbah Guljan, Tanisha Mahajan, Aamina Makroo, Maida Lateef	Applied Science Innovations Pvt.		ISBN:978-81-939516-0-6	2019	0
11.	Measures of noncompactness in (n) over-bar (p, q) summable sequence spaces	Ishfaq Ahmad Malik, Tanweer Jalal	Operators and Matrices	13 1191-1205		2019	0
12.	Measures of Noncompactness in Summable Difference Sequence Spaces	Ishfaq Ahmad Malik, Tanweer Jalal	Journal of Mathematical Extension	13 Pages 143-159	ISSN: 1735-8299 URL: http://www.ijmex.com	2019	0
13.	Measures of Noncompactness in Summable Difference Sequence Spaces	Malik Ishfaq Ahmad, Tanweer Jalal	Journal of Mathematical Extension	13, 143-159		2019	0

14.	Infinite system of integral equations in two variables of hammerstein type in C0 and ℓ1 spaces	Ishfaq Ahmad Malik, Tanweer Jalal	Filomat	33, 3441-3455	https://doi.org/10.2298/FIL1911441M	2019	02
15.	Generalized Wintgen Inquality for Legendrian Submanifolds in Sasakian Statistical Manifolds	Michel Nguiffo Boyom, Zamrooda Jabeen, Mehraj Ahmad Lone, Mohamd Saleem Lone, Mohammad Hasan Shahid	International Conference on Geometric Science of Information	407-412	https://doi.org/10.1007/978-3-030-26980-7_42	2019	02
16.	Approaches to mathematical optimization and its applications	Zamrooda Jabeen, Farida Khursheed				2019	0
17.	Transient simulation of liquid-liquid slug flow in a T-shaped process unit	Sivasamy Balasubramanian, Ashish Kapoor, B Krishna Srihari	AIP Conference	2112, 020143	https://doi.org/10.1063/1.5112328	2019	0
18.	Adsorptive and Bio Removal of Fluoride from Synthetic Waste Water by using Actinobacter Immobilized on the Surface of Sweet Lemon Peel	Aash Mohammad, Shashikant Kumar	International of Engineering & Technology	Vol. 8	ISSN: 2278-0181	2019	02
19.	In silico high throughput screening of bimetallic and single atom alloys using machine learning and ab initio microkinetic modelling	Shivam Saxena, Tuhin Suvra Khan, Fatima Jalid, Manojkumar Ramteke, M Ali Haider	Journal of Materials Chemistry A	8, 107-123	DOI: 10.1039/C9TA07651D	2019	19
20.	Reactivity Trends in Non-Oxidative Dehydrogenation of Ethanol on Stepped Surfaces of Transition Metal Catalysts and Design of Bimetallic Alloys	Fatima Jalid, Tuhin Khan, M Ali Haider	2019 North American Catalysis			2019	0
21.	In-silico screening of Pt-based bimetallic alloy catalysts using ab initio microkinetic modeling for non-oxidative dehydrogenation of ethanol to produce acetaldehyde	Fatima Jalid, Tuhin S Khan, M Ali Haider	MRS	9, 107-113	https://doi.org/10.1557/mrc.2019.6	2019	06
22.	Understanding the trends in the activity and selectivity of non-oxidative dehydrogenation of ethanol on (211) facets of transition metal catalysts and bimetallic alloys	Fatima Jalid, Tuhin S Khan, M Ali Haider	NBL 2019		ISBN:978-81-939516-0-6	2019	0
23.	Capacitance of graphene films: effect of the number of layers of the constituent graphene flakes	Afkham Mir, GN Abhilesh, Rupesh M Tamgadge, Anupam Shukla	Journal of Solid-State Electrochemistr	23, 2281-2290	https://doi.org/10.1007/s10008-019-04344-z	2019	02

