

INDIAN INSTITUTE OF TECHNOLOGY (IITs)

Provisionally Admitted RSUSQ No. U1433 for 22.09.2020

Regarding : Online Recruitment in Higher Educational Institutions (HEIs)

Asked : Prof. Manoj Kumar Jha

S.No.	Name of the IITs	teaching staff that has been recruited in Higher Educational Institutes (HEIs) and Central Universities (CUs) across the country through online selection committees:	the number of non-teaching staff that have been recruited in HEIs and CUs across the country through online selection committees, institution-wise details; and	the protocol developed to curb unfair practices by candidates and to ensure fair selection by the Ministry and/or respective HEIs, if so, the details thereof?
1	IIT Bomaby			
2	IIT Delhi			
3	IIT Guwahati			
4	IIT Kanpur			
5	IIT Kharagpur			
6	IIT Madras			
7	IIT Roorkee			
8	IIT BHU			
9	IIT Bhubaneswar	NIL	NIL	Not applicable
10	IIT Gandhinagar			
11	IIT Hyderabad			
12	IIT Indore			
13	IIT Jodhpur			
14	IIT Mandi			
15	IIT Patna			
16	IIT Ropar			
17	IIT Tirupati			
18	IIT Palakkad			
19	IIT Jammu			
20	IIT Bhilai			
21	IIT Goa			
22	IIT Dharwad			
23	IIT(ISM) Dhanbad			



भारतीय प्रौद्योगिकी संस्थान भुवनेश्वर
INDIAN INSTITUTE OF TECHNOLOGY BHUBANESWAR

F.No. 22-1/2017-Estt

Date: 23 Sep 2020

To
Shri. P. J. Soundararajan
Undersecretary to Govt. of India
Department of Higher Education
Ministry of Education, GoI
Shastri Bhawan, New Delhi – 110015

Sub: Lok Sabha Unstarred Question Dairy No. 13025 for answer on
28.09.2020 regarding “Innovative Researches Conducted by IITs

Sir,

In inviting reference to the mail dated 22 Sep 2020 on the subject mentioned above, the undersigned is directed to forward the requisite information pertaining to IIT Bhubaneswar in the attached prescribed format and the brief details in the attached annexures for kind perusal.

With regards,

Yours sincerely,

Asst. Registrar (Estt.)

Encl: As mentioned above.

Some Important Innovations happening at the IIT Bhubaneswar for the last three (3) years

1. Creation of an Innovative in-house Mechanism for Holding Comprehensive Examinations during COVID-19 pandemic to facilitate online examinations to its students(Annexure-IIIH)

IIT Bhubaneswar created a state of the art method of holding online examinations in a comprehensive manner. This method can be used for holding all types of examinations including the Class tests and End-Semester examination of an institute with the robustness and reliability of invigilation.

The proposed online examination system is robust and can be used for holding tests of wide ranging nature from simple computer based tests to detailed conventional examinations. The system uses a virtual examination hall, actual invigilators (IIT's own teachers acting as proctors in the system), question paper distribution on-line, and submission/reception of soft copies of answer books which may be printed, if needed.

This innovation helps the Institutes to address the lack of robustness in the conventional mode of online examinations. The Institute conducted the End-semester examinations in the normal comprehensive way as per its standards, very successfully, in on-line mode during June and July for its all year subjects.

2. A LIGHT WEIGHT AND LOW COST TUBE CROSS SECTION FOR IMPROVED THERMAL PERFORMANCE OF TWO-PHASE HEAT EXCHANGER

This invention relates to provide a selective tube cross section configured for improved heat transfer performance of two-phase heat exchanger. This newly designed tube structure will have advantageous application favouring two phase shell and tube heat exchanger manufacturing company and alike heat exchangers used in thermal power plant, nuclear power plant, petroleum industries, chemical processing industries, desalination plant and other allied industries.

3. REMOVAL OF TOXIC AZO DYES/AROMATIC AMINES AND INDUSTRIAL EFFLUENT TREATMENT BY POROUS RUTHENIUM NANOCATALYST

The present invention relates to the development of a unique g-C₃N₄/Fe₃O₄/p-RuNP nanocomposite system with potential applicability towards photocatalytic decomposition of water soluble aromatic amines and azo-dyes from water body, with a surprising recyclability of the said catalyst comprising advantage of magnetic separation. This invention is truly an important step towards controlling the pollution in water bodies.

4. METHODOLOGY TO DEVELOP AN ELLIPTICAL ROD FROM CIRCULAR ROD USING TWO AND HALF AXIS CNC MACHINE

The present invention relates to a method to develop an elliptical outer surface of a rod/tube from a circular section rod/tube using 3-axes CNC milling machine. The methodology adopted is user friendly during the machining of outside elliptical surface with small effort and less skill involving CNC milling machine considering easy availability and lower cost.

5. ENERGY RESEARCH at CINEMA

The goal of the Centre of Novel Energy Materials (CENEMA) is to advance, explore, and exploit the forefront of the science and engineering of energy materials. The research focus includes energy generation, energy storage, and energy distribution. For example, through bandgap engineering next-generation solar technology is explored for lightweight and flexible solar panels. On the energy storage, some of the research at the CENEMA includes emerging two-dimensional materials such as graphene and its composites for advanced super capacitors, aluminum-graphene composites as electrodes in aluminum ion (ALION) batteries and engineering of redox potential in lithium-ion batteries. Small-world networks are considered for energy distribution, particularly in grid deprived regions.

CENEMA is also working on low-cost and long-term energy storage devices which will be integrated into the solar photovoltaic modules in order to provide a continuous supply of electricity to the grid-deprived population in remote locations. Through the multiscale modelling approach, we have successfully addressed the most notable issue of dendritic growth, often found in the lithium-ion systems, by showing the possibility of replacing bulk metallic lithium or its compound with lithium-atomic-clusters. This will not only eliminate the issue of dendritic growth in lithium-based battery systems but also enhance the net effective electrode potential of the cluster-based batteries through the selection of a suitable electrolytic solvent.

