



# INDIAN INSTITUTE OF TECHNOLOGY KHARAGPUR

## BONAFIDE-CERTIFICATE

Date of Issue : 2 Dec 2021

*TO WHOM IT MAY CONCERN*

*This is to certify that - **RITWICK SEN** Roll No - **20GG40025** Son of - **JAYANTA SEN***

*is a bonafide student of **GEOLOGY(2YR. M.SC.)***

*of 2 nd year class in the current session **2021-2022***

*of undergraduate programme leading to **M.SC(2YR)** Degree in the Department of*

***GEOLOGY AND GEOPHYSICS** in this Institute.*

Generation Date : Dec 2, 2021 1:29 PM

Generated By : ERP, IIT KGP

Signature Not  
Verified

Digitally signed by  
SANTANU DAS  
Date: 2021.12.02  
13:29:48 IST  
Location: Academic  
(U.G) Section, IIT  
Kharagpur

2020172893



# Jadavpur University

*Certified that Sri / Sm. Ritwick Sen*

*having passed the Final Examination of 2020 held in the year 2020. has been admitted to the Degree of Bachelor of Science with Honours in Geological Sciences with all the Rights and Privileges and that he / she was placed in First Class.*

*In Witness whereof the Signature of the Vice-Chancellor of Jadavpur University is hereunto affixed.*



JADAVPUR UNIVERSITY

The 24th December, 2020



*Sumanjan Das*

Vice-Chancellor



**Deepak Dhingra, Ph.D.**

*Assistant Professor*

Earth Sciences, IIT Kanpur,

Kalyanpur, Kanpur, UP 208016, India

Email: deepdpes@gmail.com, ddhingra@iitk.ac.in

Cell: +91-8528024595; Phone: +91-512-2597497

### **Summer Internship Certificate**

This is to certify that **Mr. Ritwick Sen** (MSc. Geology, II year student at IIT Kharagpur) carried out an internship with me on the topic of “*Impact Melt Mapping on the Far side of the Moon*” for a duration of 2 months (April 15th - May 15<sup>th</sup> 2021 and July 31<sup>st</sup> – August 31<sup>st</sup>, 2021). The internship was carried out in online mode.

I found Ritwick’s work satisfactory during the internship and appreciate his hard work and engagement.

(Deepak Dhingra)

भौतिक अनुसंधान प्रयोगशाला  
(भारत सरकार, अंतरिक्ष विभाग की यूनिट)  
नवरंगपुरा, अहमदाबाद - 380 009, भारत



**Physical Research Laboratory**  
(A Unit of Dept. of Space, Govt. of India)  
Navrangpura, Ahmedabad - 380 009, India

फोन Phone: +91-79-26314533

फैक्स Fax: +91-79-26314407

ई-मेल E-mail: [dwijesh@prl.res.in](mailto:dwijesh@prl.res.in)

July 22, 2021

Dr. Dwijesh Ray  
Associate Professor, Planetary Science Division  
E-mail: [dwijesh@prl.res.in](mailto:dwijesh@prl.res.in)/ [dwijeshray@gmail.com](mailto:dwijeshray@gmail.com)  
Tel: +91-79-26314533

To whomsoever it may concern

This is to certify that Mr. Ritwick Sen, M.Sc. 1st year student of Department of Geology and Geophysics, Indian Institute of Technology, Kharagpur has completed Summer Internship Project under my supervision. The title of the project is "Comparison of Martian and Continental flood basalt: A geochemical approach" and the mode of the project is online.

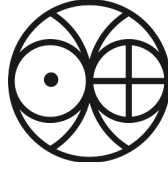
(Dwijesh Ray)



भौतिक अनुसंधान प्रयोगशाला

(भारत सरकार, अंतरिक्ष विभाग की यूनिट)

नवरंगपुरा, अहमदाबाद—380 009, भारत.



Physical Research Laboratory

(A Unit of Dept. of Space, Govt. of India)

Navrangpura, Ahmedabad—380 009, India

*This is to certify that*

***Ritwick Sen***

*of*

*Department of Geology and Geophysics, IIT Kharagpur*

*worked at this Laboratory*

*on the summer internship project,*

*“Comparison of Martian and Continental Flood Basalt: A Geo-chemical Approach”*

*during 5/27/2021 to 7/26/2021*

*under the supervision of*

*Dr. Dwijesh Ray,*

*Planetary Sciences Division,*

*Physical Research Laboratory, Ahmedabad.*

***Dr. Bhushit Vaishnav***

***Head, Academic Services***



फोन Phone : 91(0) 79-26314863 | ई-मेल E-mail : [dnoff@prl.res.in](mailto:dnoff@prl.res.in)

## Certified Letter of Research Internship at Zhejiang University

This is the letter providing proof that Ritwick Sen, as a research intern, has been working with Prof. ZhangZhou J at Zhejiang University from Mar 2021 to July 2021.

Ritwick Sen has been working on a project to link the Fe-Ni-S melt compositions with the activities of different species at different temperature. This work requires using MATLAB to interpolate values from numerical results.

Best,  
ZhangZhou J.



Date: July 28, 2021

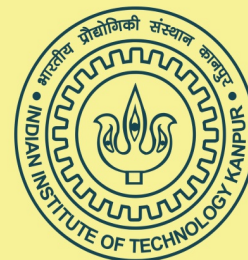
Email: zhangzhou333@zju.edu.cn

Assistant Professor  
School of Earth Sciences  
Zhejiang University  
Hangzhou, China

# JAM 2020 SCORECARD

JOINT ADMISSION TEST FOR M.Sc.