24.	Ozone pre-treatment of molasses-based biomethanated distillery wastewater for enhanced bio-composting	Sameena N Malik, Prakash C Ghosh, Atul N Vaidya, Sandeep N Mudliar	Journal of environmental management	246, 42-50	https://doi.org/10.1016/j.jenvman.2019.05.087	2019	18
25.	Nano catalytic ozonation of biomethanated distillery wastewater for biodegradability enhancement, color and toxicity reduction with biofuel production	Sameena N Malik, Shahbaz M Khan, Prakash C Ghosh, Atul N Vaidya, Sera Das, Sandeep N Mudliar	Chemosphere	230 449-461	https://doi.org/10.1016/j.chemosphere.2019.05.067	2019	08
26.	Treatment of pharmaceutical industrial wastewater by nano-catalyzed ozonation in a semi-batch reactor for improved biodegradability	Sameena N Malik, Shahbaz M Khan, Prakash C Ghosh, Atul N Vaidya, Gajanan Kanade, Sandeep N Mudliar	Science of the Total Environment	678, 114-122	https://doi.org/10.1016/j.scitotenv.2019.04.097	2019	24

List of faculty publications with DOIs (CAYm2, 2018-2019)

	Title of Publication	**Authors**	**Journal Conference**	**Volume and Page No.**	**DOI**	**Year**	**Total No. of Citations**
1.	Biomass residue characterization for their potential application as biofuels	Mudasir Akbar Shah, MNS Khan, Vimal Kumar	Journal of Thermal Analysis and Calorimetry	134, 2137-2145	https://doi.org/10.1007/s10973-018-7560-9	2018	24
2.	Utilisation of a waste biomass, walnut shells, to produce bio-products via pyrolysis: investigation using ISO-conversional and neural network methods	Tanveer Rasool, Vimal Chandra Srivastava, MNS Khan	Biomass Conversion and Biorefinery		https://doi.org/10.1007/s13399-018-0311-0	2018	16
3.	Bioenergy potential of Salix alba assessed through kinetics and thermodynamic analyses	Tanveer Rasool, Vimal Chandra Srivastava, MNS Khan	Process Integration and Optimization for Sustainability	2, 259-268	https://doi.org/10.1007/s41660-018-0040-7	2018	06
4.	Hydrothermal Liquefaction of Algae for Production of Biofuels- A Review.	Waris Baba, M.A Rather and Tanveer Rasool Dar.	Journal of Basic and Applied Engineering Research	5, 84-85		2018	0
5.	Hydrothermal carbonization: A promising transformation process of biomass into various product materials	Mushtaq Ahmad Rather	Emerging Trends in Engineering, Science and Technology for Society, Energy and Environment	687-692		2018	0
6.	Synthesis and surfactant size regulation of nanoparticles of maghemite (γ-Fe2O3)	Mushtaq Ahmad Rather	Emerging Trends in Engineering, Science and Technology for Society, Energy			2018	0

			and Environment				
7.	Adsorption studies of commercial and locally fabricated magnetic TiO2 nanoparticles towards a model dye	Mushtaq Ahmad Rather	"ICW–2018, Kerala			2018	0
8.	Hydrothermal Liquefaction of Algae for Production of Biofuels- A Review.	Waris Baba, M.A Rather and Tanveer Rasool Dar.	ETAHBS-2018			2018	0
9.	Iron Oxide Nanoparticles as Potential Drug Delivery Agents in Cancer Treatment- A Review.	Aarif H Shah and Mushtaq A Rather.	ETAHBS-2018			2018	0
10.	Transformation of Biomass into Alternate Fuels by Briquetting Technology.	Faheem Hamid and M.A. Rather.	ETAHBS-2018			2018	0
11.	A Review on Activated Carbon from Biowaste: Process, Application and Prospects.	Shakir A Mir and Mushtaq A Rather.	ETAHBS-2018			2018	0
12.	Nano-Photocatalysis: A Versatile Advanced Oxidation Process.	Mushtaq Ahmad Rather.	(ICNBL-2019)			2019	0
13.	Removal of pharmaceuticals from waste water using TiO2 nanoparticles.	Aarif H Shah and Mushtaq Ahmad Rather.	(ICNBL-2019)			2019	0
14.	Adoption of Photocatalysis in Tertiary Water Treatment	Mushtaq Ahmad Rather	Int. Conf. Contemporary Issues in Engineering, Agriculture and Applied Sciences			2019	0
15.	Fabrication of Iron Oxide Nanoparticles with High Saturation Magnetization values for use in Photocatalytic Applications.	Mushtaq Ahmad Rather.	(IMMT - 2019),BITS PILANI			2019	0
16.	Nanobioremediation approach for cleaner environment	Mushtaq Ahmad Rather.	NBL 2019			2019	0
17.	Recent trends in extraction of cellulosic nano-fibres from biomass waste: A brief review	Tanveer Rasool, Ruqaiyah Khursheed, Sabbah Guljan, Tanisha Mahajan, Aamina Makroo, Maida Lateef	Applied Science Innovations Pvt. Ltd., India		ISBN:978-81-939516-0-6	2019	0
18.	Kinetic and Thermodynamic Analysis of Thermal Decomposition of Deodar (Cedrus Deodara) Saw Dust and Rice Husk as Potential Feedstock for Pyrolysis	Tanveer Rasool, Vimal Chandra Srivastava, MNS Khan	International Journal of Chemical Reactor Engineering	17	https://doi.org/10.1515/ijcre-2017-0184	2018	04