6. VIRTUAL AND AUGMENTED REALITY CENTER OF EXCELLENCE (VARCoE)

Virtual Reality (VR) is a field of study that provides its user a synthetic experience. To simulate and generate virtual experiences it is often found that developers build computer model or virtual environments (VE) which are, for instance, spatially organized computational objects. However, Augmented reality is an emerging platform capable of addressing the challenges of virtual reality (VR) by superimposing virtual objects onto the physical world, in which the users can interact with virtual and real objects directly. IIT Bhubaneswar's center of excellence on Augmented and Virtual reality Research and Development aimed to act as a centralized body of knowledge, inventory and subject matter expertise on the specific technology of VR and AR. The major focus of this Centre is ranging from education, health care, transport, mining, to art and cultural activities. A few of the important milestones and achievements related to the ongoing research fields are listed below.

(i) AR for Education:

The AR application that is being developed under VARCoE is aimed at providing easy-to-use interface that will be able to automatically render the virtual objects over the image of the marker with appropriate pose and orientation. One of the main contributions of this research work will be to formulate the marker identification problem as a typical classification problem and solve it using advanced machine learning techniques.

(ii) Smart Grid Visualization – Applications of Virtual Reality Objectives of Proposal.

- To develop innovative methods to assist power system operators in the electricity industry to extract and visualize the knowledge from the large set of power system assets using IoT based applications.
- To propose techniques for visualization of the power system asset data as a whole as well as individual power system elements reflecting the field conditions for proactive based asset and fleet management of electrical systems.

(iii) Design and Development of Industrial Manipulator controlled using Virtual and Augmented Reality

- The objectives of the present proposal have been set as follows:
- Design and develop a 3-DOF serial manipulator that can perform the task of pick and place operation.
- To develop a VR application that can control the motion of the manipulator while following a path.
- To develop an AR application that can be used to perform the task of inspection of external features.

(iv) Healthy Lung Initiative:

The objective leveraging on Artificial Intelligence (AI), Machine Learning, Virtual- and Augmented Reality (VR & AR) for healthy lungs.

(v) Portable AR solution for non-destructive testing and lifetime prediction for oil, natural gas and steel industries

The objective of this project is to design a AR overlay system for 3-D data visualization of data.

(vi) Development of Augmented Reality based Weigh in Motion (WIM) Sensor

The project aims at designing WIM based on optical fiber system which has inherent advantage of small size, light weight, high speed, high accuracy, and hysteresis free, as opposed to most of the commercial Piezoelectric based WIM systems. Additionally, the silica only structure makes the fiber-based WIM immune to corrosion and makes the system with low maintenance and long-life. Customized designs with different shapes can be embedded. The project also aims at designing an AR overlay system for 3-D data visualization of real time data.

(vii) Virtual and augmented reality-based training modules for Metallurgical and Materials engineering students

The project is aimed at training students on metallurgy and materials engineering concepts and for handling sophisticated analytical equipment using ARVR concepts.

7. Development of a Patient Responsive Active Assist coNtrol (PRAAN) Ventilator at IIT Bhubaneswar.

Faculty members and students of IIT Bhubaneswar have developed a **Patient Responsive Active Assist coNtrol (PRAAN) ventilator for COVID19 emergencies**. It can be operated in the standard volume control mode by setting breaths-per-minute, inhale and exhale time ratios, and tidal volume. The LCD displays various control clinical parameters and features fault alarms. Some of the critical structural members have been 3D printed.

The highlight of this **PRAAN** ventilator is its active assist control mode. In this mode of operation the ventilator senses that the patient is trying to inhale and will adapts to the patient's breathing frequency, reducing the load on the lungs. This feature has been realized in the ventilator without significant increase in cost.

8. Development of a portable ventilator to fight against COVID- 19 in emergency pandemic situation.

The School of Mechanical Sciences, IIT Bhubaneswar has developed a portable ventilator to fight against **COVID- 19** in emergency pandemic situation.

The total volume of the resuscitator is **1650 ml** with a stroke volume of **800 ml**. The pumping of the portable ventilator is carried out by using programmable stepper motor drive. The speed and stroke length of the stepper motor can be both controlled manually and programmable. The ventilator can operate at a maximum breathing frequency of **12-15** breaths per minute. The resuscitator is attached with a 2000 ml reservoir bag to reserve oxygen. The provision of oxygen supply can be made to the resuscitating unit by connecting an oxygen supply. The device operates smoothly without noise, compact and portable. The delivery volume can be varied to a maximum of **500 ml for smooth delivery of oxygen**.

9. Development of a UVC Disinfection Cabinet.

IIT Bhubaneswar **developed a simple, but effective UVC Disinfection Chamber. The chamber can be used for disinfecting PPEs' of medical staff, electronic gadgets, garments, packets and other possible fomites.**

Two versions of this prototype can cater to test samples of wide ranging sizes. The time of exposure can be traded with the power. Presently, the equipment is designed as per the behavioural results of SARS COV-1. It is expected to work for SARS-COV-2 since SARS-COV-2 belongs to the same family of SARS-COV-1. The team of the developers intend to test the system against SARS-COV-2 with the help of ICMR-RMRC Bhubaneswar in the coming few days. The Institute will apply to ICMR for certification before taking it for production.

10. Development of a face shield with antimicrobial properties

The purpose of this project is to design, prototype equipment fabrication, testing, and up scaling technology transfer of **Anti-Viral face shield** as **personal protective equipment (PPE)** for safeguarding the health of health care workers against **COVID - 19**. Various nanostructured composite films (such as, TiO₂, ZnO, RGO, etc.) will be incorporated through coating on locally available transparent sheet (that is being used as face shield material) and the same would be tested with **ICMR - RMRC** for effectiveness of the use of face shield materials in fighting against COVID 19. As of now, a simple design and make of a simplified face shield has been made. A process for coating of the nanoparticles on the transparent sheet has been established and preliminary coatings with nano-materials will be tested for anti-viral effectiveness soon.