Indian Institute of Technology Kanpur

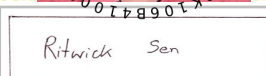


## CANDIDATE'S DETAILS



Name : **RITWICK SEN**

Registration Number : **GG617A135**



## CANDIDATE'S PERFORMANCE

Test Paper (Code)	Number of Candidates Appeared in Test Paper	Marks Scored (out of 100)	All India Rank
Geology (GG)	2742	80.0	35

## CUT-OFF MARKS\*

GEN/GEN-EWS	OBC (NCL)	SC/ST/PwD
Geology (GG) 53.01	47.71	26.5

\* A candidate is considered in the merit list if the marks scored are greater than or equal to the cut-off marks mentioned for the category, for which a valid category certificate, if applicable, is to be produced along with this scorecard.

30-March-2020

Digital Signature: **d090a315bed03b4a66665c4f7b0eab0e**

Prof. Sanjeev Garg  
Organizing Chairperson, JAM 2020  
on behalf of JAM-AB

- Candidates should note that being on the merit list of any test paper neither guarantees nor entitles one to admission at IITs and IISc.
- Candidates who are in the merit list of JAM 2020 can apply for admission to programs to which they are eligible only in the academic year 2020-21 at IITs and IISc.
- For admission to various programs, the candidates in the merit list have to submit admission form ONLINE at the JAM Online Application Processing System website (<https://joaps.iitk.ac.in>) between 09-April-2020 and 22-April-2020 with all the relevant documents. There is NO need to send a hard copy of the admission form/documents. Only those applications that are complete in all respects and have been properly submitted/uploaded within the stipulated time and date will be considered
- Upon applying, offers will be made to candidates based on the order of merit, the candidate's choice(s) and the number of seats available at the admitting institute(s). Those candidates have to satisfy the Eligibility Requirements (ERs) and Minimum Educational Qualifications (MEQs) of the programme(s) of the admitting Institute(s). The fulfilment of ER & MEQ is decided by the department offering the programme and the prerogative to accept/reject the candidate remains with the department.
- For latest updates on ER, MEQ and other admission related information, candidate must refer to the JAM 2020 official website, <https://jam.iitk.ac.in/>, and the Information Brochure available there.
- The authenticity of the contents of this Scorecard may be verified with the GATE-JAM Office, IIT Kanpur, Kalyanpur, Kanpur, Uttar Pradesh 208016, till July 03, 2020.
- Information given in this Scorecard should not be used by any person/Institute without prior permission of the GATE-JAM Office, IIT Kanpur, Kalyanpur, Kanpur, Uttar Pradesh 208016.



**Name:** Sen, Ritwick

Last (Family/Surname) Name, First (Given) Name Middle Name

**Email:** ritwicksen1998@kgpian.iitkgp.ac.in

**Gender:** M

**Appointment Number:** 2408 0112 1540 3046

**Date of Birth:** January 20, 1998

**Test Date:** November 27, 2021



Sen, Ritwick  
39, Saradapally, Bhadreswar, Hooghly, West Bengal  
129, Saradapally, Bhadreswar, Hooghly, West Bengal  
Bhadreswar, West Bengal 712124  
India

Inst. Code	Dept. Code
6173	71
2548	00
4007	71
4832	71

**Country of Birth:** India

**Native Language:** Bengali

**Test Center:** STN14763A - KiiT International School - Bhubaneswar

**Test Center Country:** India

## Security Identification

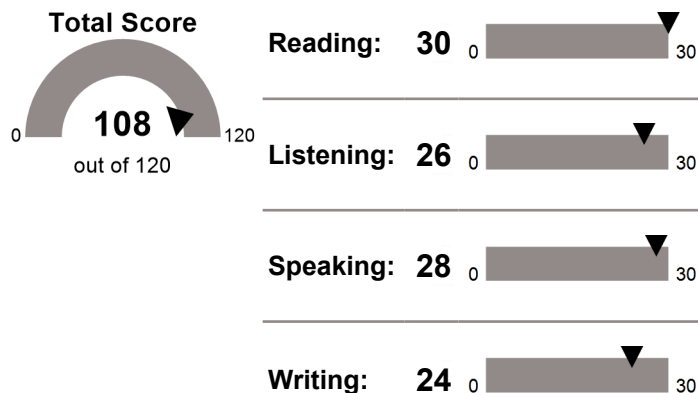
**ID Type:** PASSPORT

**ID No.:** xxxxxxxxxxxxxxxxxxxxx9913

**Issuing Country:** India

THIS IS A PDF SCORE REPORT, DOWNLOADED AND PRINTED BY THE TEST TAKER.

## November 27, 2021 Test Date Scores

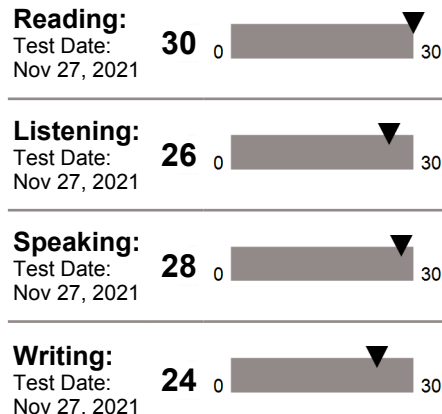


## MyBest® Scores

Your highest section scores from all valid test dates, as of November 30, 2021.

### Sum of Highest Section Scores

**108**  
out of 120



A total score is not reported when one or more sections have not been administered.  
Expired scores are not included in MyBest® calculations.