19.	Utilisation of a waste biomass, walnut shells, to produce bio-products via pyrolysis: investigation using ISO-conversional and neural network methods	Tanveer Rasool, Vimal Chandra Srivastava, MNS Khan	Biomass Conversion and Biorefinery	8, 647–657	https://doi.org/10.1007/s13399-018-0311-0	2018	16
20.	Bioenergy potential of Salix alba assessed through kinetics and thermodynamic analyses	Tanveer Rasool, Vimal Chandra Srivastava, MNS Khan	Process Integration and Optimization for Sustainability	2, 259-268	https://doi.org/10.1007/s41660-018-0040-7	2018	06
21.	Influence of height ratio on flow and heat transfer around trapezoidal geometry (a generic sharp-edged body) covering transition to periodic flow	Malik Parveez, Amit Kumar Dhiman, GA Harmain	International Journal of Heat and Mass Transfer	124, 1285-1309	https://doi.org/10.1016/j.ijheatmasstransfer.2018.03.105	2018	05
22.	Aiding buoyancy driven flow and heat transfer features of converging and diverging trapezoidal cylinders	Malik Parveez, Amit Dhiman, GA Harmain	Sādhanā	43, 1-16	https://doi.org/10.1007/s12046-018-0862-6	2018	01
23.	On i-convergent double sequence spaces defined by a compact (operator. And modulus	Tanvveer jalal	Proceedings of Jangjeon Mathematical	21, 679-687		2018	0
24.	I-Convergence of triple difference sequence spaces over n-normed space	Tanweer Jalal, Ishfaq Ahmad Malik	Tbilisi Mathematical Journal	11, 93-102	https://doi.org/10.32513/tbilisi/1546570888	2018	02
25.	Some new triple sequence spaces over n-normed space	Tanweer Jalal, Ishfaq Ahmad Malik	Proyecciones	37, 547-564	http://dx.doi.org/10.4067/S0716-09172018000300547	2018	03
26.	Measures of Noncompactness in Summable Difference Sequence Spaces	Ishfaq Ahmad Malik, Tanweer Jalal	arXiv preprint arXiv:1804.103			2018	01
27.	I-convergent triple sequence spaces over n− normed space	Tanweer jalal, ishfaq ahmad malik	Asia Pac. J. Math	5, 233-242	ISSN 2357-2205	2018	02
28.	A note on multiordered fuzzy difference sequence spaces	Tanweer Jalal	Filomat	32, 2867-2874	https://doi.org/10.2298/FIL1808867J	2018	0
29.	Some new lacunary sequence spaces of Invariant means defined by Musielak-Orlicz functions on n-normed space	Tanweer Jalal	International journal of pure and applied mathematics	119, 1-11	ISSN: 1311-8080 (printed version); ISSN: 1314-3395 (on-line version)	2018	04
30.	First-principle microkinetic modeling of ethanol dehydrogenation on metal catalyst surfaces in non-oxidative environment: design of bimetallic alloys	Tuhin S Khan, Fatima Jalid, M Ali Haider	Topics in Catalysis	61, 1820-	https://doi.org/10.1007/s11244-018-1028-9	2018	20
31.	Size distribution of trilayer graphene flakes obtained by electrochemical exfoliation of graphite:	Afkham Mir, Deepak K Singh, Anupam Shukla	Materials Chemistry and Physics	220, 87-97	https://doi.org/10.1016/j.matchemphys.2018.08.07	2018	09