11. Development of a Disinfectant Station to combat COVID-19

Indian Institute of Technology Bhubaneswar with regards to the ongoing outbreak of Novel Corona Virus (COVID-19) is committed to the health and welfare of the campuses so has gone ahead and currently developed a Disinfectant Station at the main gate of the Institute.

The Disinfection station is an open structure covered on three sides and made up of steel channels, plywood and plastic sheets. The developed disinfectant unit is currently being used to sanitize the people entering the campus from chest to waist (emphasizing on hands) and lower part of the leg including feet, by spraying appropriate disinfectant comprising of isopropyl alcohol and oxidizing agent in the form of fine mist generated by two spraying nozzles. The station can also be used to sanitize bags and luggage, wallets, mobile phones etc. The person has to spend at least 20-30 seconds in front of the nozzles for adequate disinfection.

12. Preparation of an alcohol based hand sanitizer as per WHO parameters

The School of Basic Sciences, IIT Bhubaneswar has prepared alcohol based hand sanitizer, which has been prescribed by **World Health Organization (WHO)** for preventing the spread of coronavirus and its spores from small surfaces and hand for use by the campus community.

The 'in-house prepared hand sanitizer' contains an oxidizing agent which is usually absent in most of the commercialized hand sanitizers. IIT Bhubaneswar has also started distributing the same sanitizer to the medical unit, security unit(s) as well as among the staff and faculty members residing within the campus. The alcohol based hand sanitizer prepared at IIT Bhubaneswar contain at least 70% alcohol can efficiently disinfect microorganisms and viruses on hands within 30 seconds or so after application.

13. Development of a Disinfectant Tunnel to combat COVID-19 (Annexure-IIIG)

Indian Institute of Technology Bhubaneswar has developed and installed a **Disinfectant Tunnel** with its commitment to the health and welfare of the IITBBS family during the current situation of outbreak of Corona Virus Disease 2019 (COVID-19).

The Disinfection tunnel is a semi-closed structure and is currently being used at the main gate of IIT Bhubaneswar so that it may be helpful in sanitization of almost entire portion (except the face and head) of the body of persons. The unit applies spray of appropriate disinfectant comprising of isopropyl alcohol and hydrogen peroxide in the form of fine mist generated from four nozzles placed at different heights, focused towards a specific location and connected to the air blowers. The sensing unit of the developed system is programmed to keep the disinfectant mist turned on for 15-20 sec, once the person reach to the central position. The person has to take a full turn while standing at the designated location to get exposed to the spray mist to the desired level.

14. Development of Pocket Sanitizer

- Easy to fabricate and uses low cost materials
- Refillable
- Can be used for dispensing both alcohol sanitizer and soap solution
- Works as a device for turning switches on/off and pushing buttons in ATM/elevator. The sanitizing liquid contained inside can help in disinfecting the switches and buttons.

Research Projects that are being translated for the benefit of the society

In keeping with the societal perspective in view, IIT Bhubaneswar has been actively pursuing a number of research projects which has direct and indirect societal benefit. All most all the projects have direct or indirect relevance and research areas in which projects are running includes:

1. Climate forecasting
2. Affordable Agriculture Management
3. Innovation in Energy research
4. Innovative materials for Rural Development
5. Augmented Reality and Virtual reality (AR-VR)
6. Environment and Sustainability
7. Data Science and Machine Intelligence
8. IoT and next generation networks
9. Water
10. Micro & Nano Manufacturing and Sensors
11. Nanoscience and technology
12. Physics and Chemistry of Materials

However, the project whose output is being translated for the benefit of the society includes the following:

1. Climate forecasting: In view of the vast coast line of Odisha and its neighbouring regions, the climate monitoring and prediction has been one of the foremost research areas of the Institute. This is achieved through the development of:

- Extended Range Forecast System for extreme weather conditions
- Modelling and prediction of cyclones over the Indian Sea
- Short, medium and long range prediction of monsoon rainfall
- Development of Doppler weather radar system for the prediction of severe weather conditions

The research work done in the above areas have led to the development of a *one way dynamical coupled atmosphere-storm surge model* for the prediction of storm surges 3-4 days in advance. This is an innovative model and first time developed in India. This model has been implemented very successfully for the prediction of the cyclones **Phailin** (2013), **Hudhud** (2014), **Foni** (2019) which has greatly saved human life and reduced loss of crops and other properties in the State.

2. Affordable Agriculture Management: IIT Bhubaneswar has launched a massive initiative in agriculture management in collaboration with USA & Israel.

The initiatives has led to the development of app-based decision network for Sustainable ground water exploration, Management of soil moisture content. Some Farmers are engaged in the project and it is helping the farmers in surface water, ground water control and adopt best practices in crop management.

In collaboration with Govt. of Odisha, the IIT Bhubaneswar team has also developed a Maize Sheller which is farmer friendly and highly efficient.

- 3. Solar power based and DC electrical devices:** IIT Bhubaneswar has been very successful in research related to harvesting solar energy and its utilisation for grid integration and rural application. Some of the innovations include Solar power DC System for domestic electrification, solar roof sheets and batteries, movable solar photovoltaic water pump and smart distribution system on micro and normal grid.

Such systems are demonstrated to Government of Odisha and Farmers. Large scale deployment with the Odisha government will be happening shortly.

- 4. Innovative Research Output in Batter Technology:** Very significant research results have been obtained in battery technology and hybrid materials which are being patented, now.

These developments will have a significant impact on the society.

- 5. Innovative materials for Rural Development:** The state of Odisha bears a brunt of severe coastal erosion devouring the villages for decades, on one side, and generates substantial amount of waste materials such as fly ash, red mud etc., on the other side. IIT Bhubaneswar team has successfully developed fly ash alone and fly ash-red mud combination based geopolymer concrete blocks. The research outcome demonstrated that the developed blocks could become sustainable products best suitable as barriers (seawalls, tripods) to prevent coastal erosion problems. The research bears significant importance that the manufacturing of blocks are completely cement free and utilizes exclusively waste materials, apart from that the products are environmentally benign, leave no foot-print of CO₂ and release no harmful chemicals.