THIS IS A PDF SCORE REPORT, DOWNLOADED AND PRINTED BY THE TEST TAKER.

**Sen, Ritwick**

Date of Birth: January 20, 1998

Appointment Number: 2408 0112 1540 3046

Test Date: November 27, 2021

## SCORE RANGES

<b>Total Score</b>	<b>0–120</b>
<b>Reading</b>	<b>0–30</b>
Advanced	24–30
High - Intermediate	18–23
Low - Intermediate	4–17
Below Low - Intermediate	0–3
<b>Listening</b>	<b>0–30</b>
Advanced	22–30
High - Intermediate	17–21
Low - Intermediate	9–16
Below Low - Intermediate	0–8
<b>Speaking</b>	<b>0–30</b>
Advanced	25–30
High - Intermediate	20–24
Low - Intermediate	16–19
Basic	10–15
Below Basic	0–9
<b>Writing</b>	<b>0–30</b>
Advanced	24–30
High - Intermediate	17–23
Low - Intermediate	13–16
Basic	7–12
Below Basic	0–6

## INSTITUTION CODES

The Institutions and Department code numbers shown on the front page are the ones you selected before you took the test.

Dept.	Where the Report Was Sent
00	Admissions office for undergraduate study
01, 04-41, 43-98	Admissions office for graduate study in a field other than management (business) or law according to the codes selected when you registered
02	Admissions office of a graduate school of management (business)
03	Admissions office of a graduate school of law
42	Admissions office of a school of medicine or nursing or licensing agency
99	Institution or agency that is not a college or university

For additional information about TOEFL iBT scores, score ranges, and how to improve your skills, visit [www.ets.org/toefl/ibt/scores](http://www.ets.org/toefl/ibt/scores).

**IMPORTANT NOTE TO SCORE USERS:** This is a PDF score report, downloaded and printed by the test taker. Therefore, ETS cannot guarantee that it has not been altered. To verify the scores on this report, please contact the TOEFL Score Verification Service at **+1-800-257-9547** or **+1-609-771-7100**. Scores more than two years old cannot be reported or validated.

**GOVERNMENT OF INDIA**  
**MINISTRY OF SCIENCE & TECHNOLOGY**  
**DEPARTMENT OF SCIENCE & TECHNOLOGY**  
**Technology Bhavan, New Mehrauli Road, New Delhi - 110016**



**Date: 07/06/2017**

Subject: Provisional Offer of INSPIRE Scholarship for students of 2016 Batch

Dear Mr. Ritwick Sen,

On the basis of your application submitted under **Scholarship for Higher Education (SHE)** component of the scheme, **Innovation in Science Pursuit for Inspired Research (INSPIRE)**, I am delighted to inform that you have been provisionally selected for the award of INSPIRE Scholarship for the period starting **2015**, which is the year of your enrollment in B.Sc/Int. MSc. or Int. M.S. Course. Your INSPIRE Scholarship Registration Number is **201600056624**.

The final selection for scholarship will be subject to the satisfaction of norms as listed in the **Post Offer Implementation Guidelines**, which is enclosed along with this offer letter.

The total amount of the Scholarship is Rs 80,000/- per annum, out of which Rs 60,000/- as scholarship @ Rs 5000 per month and Rs 20,000/- per year shall be reimbursed for expenses towards summer research internships in research/academic institutions. The maximum tenure of this Scholarship is five years, or until the completion of M.Sc. / Int. M.Sc. /Int. MS course, whichever is earlier, provided you continue to maintain academic excellence and performance. Please note that a student cannot avail more than one scholarship at any time. Further, on acceptance of the INSPIRE scholarship by a student, switching over to other government scholarship schemes including KVPY, is not allowed at any stage without the due permission of the DST.

The Scholarship will be provided directly to you through the **State Bank of India (SBI)** to your bank account. To facilitate the transfer of Scholarship to your bank account, you are requested to **open a normal Savings Bank Account in your name only, at any branch of State Bank of India (SBI) in the country, having no limit of cash transfer (Jandhan, Kiosk, Zero Balance Opening Account or similar type account may please avoided)**. Please note that joint account or account in Banks other than SBI will not be accepted. Upon opening of the Savings Bank account at SBI, you may please fill up the pro-forma available on the online web-portal with the requisite information.

Please note that the submission of the documents such as SBI Bank account details, yearly Performance Reports and Mark Sheets is accepted only through the Online Portal. Please do not send any documents by post. The link to download the Performance Report format is available here [www.inspire-dst.gov.in/SHE\\_Performance\\_Report.pdf](http://www.inspire-dst.gov.in/SHE_Performance_Report.pdf). The validity of this Provisional Offer shall be 120 days from the date of Offer and no documents will be accepted after the prescribed time limit.

For any assistance during online submission of documents, you can write to [inspire.prog-dst@nic.in](mailto:inspire.prog-dst@nic.in) or call 0120-4676260 (Mon-Sat, 10AM to 5PM).

With best regards,

**Ms. Tamanna Arora**  
Scientist 'C'  
INSPIRE Programme Division

**Mr. Ritwick Sen**  
C/o Jayanta Sen  
39, Saradapally, Bhadreswar, Hooghly  
Hooghly - 712124 WEST BENGAL

*This is a computer generated letter, no signature is required*



## INSPIRE Scholarship – Post-Offer Implementation Guidelines for Scholars

INSPIRE Scholarship, offered to pursue undergraduate (UG) studies and continued up to post-graduate (PG) studies, is based on Class 12<sup>th</sup> standard examination results (top 1%) of respective Boards or within eligible rank in chosen few competitive examinations such as JEE (main), JEE (advanced), NEET (AIPMT) and securing admission in science stream (in any of science course or its combination out of 18 identified subjects) at any recognized colleges or universities or academic institutions in the country.