	Effect of the synthesis parameters				1		
32.	Bilayer-rich graphene suspension from electrochemical exfoliation of graphite	Afkham Mir, Anupam Shukla	Materials & Design	156, 62-70	https://doi.org/10.1016/j.matdes.2018.06.035	2018	19
33.	Electrochemical exfoliation of graphite to stage-III graphite bisulfate flakes in low concentration sulfuric acid solution: A novel synthesis route to completely trilayer graphene suspension	Afkham Mir, Anupam Shukla	Applied Surface Science	443, 157-166	https://doi.org/10.1016/j.apsusc.2018.02.284	2018	09
34.	Catalytic ozone pretreatment of complex textile effluent using Fe2+ and zero valent iron nanoparticles	Sameena N Malik, Prakash C Ghosh, Atul N Vaidya, Sandeep N Mudliar	Journal of hazardous materials	357 363-375	https://doi.org/10.1016/j.jhazmat.2018.05.070	2018	38

Ph.D. awarded during the assessment period while working in the Institute

S. No.	Name of the Student	Supervisor/Co-Supervisor	Institute	Year of award
1.	Mushtaq Ahmad Rather	Prof. M. N. S. Khan/ Prof. Rajat Gupta	NIT Srinagar	2017
2.	Tanveer Rasool Dar	Prof. M. N. S. Khan	NIT Srinagar	2018
3.	Malik Parveiz Ahmad	Prof. G. A. Harmain/Dr. A. K. Dhiman	NIT Srinagar	2018
4.	Fatima Jalid	Dr. M. Ali Haider/ Dr. F. Q. Mir	IIT Delhi	2020
5.	Afkham Mir	Dr. Anupam Shukla	IIT Delhi	2018
6.	Iqrah Akbar	P. Jamal	IIUM Malaysia	2019

Claimed 05

5.8.2 Sponsored research (20)

Funded research from outside:
(Provide a list with Project Title, Funding Agency, Amount and Duration)
Funding Amount (Cumulative during last three academic years starting from CAYm1):
Amount > 50 Lacs– 20 Marks,
Amount > 40 and ≤50 Lacs – 15 Marks,
Amount > 30 and ≤40 Lacs– 10 Marks,
Amount ≥15 and ≤30 Lacs – 5 Marks,
Amount < 15 Lacs – 0 Marks

	Title	Name of PI & Co-PI	Agency	Amount	Duration	Year	Status
CAYm2 (2018-19)	Briqueting of Dal Lake weeds to serve as a fuel source.	PI: Dr. Mushtaq Ahmad Rather	MHRD-Swachtta Action plan	24.94 lakhs	3 Years	2018	Ongoing
CAYm1 (2019-20)	Isotherm Modelling of Cu(II) using nitric acid modified waste biomass	PI: Dr. Tanveer Rasool Dar	TEQIP-III, NIT Srinagar	Rs. 1.00 Lakh	-	2019	Ongoing
	Study of bioremediation	PI: Dr. Mushtaq	TEQIP-III, NIT	Rs. 1.00 Lakh	-	2019	Ongoing

	potential of locally available micro-organisms existing in Dal Lake Kashmir under controlled conditions	Ahmad Rather	Srinagar				
	Preparation of ceramic based membranes for separation of iron from groundwater	PI: Dr. F.Q. Mir	TEQIP-III, NIT Srinagar	Rs. 1.00 Lakh	-	2019	Ongoing
	Fabrication and characterization of composite proton exchange membrane for direct methanol fuel cells(DMFC).	Co-PI: Dr. F.Q. Mir	TEQIP-III, NIT Srinagar	Rs. 1.00 Lakh	-	2019	Ongoing
Assessment				**05**			

5.8.3 Development activities (15)

Claimed 15

Provide details:

5.8.3.1 Product Development
5.8.3.2 Research laboratories
5.8.3.3 Instructional materials
5.8.3.4 Working models/charts/monograms etc.