- 6. Other innovations in Energy Research:** The institute obtained several industry projects with NALCO and is part of grants of value more than 2 crores over the last three years to develop advanced energy efficient materials using aluminium and graphene embedded through powder sintering, doping during melting and through coating. These materials find applications in LEDS, battery, solar collector and heat exchangers. The research helps in providing sustainable energy solutions to society as well as enables in creating jobs through Start Up.

Energy from Waste is another area where the Institute has achieved success. Examples include Bio-fuel from solid waste using microwave catalytic reactor, Production of bio-energy from kitchen and industrial waste water using microbial fuel cell.

INDIAN INSTITUTES OF TECHNOLOGY (IITs)

LSUS Diary No. 13025 for 28.09.2020 regarding "Innovative Researches Conducted by IITs"

S.No.	Name of the IITs	Part (a)	Part (b) & (c)	Part (d) & (e)
		Please give details for the last 3 years 2017, 2018, 2019 and also for 2020	If, yes give details	
1	IIT Bombay			
2	IIT Delhi			
3	IIT Guwahati			
4	IIT Kanpur			
5	IIT Kharagpur			
6	IIT Madras			
7	IIT Roorkee			
8	IIT BHU			
9	IIT Bhubaneswar	<p>1. Creation of an Innovative in-house Mechanism for Holding Comprehensive Examinations during COVID-19 pandemic to facilitate online examinations to its students</p> <p>2. A Light weight and low cost tube cross section for improved thermal performance of two-phase heat exchanger</p> <p>3. Removal of toxic azo dyes/aromatic amines and industrial effluent treatment by porous ruthenium nanocatalyst</p> <p>4. Methodology to develop an elliptical rod from circular rod using two and half axis cnc machine</p> <p>5. Energy research at cinema</p> <p>6. Research on Virtual and Augmented Reality areas</p> <p>7. Development of a Patient Responsive Active Assist coNtrol (PRAAN) Ventilator at IIT Bhubaneswar</p> <p>8. Development of a portable ventilator to fight against COVID- 19 in emergency pandemic situation</p> <p>9. Development of a UVC Disinfection Cabinet</p> <p>10. Development of a face shield with antimicrobial properties</p> <p>11. Development of a Disinfectant Station to combat COVID-19</p> <p>12. Preparation of an alcohol based hand sanitizer as per WHO parameters</p> <p>13. Development of a Disinfectant Tunnel to combat COVID-19</p> <p>14. Development of Pocket Sanitizer</p> <p>Brief details related to the above are provided in the Annexure -A</p>	<p>In keeping with the Societal Perspective in view, IIT Bhubaneswar has been actively pursuing the research in the following areas:</p> <ol style="list-style-type: none"> 1. Climate forecasting 2. Affordable Agriculture Management 3. Innovation in Energy research 4. Innovative materials for Rural Development <p>Augmented Reality and Virtual reality (AR-VR)</p> <ol style="list-style-type: none"> 6. Environment and Sustainability 7. Data Science and Machine Intelligence 8. IoT and next generation networks 9. Water 10. Micro & Nano Manufacturing and Sensors 11. Nanoscience and technology 12. Physics and Chemistry of Materials <p>Breif details related to the abvoe research areas are provided in the Annexure-B</p>	<p>Affordable Agriculture Management: IIT Bhubaneswar has launched a massive initiative in agriculture management in collaboration with USA & Israel. The initiatives has led to the development of app-based decision network for Sustainable ground water exploration, Management of soil moisture content. Some Farmers are engaged in the project and it is helping the farmers in surface water, ground water control and adopt best practices in crop management.</p> <p>In collaboration with Govt. of Odisha, the IIT Bhubaneswar team has also developed a Maize Sheller which is farmer friendly and highly efficient.</p>
10	IIT Gandhinagar			
11	IIT Hyderabad			

INDIAN INSTITUTES OF TECHNOLOGY (IITs)

LSUS Diary No. 13025 for 28.09.2020 regarding "Innovative Researches Conducted by IITs"

S.No.	Name of the IITs	Part (a)	Part (b) & (c)	Part (d) & (e)
		Please give details for the last 3 years 2017, 2018, 2019 and also for 2020	If, yes give details	
12	IIT Indore			
13	IIT Jodhpur			
14	IIT Mandi			
15	IIT Patna			
16	IIT Ropar			
17	IIT Tirupati			
18	IIT Palakkad			
19	IIT Jammu			
20	IIT Bhilai			
21	IIT Goa			
22	IIT Dharwad			
23	IIT(ISM) Dhanbad			

Proforma-I

Category	No. of backlog reserved vacancies as on 31.12.2018	No. of backlog reserved vacancies filled up as on 31.12.2018	No. of unfilled backlog reserved vacancies as on 01.01.2019
1	2	3	4
SC	NIL		
ST			
OBC			
Total			

Proforma-II

Category	No. of backlog reserved vacancies as on 31.12.2019	No. of backlog reserved vacancies filled up as on 31.12.2019	No. of unfilled backlog reserved vacancies as on 01.01.2020
1	2	3	4
SC	NIL		
ST			
OBC			
Total			

Proforma-III

Category	No. of backlog reserved vacancies as on 31.12.2020	No. of backlog reserved vacancies filled up as on 30.12.2020	No. of unfilled backlog reserved vacancies as on 31.12.2020
1	2	3	4
SC	NIL		
ST			
OBC			
Total			

Lok Sabha Unstarred Diary No. 3153 Answer Date 08.02.2021**The total number of Ph.D. students admitted in Spring (2019-20) and Autumn (2020-21).**