INSPIRE Scholarship shall be regulated with the following guidelines:

**1. Mode of Intimation to Scholar:** Upon selection, each scholar eligible to receive scholarship shall receive intimation through e-mail so that Scholar could print the **Offer Letter** at their end.

**2. Confirmation of Scholarship Offer:** All offers made initially shall be '**Provisional**'. This shall be confirmed based on the subjects/courses pursued in the B.Sc./B.S./Int. M.Sc./Int. M.S. course and upon submission of the first year B.Sc./B.S./Int. M.Sc./Int. M.S. examination Mark-sheets by the Scholar. In case of otherwise, the Offer stands invalid and no communication would be made separately in this regard.

**3. Re-admission or Change of College/ University:** Any change or re-admission to another College/ University/ Academic Institute within the same academic year is acceptable, provided the scholar pursues subjects out of identified 18 nos. subject(s). The Offer would stand invalid in case this change or re-admission occurs in the next academic year and thereon, or subject(s) pursued is/ are beyond the 18 identified subjects. In such a case, there will be no scope for restoration of the offer and no communication would be made separately to Scholar.

**4. Opening & Submission of Bank Account:** Scholars are required to open a regular Bank Account within India at any branch of State Bank of India, exclusively on Scholar's name. [opening of Joint A/c may be allowed only in case of Minor Scholars as under Guardian (U/G)] The scholars must submit the **Accounts details in the specified format** (through the online portal only) along with the **self-attested photocopy of front page of Bank Passbook, within 120 days** of this Offer.

However, a maximum period of 120 days would be allowed to a scholar for the completion of Bank Account related formalities and the offer of the scholarship would stand cancelled in case the scholar fails to submit the account details within this time period. After the due date, the names of such scholars shall be notified at the website: [www.inspire-dst.gov.in](http://www.inspire-dst.gov.in) as "**Cancelled Scholarship**" and no further communication shall be made separately to such scholars. Scholars are also requested to visit this website regularly to see notifications on their Accounts related issues such as Invalid Accounts/ No Frills Accounts/ Joint Account/ Dormant Account and to take necessary actions within one month of such notification.

**5. Payment and Continuation of Scholarship:** The Scholarships for 1<sup>st</sup> and 2<sup>nd</sup> years are paid together at the second year of the scholars' undergraduate course. The Scholarship is paid on the basis of following:

a) Year-wise requirements:

Year of Scholarship	Basis	Documents to be submitted
First	Based on (i) Class XII Board Marks and (ii) continuation in second year course in the identified science subject(s) at the UG level.	First Year B.Sc./B.S./Int. M.Sc./Int. M.S. (i) Performance Report and (ii) Mark-sheets.
Second	Based on Performance in First Year B.Sc. /B.S./Int. M.Sc./Int. M.S. Exams.	
Third	Based on Performance in Second Year B.Sc. /B.S./Int. M.Sc./Int. M.S. Exams.	Second Year B.Sc. /B.S./Int. M.Sc./Int. M.S. (i) Performance report and (ii) Mark-sheets.
Fourth	Based on performance in III year B.Sc. /B.S./Int. M.Sc./Int. M.S. exams and joining M.Sc. course in the identified science subject(s) at PG level.	(i) Third year B.Sc. /B.S./Int. M.Sc./Int. M.S. Performance Reports and Mark-sheets & (ii) M.Sc. Enrolment Certificate.
Fifth	Based on performance in First year M.Sc. exams or Fourth year Int. M.Sc./Int. M.S. exams (as the case may be)	First year M.Sc. or fourth year Int. M.Sc./Int. M.S. Performance Report and Mark-sheets.

b) For continuation of INSPIRE Scholarship, the scholar shall (i) pass in all subjects, and (ii) secure minimum 60% aggregate marks or 6.0 CGPA on a 10.0 point scale or its equivalent in his/her annual examinations (or 2 semesters) in B.Sc. /B.S. /Int. M.Sc. /Int. M.S. or M.Sc. examinations, failing which the scholarship for the next academic year will not be paid.

c) If a scholar has failed or could not attend the annual/ any of the semester examination(s) in that year, the INSPIRE Scholarship for the next academic year will not be paid. However, scholarship will be restored (only prospectively) in the next to next academic year, provided the scholar's academic performance is within the aforesaid eligibility norm mentioned at 5b.

d) The maximum tenure of INSPIRE Scholarship is five years. Except Integrated MSc or Integrated MS course, the scholarship shall continue at PG level only after successful completion of 3 years BSc or 4 years BS course, for another two years or one year, depending upon the course pursued at the UG level. The Scholar needs to maintain their academic performance as per clause 5b and pursue only the identified subject(s) at the MSc level. If it is otherwise, the continuation of scholarship at the PG level stands cancelled automatically and no representations shall be entertained in this regard.