5.8.3.1 In house product development:

S.No	Name of product
1.	Development of microfiltration test cell.
2.	Development of manual press for compression.
3.	Fabrication of die for ceramic membrane preparation.
4.	Fabrication and development of Electrodialysis cell.
5.	Development of various types of membranes for different industrial applications.
6.	Design and fabrication of packed column in order to determine flow characteristics and pressure drop in non-newtonian fluid through different packings.
7.	Fabrication of experimental setup to carry out photocatalysis involving UV light employing UV LED's than traditional UV tube.

5.8.3.2 Research laboratories

S.No.	Name
1.	Energy Engineering Lab.
2.	Environmental Engineering Lab.
3.	Catalysis Lab.
4.	Biochemical Engineering Lab.
5.	Membrane Science & Technology Lab.
6.	Multiphase Engineering Lab.

5.8.3.3 Instructional materials

Each high-end equipment in every research lab is supported with instruction manuals and operating software for proper and safe use. The instruction material also provides procedure

for calibrating and troubleshooting of the equipment.

5.8.3.4 Working models/charts/monograms etc.

Apart from different high-end equipment such as CHNS analyzer, Capillary Flow Porometer, Potentiostat, BET analyzer, HPLC, FTIR, Spectrophotometers, Bioreactor, Digital Bomb Calorimeter working models like Electrodialysis cell, Microfiltration cell, distillation still, packed columns etc. are available in the department for the effective teaching-learning process.

Assessment	15

5.8.4 Consultancy (from Industry) (20) **Claimed 0**

(Provide a list with Project Title, Funding Agency, Amount and Duration)
Funding Amount (Cumulative during last three academic years starting from CAYm1):
Amount >10 Lacs – 20 Marks,
Amount ≤10 and ≥ 8 Lacs – 15 Marks,
Amount < 8 and ≥6 Lacs– 10 Marks,
Amount < 6 and ≥4 Lacs–5 Marks,
Amount < 4 and ≥2 Lacs– 2 Marks,
Amount <2 Lacs – 0 Marks

S.No	Name	Agency	Amount	Duration	Year	Status
01.	M/S Green Energy	M/S Green Energy	11,100/-	-	2021	Completed
02.	Water Testing of Ground water	M/S NCC Ltd. AIIMS Awantipora	17,500/-	-	2021	Completed

5.9 Faculty Performance Appraisal and Development System (FPADS) (10) **Claimed 10**

The institute has in place a continuous, incisive, well-organized, and effective faculty performance appraisal system for the faculty members. For this purpose, an "Annual Assessment Report for the Faculty and the Staff" is prepared for every member. This report gives a detailed description of the members' contribution to teaching-learning process, contribution in laboratory development, course development and development of teaching aids, laboratory manuals, and special lectures. In addition, participation in organizing seminars, symposia, conferences, continuing education programs, research and development activities, sponsored research projects, contribution to department and institute administration, etc., are also taken into account. A copy of the Assessment form is provided in the Annexure-5A. The annual assessment report is given due consideration in the process of promotion and up-gradation of faculty members and hence plays a vital role in the development of the academic, research and administrative system of the institute.