S.No.	Name of the Institute	Name of the Department	No. of Ph.D Student Department Wise					Total
			GEN	SC	ST	OBC	EWS	
1	Indian Institute of Technology Bhubaneswar	School of Basic Sciences (BIO Science)	3	0	0	0	0	3
2	Indian Institute of Technology Bhubaneswar	School of Basic Sciences (Chemistry)	3	1	0	2	1	7
3	Indian Institute of Technology Bhubaneswar	School of Basic Sciences (Mathematics)	3	2	0	1	1	7
4	Indian Institute of Technology Bhubaneswar	School of Basic Sciences (Physics)	10	0	0	4	1	15
5	Indian Institute of Technology Bhubaneswar	School of Earth Ocean and Climate Sciences	5	0	0	5	0	10
6	Indian Institute of Technology Bhubaneswar	School of Electrical Sciences (Computer Science and Engineering)	1	1	0	1	0	3
7	Indian Institute of Technology Bhubaneswar	School of Electrical Sciences (Electrical Engineering)	4	1	0	1	0	6
8	Indian Institute of Technology Bhubaneswar	School of Electrical Sciences (Electronics and Communication Engineering)	3	1	0	7	0	11
9	Indian Institute of Technology Bhubaneswar	School of Humanities, Social Sciences and Management (Economics)	3	0	1	1	0	5



10	Indian Institute of Technology Bhubaneswar	School of Humanities, Social Sciences and Management (English)	1	0	0	0	0	1
11	Indian Institute of Technology Bhubaneswar	School of Humanities, Social Sciences and Management (Psychology)	0	0	0	0	0	0
12	Indian Institute of Technology Bhubaneswar	School of Infrastructure	11	0	0	4	0	15
13	Indian Institute of Technology Bhubaneswar	School of Mechanical Sciences	5	1	0	3	0	9
14	Indian Institute of Technology Bhubaneswar	School of Minerals, Metallurgical and Materials Engineering	5	1	0	5	0	11
Total			57	8	1	34	3	103



भारतीय प्रौद्योगिकी संस्थान भुवनेश्वर
INDIAN INSTITUTE OF TECHNOLOGY BHUBANESWAR

F. No. 22-1/2021-MoE(Acad)

Date: 10 February 2021

To
Shri P. J. Soundarajan
Under Secretary (IITs)
Department of Higher Education
Ministry of Education
Shastri Bhavan
New Delhi -110011

Sub: Rajya Sabha Unstarred admitted question No. U1494 for 11.02.2021 regarding
"Use of Block Chain Technology for issuing certificate".

Ref: Email dated 08.02.2021

Sir,

With reference to the subject cited above the relevant information pertaining to IIT Bhubaneswar is furnished hereunder:

Sl. No.	Query	Reply
(a)	Whether Government has started issuing graduation/degree certificate using block chain technology	No
(b)	If so, the details thereof;	NA
(c)	Whether Government is of the view that these technologies can address the fake certificate issue that hamper the quality of the education; and	NA
(d)	Is so, the details thereof?	NA

This is for your kind information and necessary action please.

Yours sincerely,

Assistant Registrar (Estt.)



भारतीय प्रौद्योगिकी संस्थान भुवनेश्वर
INDIAN INSTITUTE OF TECHNOLOGY BHUBANESWAR

F. No. 22-2/2021-MoE.

Date: 10 March 2021

To
Shri P. J. Soundararajan
Under Secretary (IITs)
Department of Higher Education
Ministry of Education, Government of India,
Shastri Bhavan, New Delhi -110011.

Sub: - Rajya Sabha Provisionally Admitted Starred/Unstarred Dairy No. U4075 for answer on 18.03.2021 regarding "Reservation norms in IITs"

Ref: Email dated 06.03.2021

Dear Sir,

With reference to the subject cited above, the undersigned is directed to furnish the information in respect of IIT Bhubaneswar as below:

Sl. No.	Query	Reply										
1	The details of the applicability of existing reservation norms in Ph.D. and postgraduate programme admissions in IITs through seats which are not funded by Government sources, like research project staff, sponsored, self-financed, external and part-time researchers.	The reservation rules of Govt. of India are applied for all types of admission to Ph.D and Postgraduate programmes like Research Project Staff and Sponsored candidates. At present the Institute is not admitting the students of self-financed, external and part time researchers.										
2	Whether cut-off marks for SC/ST/OBC/EWS categories, decided by the various departments of IITs, for selection to their research programmes are regulated by any directives issued by Government/courts	The fixing of cut-off score/ marks for candidates in different categories shall be as per the norms of the Institute regulation vide Senate Res. No.29.A.B.1 (copy enclosed).										
3	The details on how cut-offs are decided for each social category?	The cut-offs at IIT Bhubaneswar are decided as per the norms given in the following table: <table border="1"><thead><tr><th>Category</th><th>Cut-off Score/ Marks</th></tr></thead><tbody><tr><td>General</td><td>X</td></tr><tr><td>OBC-NCL</td><td>0.9X</td></tr><tr><td>SC/ST/PwD</td><td>0.67X</td></tr><tr><td>EWS</td><td>Same as General i.e X</td></tr></tbody></table> X= Cut-off score / marks of unreserved category which is decided by the School based on the number of application and score/ marks of eligible applicants.	Category	Cut-off Score/ Marks	General	X	OBC-NCL	0.9X	SC/ST/PwD	0.67X	EWS	Same as General i.e X
Category	Cut-off Score/ Marks											
General	X											
OBC-NCL	0.9X											
SC/ST/PwD	0.67X											
EWS	Same as General i.e X											

Thanking you.

Yours sincerely,

Assistant Registrar (Estt.)



भारतीय प्रौद्योगिकी संस्थान भुवनेश्वर
INDIAN INSTITUTE OF TECHNOLOGY BHUBANESWAR

F. No. 22-2/2021-MoE.

Date: 10 March 2021

To
Shri P. J. Soundararajan
Under Secretary (IITs)
Department of Higher Education
Ministry of Education, Government of India,
Shastri Bhavan, New Delhi -110011.