## 6. Submission of Performance Reports and Mark-sheets:

a) Except for very 1<sup>st</sup> year, scholarship for any academic year shall be paid to the scholar only upon the receipt of (i) Performance report and (ii) Mark Sheet (annual basis or two semesters) of B.Sc. /B.S./Int. M.Sc./Int. M.S. or M.Sc. course for previous academic year.

b) The Scholar shall submit above (at 6a) referred documents altogether. Scholarship will not be processed in case any one of the aforementioned documents is not submitted. The link to download the blank format of the Performance report can be found here [http://www.inspire-dst.gov.in/SHE\\_Performance\\_Report.pdf](http://www.inspire-dst.gov.in/SHE_Performance_Report.pdf).

c) Scholars are advised to submit their yearly Mark-sheets and performance related documents on-time, preferably within 2 months of announcement of yearly results to facilitate the payment of scholarship by DST-INSPIRE. However, keeping in view the diverse time schedules of the examinations in Universities across the country, scholars are permitted a maximum period of twelve (12) months to submit their Performance Report and Mark-sheets for a given completed academic year ending June every year. As an example, 2012 batch enrolled student is expected to submit the First Year Performance Report and First Year Mark Sheet before 30<sup>th</sup> June 2014. This analogy can be followed by other batches for the release of the INSPIRE Scholarship.

d) If a scholar does not submit his/her annual Performance Reports and Mark-sheets for two consecutive academic years, the offer of scholarship shall be withdrawn.

e) Provisional or Internet copy of the Mark-sheets will not be considered.

**7. Research Projects Mentorship for Scholars:** The main objective of INSPIRE/SHE program is to encourage young students to pursue Research as a career. In order to inculcate scientific values and develop scientific temper, the scholars are required to enrol in a Research Project every year. To avail the mentorship grant, the scholars are expected to do project work under a Research Supervisor (Mentor) during summer vacation period, in any recognized Universities or Institutes or Research Laboratories/ Centres of their choice (preferably outside their parent institutions) either in India or abroad. The scholar may avail institutional arrangement or arrange both Mentoring Institution and Mentor to carry out this. Consumables required to carry out project work, if recommended by the Mentor, will be paid from the Mentorship Grant, either to the Institute where project work is pursued or to the Scholar directly.

For students doing a project in India, the expenses related to travel, accommodation and consumable expenses are reimbursed to the student within the mentorship grant. Please note that no food expenses are covered by this grant, as the students receive scholarship during this period. Students at 4<sup>th</sup> or 5<sup>th</sup> year of the Scholarship may be allowed to carry our research project in any Institute/ University/ Laboratory abroad by utilizing the Mentorship Grant available for five years on pro-rata basis. If the sponsoring institute pays any stipend or travel grant, only the difference between the support received from all sources put together and actual expenditure will be reimbursed from the Mentorship Grant.

**(7.1) For students doing a project in India:** The expenses related to travel, accommodation and consumable expenses are reimbursed to the student within the mentorship grant. Please note that no food expenses are covered by this grant, as the students receive scholarship during this period. The DST-INSPIRE shall make provision of Rs 20,000/- per annum or (Rs 1,00,000/- in 5 years) as Mentorship Grant to each INSPIRE Scholar to carry summer vacation research work at every year. The Mentorship Grant shall be reimbursed either to the mentoring institutions as a bench fee to accommodate the INSPIRE scholar or directly to the Scholar to carry out research work. After completion of the project work at the Institute or University or Research Laboratory under a Research Supervisor (Mentor), the candidate should submit the following documents to the DST for reimbursement of the Mentorship Grant.

**(a)** A letter attested by the Research Supervisor and Head of Institution where the scholar is enrolled for the project. Duration of the project i.e. date of commencement and date of completion must be mentioned in the certificate. **(b)** A report outlining the objectives and results of his/her project. The scholars are requested to specify clearly to whom the mentorship grant must be reimbursed (Mentoring Institution or scholar).

**(b)** A report outlining the objectives and results of his/her project. The scholars are requested to specify clearly to whom the mentorship grant must be reimbursed (Mentoring Institution or scholar).

**(7.2) For students doing a project Abroad:** Students at 4<sup>th</sup> or 5<sup>th</sup> year of the Scholarship may be allowed to carry our research project in any Institute/ University/ Laboratory abroad by utilizing the Mentorship Grant available for five years on pro-rata basis. If the sponsoring institute pays any stipend or travel grant, only the difference between the support received from all sources put together and actual expenditure will be reimbursed from the Mentorship Grant. The DST-INSPIRE shall make provision of Rs 20,000/- per annum or (Rs 1,00,000/- in 5 years) as Mentorship Grant to each INSPIRE Scholar to carry summer vacation research work. The Mentorship Grant shall be reimbursed either to the mentoring institutions as a bench fee to accommodate the INSPIRE scholar or directly to the Scholar to carry out research work, In case a Scholar does not utilize this grant in any year during the tenure of INSPIRE Scholarship, it can be carried forwarded until the completion of the tenure of INSPIRE Scholarship. Student is eligible only to receive the expenditure, which he has incurred for basic research work. There is no provision for reimbursement of the unutilized grant to the student. After completion of the project work at the Institute or University or Research Laboratory under a Research Supervisor (Mentor), the candidate should submit the following documents to the DST for reimbursement of the Mentorship Grant.

**(a)** A letter attested by the Research Supervisor and Head of Institution where the scholar is enrolled for the project. Duration of the project i.e. date of commencement and date of completion must be mentioned in the certificate.