Assessment	10

5.10 Visiting/Adjunct/Emeritus Faculty etc. (10) **Claimed 10**

Adjunct faculty also includes Industry experts. Provide details of participation and contributions in teaching and learning and /or research by visiting/adjunct/Emeritus faculty etc. for all the assessment years:

5.10.1 Provision of visiting/adjunct faculty (1)
5.10.2 Minimum 50 hours per year interaction with adjunct faculty from industry/retired professors etc. (9)

(Minimum 50 hours' interaction in a year will result in 3 marks for that year; 3marks x 3years= 9 marks)

2017-2018

S. No.	Date	Name of Event	Delivered By
01	Sep 6-7, 2017	"Youth Entrepreneurship in conflict areas" Symposium in Srinagar, J&K	CHINAR International in association with South Asia Network of Impact Masters and IIED Center, NIT Srinagar
02	Oct 2, 2017 (MEGA EVENT)	IDEA CHALLENGE 2017 – "The Future World"	IIED Center
03	Oct 2, 2017	Swach Bharat Abhiyan	Srinagar Municipal Corporation
04	Oct 2, 2017	Orientation Session of Batch 2016 & Batch 2017	IIED Center
05	Oct 5, 2017	Orientation program of "The Better You"	STARTUP KASHMIR
06	Oct 29, 2017	One day seminar on "Importance of international certification in Design, Automation and IT industries"	CETPA Infotech. Pvt. Ltd.
07	Nov 2, 2017	Interaction Session with "Prof. Anil Kumar Gupta", Founder of Honey Bee Network.	Central University of Kashmir
08	Nov 9, 2017	Catalysing a cultural shift in youth entrepreneurship	EDP Cell on National Entrepreneurship Day
09	May 07, 2018	Lecture on Gas Hydrates	Dr. Jatindra Sangwai, Centre of Ocean Technology (IIT Madras)
10	July 2018	5 day workshop on "Project Planning & Control with Primavera"	- IIED Center

2018-19

S. No.	Date	Name of Event	Delivered By
1.	March 23	Awareness Programme on "Industrial Policy, Schemes, and initiatives".	DIC Srinagar
2.	May 2019	Two Day Workshop on E-Summit	IIED Center

Assessment	10

ANNEXURE–5A

राष्ट्रीय प्रौद्योगिकी संस्थान श्रीनगर

NATIONAL INSTITUTE OF TECHNOLOGY SRINAGAR

(An autonomous Institute of National Importance under the aegis of Ministry of Education, Govt. of India)

हजरतबल, श्रीनगर , जम्मू-कश्मीर, 190006, भारत

Hazratbal, Srinagar Jammu and Kashmir, 190006, INDIA

Annual Performance Appraisal Report

Faculty Members

Name of the Employee …….

Section/ Department ……...

Report for the year/period ending……....

Personal Data

Part – 1

(To be filled by the Personnel Department)

1.	Name of the Faculty…….		
2.	Date of birth (DD/MM/YYYY) ……..…/……..../……. (in words) ….. ……....		
3.	Designation of post held …….		
4.	Whether the officer belongs to Scheduled Caste / Scheduled Tribe?		
5.	Date of continuous appointment in the present grade	Date……	Grade…….
6.	Period of absence from duty on leave, training etc. during the year		

PART-2 **To be filled in by the faculty member reported upon**

a. Highest Academic qualification _____

b. Any additional qualification which has been _____
acquired during the year under review _____

1. Membership of Professional/Scientific _____
Societies

2. Teaching Load /Week with course name and class : Lectures Tutorials Practicals Total
(Enclosed copy of Time Table)

3.1. Undergraduate Classes: _____ _____ _____ _____

3.2. Postgraduate Classes: _____ _____ _____ _____

3. Project/Research Supervision :
Give brief description of each project: names of the students and co-supervisors:

Project/Thesis	Title	No. of Students	Co- Supervisor
4.1. B. Tech	_____	_____	_____
	_____	_____	_____
	_____	_____	_____
	_____	_____	_____
4.2. M. Tech/M.Sc.	_____	_____	_____
4.3. Ph.D.	_____	_____	_____

4. Paper Published during the period of assessment: (Give details of the title of the paper, with Coauthors, (if any) details of the Journals/Conferences, Date etc.

_____

_____

5. Contributions to the Laboratory Development :(Give the name of the laboratory/equipment developed etc.)

_____

_____

_____

6. Contribution to the Course Development: (Give the details about contribution to any new course introduced, modifications made in the existing course etc.)