**Sub: - Rajya Sabha Provisionally Admitted Starred/Unstarred Diary No. U2396
for answer on 18.03.2021 regarding "Equal opportunity Cells in IITs"**

Ref.: Email dated 06.03.2021

Dear Sir,

With reference to the subject cited above, the undersigned is directed to furnish the information in respect of IIT Bhubaneswar as below:

Sl. No.	Query	Reply
1	Whether the Ministry has issued any direction/guidelines for constituting SC/ST/OBC Cells Or Equal Opportunity Cells in the IITs, if so, the details thereof;	Not applicable to IIT Bhubaneswar.
2	Whether any IITs have set up SC/ST/OBC Cells or Equal Opportunity Cells in their campus, if so, that details thereof and if not, the reasons therefor; and	IIT Bhubaneswar has set up a cell for SC, ST, OBC, PWD and Minorities. Shri Debaraj Rath, Joint Registrar is acting as the Nodal Officer of the cell.
3	Whether any of the IITs have set up Special Academic Support Programs to help with the academic deficiencies of their students especially for SC,ST and OBC Students, if so, the details therefor ?	Academic programme of the IIT Bhubaneswar undertakes the following activities, in its constant endeavor for the educational development especially for SC, ST and OBC students. i. Institute provides preparatory course of one-year duration to SC/ST students with academic deficiencies to tune up them to pursue academic programme allocated to them through JOSAA. ii. Subject faculties take special care of the SC/ST and OBC students in their classes to help them understanding the subject. iii. Institute library issues additional books to SC/ST students compared to other students.

		<p><u>Other supports:</u></p> <ol style="list-style-type: none">1. Government of India guidelines (scholarships and other financial supports) issued from time to time for the SC/ST and OBC students are executed by the Institute in time with due care.2. Institute provides free mess and accommodation for B. Tech and MSc SC/ST students.
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Thanking you.

Yours sincerely,



Assistant Registrar (Estt.)

F. No. 22-2/2021-MoE.
Date: 12 March 2021

To
Shri P. J. Soundararajan
Under Secretary (IITs)
Department of Higher Education
Ministry of Education, Government of India,
Shastri Bhavan, New Delhi -110011.

Sub: - Rajya Sabha Provisionally Admitted Starred/Unstarred Dairy No. U3285 for answer on 18.03.2021 regarding "Reservation status in IIT, Bombay

Ref.: Email dated 08.03.2021

Dear Sir,

With reference to the subject cited above, the undersigned is directed to furnish the information in respect of IIT Bhubaneswar as below:

Sl. No.	Query	Reply
1	Whether none of the 26 departments in IIT Bombay managed to fill seats reserved for Scheduled Tribe students in Ph.D programmes between 2015 and 2019	Not related to IIT Bhubaneswar
2	If so, the details thereof quota-wise seats reserved/filled up/kept vacant, course-wise and IIT-wise and department-wise also and reasons therefor	The details are given in the enclosed Annexure.
3	Corrective steps being taken in this regard?	Not Applicable

Thanking you.

Yours sincerely,

**Assistant Registrar (Estt.)
IIT Bhubaneswar**

F. No. 22-2/2021-MoE.

Date: 12 March 2021

To
Shri P. J. Soundararajan
Under Secretary (IITs)
Department of Higher Education
Ministry of Education, Government of India,
Shastri Bhavan, New Delhi -110011.

Sub: - Rajya Sabha Provisionally Admitted Question Dy.no U2385 and U2384 for 18.03.2021 regarding Suicide cases of students at national institutes.

Ref.: Email dated 10.03.2021

Dear Sir,

With reference to the subject cited above, the undersigned is directed to furnish the information in respect of IIT Bhubaneswar as below:

Student Suicide Last 5 Years & Current Year (Semester-wise)				
S.No	Name of the IITs	Batch	Details of the Suicide in the last 5 years and Current year (Semester-wise)	Remarks
1	IIT Bhubaneswar	2016	0	
		2017	0	
		2018	0	
		2019	0	
		2020	0	
		2021 (As on 28.02.2021)	0	

Thanking you.

Yours sincerely,

Assistant Registrar (Estt.)

IIT Bhubaneswar

INDIAN INSTITUTE OF TECHNOLOGY BHUBANESWAR

Annexure

Rajya SABHA STARRED/UNSTARRED NO. U3285 ANSWER DATE:- 18.03.2021

Academic Year 2020-21

Sl. No.	Name of the IITs	Department	Course	Reserved Seats					Filled up Seats					Vacant Seats				
				General	SC	ST	OBC	EWS	General	SC	ST	OBC	EWS	General	SC	ST	OBC	EWS
1		School of Infrastructure	UG	41	16	7	29	11	36	16	7	25	10	5	0	0	4	1
			PG	30	10	5	16	5	29	10	1	16	5	1	0	4	0	0
			Ph.D	NA					32	2	1	11	0	NA				
2		School of Electrical Sciences	UG	85	33	16	58	21	82	33	16	58	19	3	0	0	0	2
			PG	36	12	4	24	4	33	9	2	19	5*	3	3	2	5	0
			Ph.D	NA					32	8	2	19	1	NA				
3		School of Mechanical Sciences	UG	47	17	9	31	11	41	16	9	29	10	6	1	0	2	1
			PG	27	9	3	18	3	27	5	0	18	3	0	4	3	0	0
			Ph.D	NA					29	3	0	10	0	NA				
4		School of Minerals, Metallurgical and Materials Engineering	UG	16	6	1	11	5	13	5	1	11	5	3	1	0	0	0
			PG	9	3	1	6	1	9	2	1	6	1	0	1	0	0	0
			Ph.D	NA					23	1	0	10	0	NA				
5		School of Basic Sciences	UG	NA														
			PG	30	12	6	20	8	27	8	5	17	6	3	4	1	3	2
			Ph.D	NA					59	15	3	32	4	NA				
6		School of Earth Ocean and Climate Sciences	UG	NA														
			PG	29	10	5	19	6	18	10	2	16	3	11	0	3	3	3
			Ph.D	NA					19	3	1	11	1	NA				
7		School of Humanities, Social Sciences and Management	UG	NA														
			PG	NA														
			Ph.D						12	1	2	6	0					

NB: (1) Ph.D = Total Sanctioned Seats- 449, Seats filled- 353, Seats vacant- 96 (2) * One seat more filled due to tie in the marks of selection.