**(b)** A report outlining the objectives and results of his/her project.

**(c)** Travel Bill (Air Fare Tickets, Boarding Pass).

\*\*\*

*This is a computer generated letter, no signature is required.*





# ASUTOSH COLLEGE

92, S. P. Mukherjee Road

Kolkata - 700 026 (India)

Website: [www.asutoshcollege.in](http://www.asutoshcollege.in) , Mail-id: [mail@asutoshcollege.in](mailto:mail@asutoshcollege.in)



Webinar on  
“Martian Geology : Enigmas And Recent Insights”  
Organized by  
Department of Geology, Asutosh College

## Certificate of Participation

**This is to certify that,**

**Mr. Ritwick Sen of Indian Institute of Technology Kharagpur,**  
has participated in the webinar on “ **Martian Geology : Enigmas And Recent Insights** ”, held on  
**6th September, 2020.**

**Prof. Apurba Ray**

Vice-Principal, Asutosh College

**Dr. Tathagata Ray Chaudhuri**

Co-ordinator IQAC, Asutosh College

(Jt-Convenor)

**Dr. Ashis Kumar Das**

Head, Department of Geology, Asutosh College

(Jt-Convenor)

Dated: 08-09-2020

This certificate is computer generated and can be verified by scanning the QR code given below. This will display the certificate from the NPTEL repository, <https://nptel.ac.in/noc/>

Roll No: NPTEL21CE11S13020175

To  
RITWICK SEN  
39, STN SARANI, SARADAPALLY, BHADRESWAR  
129, STN SARANI, SARADAPALLY, BHADRESWAR  
BHADRESWAR  
WEST BENGAL - 712124  
PH. NO :8017805034



Score	Type of Certificate
>=90	Elite+Gold
75-89	Elite+Silver
>=60	Elite
40-59	Successfully Completed
<40	No Certificate

No. of credits recommended by NPTEL:3

An additional 1 credit may be awarded if the University deems it fit, based on the actual student effort involved.



Elite

# NPTEL Online Certification

(Funded by the Ministry of HRD, Govt. of India)



This certificate is awarded to

**RITWICK SEN**

for successfully completing the course



## Remote Sensing: Principles and Applications

with a consolidated score of **81** %

Online Assignments	24.38/25	Proctored Exam	57/75
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Total number of candidates certified in this course: **162**

Jan-Apr 2021  
(12 week course)

*Sridhar*

**Prof. Sridhar Iyer**  
Head CDEEP & NPTEL Coordinator  
IIT Bombay



Indian Institute of Technology Bombay



Roll No:NPTEL21CE11S13020175

To validate and check scores: <https://nptel.ac.in/noc>



भारत सरकार

Government of India

भारतीय भूवैज्ञानिक सर्वेक्षण प्रशिक्षण संस्थान, हैदराबाद

Geological Survey of India Training Institute, Hyderabad



प्रमाणपत्र / **Certificate**  
प्रमाणित किया जाता है कि

Ritwick Sen

ने **CGMT** प्रभाग, भारतीय भूवैज्ञानिक सर्वेक्षण प्रशिक्षण संस्थान, हैदराबाद द्वारा 22.06.2021 से 12.07.2021 तक आयोजित *Course In GIS Analysis* प्रशिक्षण पाठ्यक्रम को ऑनलाइन प्रशिक्षण के रूप में सफलतापूर्वक पूर्ण किया तथा **B** ग्रेड प्राप्त किया ।

***Certified that***  
Ritwick Sen

*has successfully completed the Online Training on Course In GIS Analysis conducted through GSITI website, Hyderabad from 22-06-2021 to 12-07-2021 and secured B Grade.*

Grade	A+	A	B+	B	C
Percentage	>90%	80% -89%	70% -79%	60% -69%	50% -59%

(हैदराबाद / Hyderabad)

( 22-06-2021 )

(सीएच. वेंकटेश्वर राव / Ch. Venkateswara Rao)

उप महानिदेशक एवं प्रमुख : मिशन - V / Deputy Director General & Head: Mission - V





भारत सरकार

Government of India

भारतीय भूवैज्ञानिक सर्वेक्षण प्रशिक्षण संस्थान, हैदराबाद

Geological Survey of India Training Institute, Hyderabad



प्रमाणपत्र / **Certificate**  
प्रमाणित किया जाता है कि

Ritwick Sen

ने PGRS प्रभाग, भारतीय भूवैज्ञानिक सर्वेक्षण प्रशिक्षण संस्थान, हैदराबाद द्वारा 22.06.2021 से 22.07.2021 तक आयोजित *Basic of Remote Sensing* प्रशिक्षण पाठ्यक्रम को ऑनलाइन प्रशिक्षण के रूप में सफलतापूर्वक पूर्ण किया तथा A+ ग्रेड प्राप्त किया ।

***Certified that***  
Ritwick Sen

*has successfully completed the Online Training on Basic of Remote Sensing conducted through GSITI website, Hyderabad from 22-06-2021 to 22-07-2021 and secured A+ Grade.*

Grade	A+	A	B+	B	C
Percentage	>90%	80% -89%	70% -79%	60% -69%	50% -59%

(हैदराबाद / Hyderabad)

( 29-06-2021 )

(सीएच. वेंकटेश्वर राव / Ch. Venkateswara Rao)

उप महानिदेशक एवं प्रमुख : मिशन- V / Deputy Director General & Head: Mission - V



भारत सरकार

Government of India

भारतीय भूवैज्ञानिक सर्वेक्षण प्रशिक्षण संस्थान, हैदराबाद

Geological Survey of India Training Institute, Hyderabad



प्रमाणपत्र / **Certificate**  
प्रमाणित किया जाता है कि

Ritwick Sen

ने PGRS प्रभाग, भारतीय भूवैज्ञानिक सर्वेक्षण प्रशिक्षण संस्थान, हैदराबाद द्वारा 22.06.2021 से 22.07.2021 तक आयोजित *Application of Remote Sensing in Mineral Exploration* प्रशिक्षण पाठ्यक्रम को ऑनलाइन प्रशिक्षण के रूप में सफलतापूर्वक पूर्ण किया तथा A ग्रेड प्राप्त किया।