_____

Name of R & D Scheme/ Consultancy Work	Agency	Date from which Scheme Started	Research Staff Engaged	Progress made	Expected Date of Completion

7. Publication of Book Development of teaching aids or / Laboratory manuals / Special lectures/ Participation in or Organization of Seminars, symposia, conference, Summer and Winter Schools and other Continuing Educational programmes and Refreshers courses

   _____

   _____

8. Contribution to the social corporate life on the Campus_____
9. Contribution to the Department/Institution Administration :

   11.1. Department _____

   11.2. Institute _____

10. Additional contribution not covered above and which are relevant to the assessment of your activities

    _____

Date: _____ Signature of faculty reported upon

PART – 3

Numerical grading is to be awarded by reporting and reviewing authority which should be on a scale of 1-10, where 1 refers to the lowest grade and 10 to the highest.

(Please read carefully the guidelines before filling the entries)

(A) Assessment of work output (weightage to this section would be 40%)

	Reporting authority	Reviewing Authority	Initial of Reviewing Authority
(i)Accomplishment of planned work/work allotted (as per subjects allotted)			
(ii)Quality of output			
(iii) Analytical ability			
(iv) Accomplishment of exceptional work/ unforeseen tasks performed			
Overall Grading on 'Work Output'			

(B) Assessment of personal attributes (weightage to this section would be 30%)

	Reporting authority	Reviewing Authority	Initial of Reviewing Authority
(i) Attitude to teaching work			
(ii) Sense of responsibility.			
(iii) Maintenance of Discipline.			
(iv) Communication skills.			
(v) Leadership qualities.			
(vi) Capacity to work in team spirit.			
(vii) Capacity to adhere to time schedule.			
(viii) Inter- Personal relations			
(ix) Overall bearing and personality			
Overall Grading on 'Personal Attributes'			

(C)Assessment of functional competency (weightage to this Section would be 30%)

	Reporting authority	Reviewing Authority	Initial of Reviewing Authority
(i) Knowledge of the subject(s)/Teaching Capability			
(ii) Ability to interest the students and to arrange subject matter so as to cover all main parts of it			
(iii) Decision making ability.			
(iv) Ability to maintain discipline in the classroom & outside			
(v) Ability to motivate and develop students			
(vi) Reputation among students			
Overall Grading on 'Functional Competency'			

PART- 4 **GENERAL**

1. Relations with the public(wherever applicable)
   (Please comment on the officer's accessibility to the public and responsiveness to their needs.)

2. Training
   (Please give recommendations for training with a view to further improving the effectiveness and capabilities of the Officer.)

3. State of Health

4. Integrity
(Please comment on the integrity of the officer)

5. Pen picture by Reporting Officer(in about 100 words) on the overall qualities of the officer including area of strengths and lesser strength, extraordinary achievements, significant failures(ref: 3(A) & 3(B) of Part-2) and attitude towards weaker sections.

6. Overall numerical grading on the basis of weightage given in Section A, B and C in Part -3 of the Report.

Signature of the Reporting Officer

Place:_____ Name in Block Letters:_____

Date_____ Designation: _____

During the period of Report: _____

PART – 5

REMARKS OF THE REVIEWING OFFICER:

1. Length of service under the Reviewing Officer

2. Do you agree with the assessment made by the reporting officer with respect to the work output and the various attributes in Part- 3 & Part -4? Do you agree with the assessment of reporting Officer in respect of extraordinary achievements/significant failures of the officer reported upon? (Ref. Part-3(A(v)and Part-4(5)) (In case of you do not agree with any of the numerical assessment attributes. Please record your assessment on the column provided for you in that section and initial your entries).

3. In case of disagreement, please specify the reasons. Is there anything you wish to modify or add?

4. Pen picture by Reviewing Officer. Please comment (in about 100 words) on the overall qualities of the officer including area of strengths and lesser strength and his attitude towards weaker sections.

Overall numerical grading on the basis of weightage given in Section –A, Section –B and Section- C in Part 3 of the Report.

Signature of the Reviewing Officer

Place:_____ Name in Block Letters_____

Designation:_____

Date:_____ During the period of Report:_____