भारतीय प्रौद्योगिकी संस्थान भुवनेश्वर
INDIAN INSTITUTE OF TECHNOLOGY BHUBANESWAR

F. No. 22-1/2021-MoE.

Date: 19 March 2021

To
Shri P. J. Soundararajan
Under Secretary (IITs)
Department of Higher Education
Ministry of Education, Government of India,
Shastri Bhavan, New Delhi -110011.

Sub: - Lok Sabha Unstarred Dairy No. 12326 for answer on 22.03.2021 regarding "Institute Development Plan".

Ref.: Email dated 15.03.2021

Dear Sir,

With reference to the subject cited above, the undersigned is directed to furnish the information in respect of IIT Bhubaneswar as below:

Sl. No.	Query	Reply
1	Whether the Government has asked the IITs to develop Institute Development Plan to envisioned in NEP 2020;	Not applicable
2	If so, the details thereof	Not applicable
3	Whether the mobility of faculty members and industry experts between technical institute and industry will promote collaborations between technical institute and industry will promote collaborations between industry and academia and if so, the details thereof;	Mobility of Faculty members and Industry experts between the technical Institute and Industry shall certainly help each other in bridging the gap between both the institutions in promoting collaborative research, technology transfer, training of personnel and career development of human taskforces engaged therein. Higher learning premier Institutes like IITs are the forerunners of innovation, skill development can serve the industry with effective mobility of faculty members and industry experts. The concept of "Lab to Land" may be made more effective with such mobilization of experts / faculty members.
4	Whether the Government proposes to constitute a taskforce to review use of technology at all IITs and also to accelerate deployment of digital tools in the country and if so, the details thereof; and	Not applicable.
5	The details of the contribution of the academics during the challenging times of COVID-19 and for their contribution in combating the COVID-19 by new scientific research?	(A) During COVID 19, academics of IIT Bhubaneswar contributed a lot by innovating and offering an uncompromising education to its students on time in keeping most of the students in the campus following SoP of Govt. of India. The details of online teaching and examination conducted during the pandemic situation are appended below: 1. Online theory classes started without losing a day. 2. Laboratory classes were conducted online both by live streaming or recorded video transmission of the experiments performed on the lab table, and also by

J.B.

bringing the students in batches to the campus physically for the conduct of the lab experiments.

3. Course faculty members were permitted to conduct classes from their homes during the lockdown period.
4. Pen and paper based comprehensive exams were conducted online with real time invigilation. The unique scheme of conducting the exam online was designed by the institute inhouse. It was highly successful.
5. Holding of the 9th Convocation in a very unique, hybrid mode with physical, online and virtual presence of the students.
6. Final year students were given priority to take semester exams and their result was declared in time. This enabled the students to join their jobs and also persue their higher studies.
7. Students were advised to take internships, which is a curriculum requirement, in online mode. Internships were also arranged with faculty members in interdisciplinary areas within the institute.
8. Admission for July 2020-21 academic session for all programmes were conducted in online mode.
9. All academic meetings including Senate were conducted in online mode for taking academic decisions in for all academic activities.
10. Online interactive sessions were conducted with the students by the institute heads to collect their feedback and keep their moral high during the pandemic situation.
11. Students were offered to stay in the campus hostel and attend classes in online mode. Measures to prevent pandemic spread in the campus were taken timely and strictly following the SoP.

(B) The contribution of IIT Bhubaneswar in combating the COVID 19 by adopting new scientific research are as below:

1. Faculty members and students of IIT Bhubaneswar have developed a Patient Responsive Active Assist coNtrol (PRAAN) ventilator for COVID19 emergencies
2. IIT Bhubaneswar has developed a portable ventilator to fight against COVID- 19 in emergency pandemic situation.
3. IIT Bhubaneswar developed a simple, but effective UVC Disinfection Chamber. The chamber can be used for disinfecting PPEs' of medical staff, electronic gadgets, garments, packets and other possible fomites.
4. IIT Bhubaneswar developed Pocket Sanitizer
5. IIT Bhubaneswar developed a Disinfectant Station at the main gate of the Institute.
6. IIT Bhubaneswar prepared alcohol based hand sanitizer as per WHO parameters
7. IIT Bhubaneswar developed a Disinfectant Tunnel to combat COVID-19.

Thanking you.

Yours sincerely,



Assistant Registrar (Estt.)

Rajya Sabha admitted Unstarred Question No.3380 regd "vacant faculty posts under SC/ST/OBC category"

INDIAN INSTITUTE OF TECHNOLOGY BHUBANESWAR

S.No.	Name of the Institute	Number of Vacant Faculty Post (AS ON DATE-20.03.2021)						
		GEN	SC	ST	OBC	EWS	PwD^	Total
11	IIT Bhubaneswar	55	13	8	16	11	4	103

NOTE:

- 1. There is no reservation for Professor / Associate Professor Position in Science & Engineering Stream as per MHRD order F. No. 16-8/2000-TS.I, dated 09.06.2008**
- 2. The Institute follows the flexible cadre structure for appointment of faculty members.**
- 3. ^The PwD reservations are on horizontal basis as per the GOI norms.**
- 4. The Director's name has been included in the Professor List**