***Certified that***  
Ritwick Sen

*has successfully completed the Online Training on Application of Remote Sensing in Mineral Exploration conducted through GSITI website, Hyderabad from 22-06-2021 to 22-07-2021 and secured A Grade.*

Grade	A+	A	B+	B	C
Percentage	>90%	80% -89%	70% -79%	60% -69%	50% -59%

(हैदराबाद / Hyderabad)

( 30-06-2021 )

(सीएच. वेंकटेश्वर राव / Ch. Venkateswara Rao)

उप महानिदेशक एवं प्रमुख : मिशन- V / Deputy Director General & Head: Mission - V





भारत सरकार

Government of India

भारतीय भूवैज्ञानिक सर्वेक्षण प्रशिक्षण संस्थान, हैदराबाद

Geological Survey of India Training Institute, Hyderabad



प्रमाणपत्र / **Certificate**  
प्रमाणित किया जाता है कि

Ritwick Sen

ने *PET* प्रभाग, भारतीय भूवैज्ञानिक सर्वेक्षण प्रशिक्षण संस्थान, हैदराबाद द्वारा 30.06.2021 से 07.07.2021 तक आयोजित *Course on thin preparation* प्रशिक्षण पाठ्यक्रम को

ऑनलाइन प्रशिक्षण के रूप में सफलतापूर्वक पूर्ण किया

***Certified that***  
Ritwick Sen

*has successfully completed the Online Training on Course on thin preparation conducted through GSITI website, Hyderabad from 30-06-2021 to 07-07-2021.*

Grade	A+	A	B+	B	C
Percentage	>90%	80% -89%	70% -79%	60% -69%	50% -59%

(हैदराबाद / Hyderabad)

( 30-06-2021 )

*Ch. Venkateswara Rao*  
(सीएच. वेंकटेश्वर राव / Ch. Venkateswara Rao)

उप महानिदेशक एवं प्रमुख : मिशन - V / Deputy Director General & Head: Mission - V



भारत सरकार

Government of India

भारतीय भूवैज्ञानिक सर्वेक्षण प्रशिक्षण संस्थान, हैदराबाद

Geological Survey of India Training Institute, Hyderabad



प्रमाणपत्र / **Certificate**  
प्रमाणित किया जाता है कि

Ritwick Sen

ने RTDER प्रभाग, भारतीय भूवैज्ञानिक सर्वेक्षण प्रशिक्षण संस्थान, हैदराबाद द्वारा 24.06.2021 से 24.07.2021 तक आयोजित *Introduction to Meteorites and Planetary Sciences* प्रशिक्षण पाठ्यक्रम को ऑनलाइन प्रशिक्षण के रूप में सफलतापूर्वक पूर्ण किया तथा A ग्रेड प्राप्त किया।

***Certified that***  
Ritwick Sen

*has successfully completed the Online Training on Introduction to Meteorites and Planetary Sciences conducted through GSITI website, Hyderabad from 24-06-2021 to 24-07-2021 and secured A Grade.*

Grade	A+	A	B+	B	C
Percentage	>90%	80% -89%	70% -79%	60% -69%	50% -59%

(हैदराबाद / Hyderabad)

( 24-06-2021 )

(सीएच. वेंकटेश्वर राव / Ch. Venkateswara Rao)

उप महानिदेशक एवं प्रमुख : मिशन- V / Deputy Director General & Head: Mission - V



# Protolith'20

DEPARTMENT OF EARTH SCIENCES  
IIT BOMBAY



## CERTIFICATE OF APPRECIATION

This is to certify that Ritwick Sen of  
Team Metastable from IIT Kharagpur  
has been awarded the 1st Runner Up place in the event  
Game of Stones of the National-level Technical Symposium  
"Protolith'20" held on 28<sup>th</sup> – 30<sup>th</sup>, December 2020. The Department of Earth  
Sciences, IIT Bombay, appreciates your enthusiasm, dedication, and efforts.  
You have been truly exceptional, and we wish you the best for your future.

Dr. M. Radhakrishna  
(Professor-in-charge Protolith'20)  
Dept. of Earth Sciences  
IIT Bombay

Dr. Santanu Banerjee  
(Head of Department)  
Dept. of Earth Sciences  
IIT Bombay

Piyush Srivastava  
(Overall Co-ordinator Protolith'20)  
Dept. of Earth Sciences  
IIT Bombay



Date: 23-08-2020

Validate  
Certificate  
here



Presidency University Kolkata




Geological Institute


*Presidency University SPE Student Chapter*  
**CERTIFICATE OF ACHIEVEMENT**


*This certificate is issued in appreciation of Mr. Ritwick Sen, a student of  
Jadavpur University Kolkata, on securing the Third position in the Online Quiz Competition  
organised by Presidency University SPE Student Chapter in association with the Geological Institute  
on 25th July and 26th July 2020.*

  
Mr. A Bhattacharyya  
Secretary, GI

  
Ms. D Saha  
Secretary, GI

  
Mr. A Panda  
Secretary, PU SPE SC

  
Mr. S Mallick  
President, PU SPE SC

  
Dr. Supriyo Das  
Faculty Advisor, PU SPE SC

# ARIZONA STATE UNIVERSITY

## CONTINUING AND PROFESSIONAL EDUCATION

This is to certify that

**RITWICK SEN**

has participated in the online course

**A SUSTAINABLE EARTH**

and has earned satisfactory scores to complete the course

**July 3, 2021**



Darcy Richardson  
*Director of Continuing and Professional Education  
Arizona State University*