Loksabha unstarred Dairy No. 3390 to be answered on 25.03.2021

S.No.	Name of the IITs	Year	Name of the Department	No. of Ph.D. students department wise					
				General	SC	ST	OBC	EWS	Total
1	IIT Bhubaneswar	2016-17	School of Basic Sciences	4	3	1	4	0	12
			School of Earth Ocean and Climate Sciences	5	0	0	3	0	8
			School of Electrical Sciences	8	3	0	5	0	16
			School of Humanities, Social Sciences and Management	0	0	0	1	0	1
			School of Infrastructure	5	2	0	1	0	8
			School of Mechanical Sciences	7	2	0	3	0	12
			School of Minerals, Metallurgical and Materials Engineering	2	1	0	1	0	4
			TOTAL-	31	11	1	18	0	61
		2017-18	School of Basic Sciences	7	2	1	3	0	13
			School of Earth Ocean and Climate Sciences	1	0	0	1	0	2
			School of Electrical Sciences	3	2	0	3	0	8
			School of Humanities, Social Sciences and Management	0	0	0	1	0	1
			School of Infrastructure	8	1	0	4	0	13
			School of Mechanical Sciences	9	0	0	2	0	11
			School of Minerals, Metallurgical and Materials Engineering	2	0	0	1	0	3
			TOTAL-	30	5	1	15	0	51
		2018-19	School of Basic Sciences	19	4	2	5	0	30
			School of Earth Ocean and Climate Sciences	2	1	0	0	0	3
			School of Electrical Sciences	12	1	1	5	0	19
			School of Humanities, Social Sciences and Management	4	0	0	2	0	6
			School of Infrastructure	10	0	0	2	0	12
			School of Mechanical Sciences	5	2	0	3	0	10
			School of Minerals, Metallurgical and Materials Engineering	9	0	0	1	0	10
			TOTAL-	61	8	3	18	0	90

2019-20	School of Basic Sciences	14	2	1	8	2	27
	School of Earth Ocean and Climate Sciences	3	1	0	3	1	8
	School of Electrical Sciences	7	1	0	2	0	10
	School of Humanities, Social Sciences and Management	3	0	2	2	0	7
	School of Infrastructure	1	1	1	0	0	3
	School of Mechanical Sciences	4	0	0	1	0	5
	School of Minerals, Metallurgical and Materials Engineering	3	0	0	0	0	3
	TOTAL-	35	5	4	16	3	63
2020-21	School of Basic Sciences	19	4	0	15	2	40
	School of Earth Ocean and Climate Sciences	6	0	1	4	0	11
	School of Electrical Sciences	7	3	0	7	1	18
	School of Humanities, Social Sciences and Management	4	1	0	1	0	6
	School of Infrastructure	14	0	0	5	0	19
	School of Mechanical Sciences	5	1	0	4	0	10
	School of Minerals, Metallurgical and Materials Engineering	6	1	0	6	0	13
	TOTAL-	61	10	1	42	3	117
# As on date (students on roll)		206	33	9	98	6	352

The data mentioned as on date is total 352. Total No. of Ph.D scholars are not tallying with the year wise total strength due to temporary withdrawal of scholars / prematurely leaving the programme etc.

Shri P. J. Soundararajan
Under Secretary (IITs)
Ministry of Education
Department of Higher Education
427-C, Shastri Bhawan,
New Delhi- 110001

Ref: MoE Email dated 23.03.2021

Sub: Rajya Sabha admitted Unstarred Dairy No. U5326 regarding "Development of IITs abroad"

Dear Sir,

With reference to the subject cited above and your email dated 23.03.2021, the undersigned is directed to convey the following information in respect of IIT Bhubaneswar.

The Institute follows flexible cadre structure for appointment of faculty members. The answer to the Dairy No. U5326 are as follows:

Sl. No.	Information Sought	Information Provided
(a)	Whether Government has initiated plans in the direction of UGC's recent decision to permit select IITs to set up campuses abroad;	No such communication has been received at IIT Bhubaneswar
(b)	If so, the details thereof;	Not Applicable
(c)	The data on the shortage of teaching faculty as compared to available positions in IITs; and	The details are given in Annexure as per the prescribed format in excel sheet.
(d)	The steps being taken by Government to emphasize on the diversification of IITs to promote them as a global brand to educational institutions?	The MoE, Govt. of India initiated the IOE category to support attaining the status of global brand. The NEP 2020 encourages institutions for diversifications.

Thanking you,

Yours sincerely,

Assistant Registrar (Estt.)
IIT Bhubaneswar

Reply to Rajya Sabha Unstarred Diary No. U5326 for answer on 01.04.2021 regarding

In Respect of Part (C) of the question

S.No.	Name of the institute	Number of Vacant Faculty Post	Student Strength	Faculty Strength in position	Ratio
11	IIT Bhubaneswar	103	2451	137	17.89:1

NOTE:

- 1. The Institute follows the flexible cadre structure for appointment of faculty members.**
- 2. The above data is as on date i.e. 26.03.2021**



भारतीय प्रौद्योगिकी संस्थान भुवनेश्वर
INDIAN INSTITUTE OF TECHNOLOGY BHUBANESWAR

F. No. 22-2/2021-MoE.

Date: 09 April 2021

To
Shri Ashwini Kumar
Assistant Section Officer
Technical Section-1 (IITs)
Department of Higher Education
Ministry of Education, Shastri Bhavan
New Delhi -110011

Sub: - Rajya Sabha Unstarred Q. No. 1227 for 28.11.2019 on the subject "High expense on government litigation" raised by Hon'ble Member, Shri Amar Patnaik-reg.

Ref: Your Email dated 05.04.2021

Sir,

With reference to, the subject cited above, the undersigned is directed to furnish the information with respect to IIT Bhubaneswar in the given below:

Sl. No.	Query	Reply
a.	The details of the expenditure on lawyer's fees and other related expenses incurred by Government on litigation where Government is a party during the last five years	The expenses incurred by IIT Bhubaneswar on litigation where Government is a party during the last five years is as under: 2016-17 - ₹1,19,738/- 2017-18 - ₹1,52,260/- 2018-19 - ₹6,82,100/- 2019-20 - ₹73,950/- 2020-21 - ₹ 30,500/-
b.	The details of the expenditure on lawyer's fees and other expenses incurred by Government on litigation initiated by it, as well as litigation for dispute inter-se Government Ministries, Departments and Public Sector Undertaking during the last five years.	Nil
c.	The details of steps taken by government to reduce expenditure on litigation.	Not applicable

This is for your kind information and necessary action at your end.

Thanking you.

Yours sincerely,

Assistant Registrar (Estt.)