**ASU** Continuing and  
Professional Education  
Arizona State University



# ARIZONA STATE UNIVERSITY

## CONTINUING AND PROFESSIONAL EDUCATION

This is to certify that

**RITWICK SEN**

has participated in the online course

**THE PROCESS AND LIFETIME OF A SPACE MISSION**

and has earned satisfactory scores to complete the course

**July 1, 2021**



Darcy Richardson  
*Director of Continuing and Professional Education  
Arizona State University*

**ASU** Continuing and  
Professional Education  
Arizona State University



भारतीय सुदूर संवेदन संस्थान/ INDIAN INSTITUTE OF REMOTE SENSING  
भारतीय अंतरिक्ष अनुसंधान संगठन/ INDIAN SPACE RESEARCH ORGANISATION  
अंतरिक्ष विभाग, भारत सरकार/ DEPARTMENT OF SPACE, GOVERNMENT OF INDIA



नामांकन सं./ Enrollment No. 202110151088611

आई.आई.आर.एस. आउटरीच कार्यक्रम  
IIRS Outreach Programme

कार्यशाला में सहभागिता का प्रमाणपत्र / CERTIFICATE OF PARTICIPATION IN WORKSHOP

यह प्रमाणित किया जाता है कि श्री **ऋत्विक सेन** ने दिनांक **11 अगस्त, 2021** को आयोजित एक दिवसीय ऑनलाइन कार्यशाला, **चन्द्र विज्ञान के लिए सुदूर संवेदन** में भाग लिया।

This is to certify that **MR. RITWICK SEN** has participated in one day online workshop titled **Remote Sensing for Lunar Science** , conducted on **11-08-2021**.

**Date:** 25-08-2021  
**Place:** Dehradun

**निदेशक/ Director**  
**आई०आई०आर०एस, देहरादून/ IIRS, Dehradun**

नामांकन सं. / Enrolment No. : 202182992888



# CERTIFICATE OF PARTICIPATION IN ONLINE COURSE

यह प्रमाणपत्र

श्री रित्विक सेन

को “मशीन लर्निंग से डीप लर्निंग तक : सुदूर संवेदन डेटा वर्गीकरण की एक यात्रा”

में ऑनलाइन पाठ्यक्रम में भाग लेने पर प्रदान किया जाता है।

इस ऑनलाइन पाठ्यक्रम का आयोजन 05 जुलाई, 2021 से 09 जुलाई, 2021 (कुल पाठ्यक्रम की अवधि = 13 घंटे 30 मिनट) के दौरान किया गया।

THIS CERTIFICATE IS

AWARDED TO

MR. RITWICK SEN

ON HAVING PARTICIPATED IN THE ONLINE COURSE ON

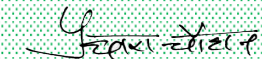
“Machine learning to Deep Learning: A journey for remote sensing data classification”

THIS ONLINE COURSE WAS CONDUCTED DURING 05-07-2021 to 09-07-2021 ( Total course duration was = 13 hours and 30 minutes ).

Date: 20-07-2021

Place: Dehradun

UID- 4fc31ea5da49afbd6d4de1f9f458ec6 .This Certificate can be validated using URL- <https://certificate.iirs.gov.in>



निदेशक/ Director

आई.आई.आर.एस, देहरादून/ IIRS, Dehradun





भारतीय सुदूर संवेदन संस्थान/ INDIAN INSTITUTE OF REMOTE SENSING  
भारतीय अंतरिक्ष अनुसंधान संगठन/ INDIAN SPACE RESEARCH ORGANISATION  
अंतरिक्ष विभाग, भारत सरकार/ DEPARTMENT OF SPACE, GOVERNMENT OF INDIA



नामांकन सं./ Enrollment No. : 202110151076702

आई.आई.आर.एस. आउटरीच कार्यक्रम  
IIRS Outreach Programme

कार्यशाला में सहभागिता का प्रमाणपत्र/CERTIFICATE OF PARTICIPATION IN WORKSHOP

यह प्रमाणित किया जाता है कि **श्री ऋत्विक् सेन** ने इस संस्थान द्वारा दिनांक 16 जुलाई, 2021 को आयोजित एक दिवसीय ऑनलाइन कार्यशाला, **बाढ़ जोखिम मानचित्रण और निगरानी के लिए एस. ए. आर. के अनुप्रयोग** में भाग लिया।

(संबन्धित आई.आई.आर.एस नोडल केंद्र- इंडियन इंस्टीट्यूट ऑफ टेक्नोलॉजी खड़गपुर, पश्चिम बंगाल)।

This is to certify that **MR. RITWICK SEN** has participated in one day online workshop titled **SAR Application for flood hazard mapping and monitoring** , conducted by this institute on **16-07-2021**.

(Concerned IIRS Nodal Centre- **Indian Institute Of Technology Kharagpur, West Bengal**).

Date: 23-07-2021

Place: Dehradun

समन्वयक, विश्वविद्यालय/ संस्थान  
Coordinator, University/ Institution

निदेशक/ Director  
आई०आई०आर०एस, देहरादून/ IIRS, Dehradun

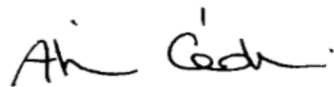
Jan 8, 2021

**Ritwick Sen**

has successfully completed

**Introduction to Programming with MATLAB**

an online non-credit course authorized by Vanderbilt University and offered through  
Coursera



Akos Ledeczki, Ph.D.  
Professor  
Computer Engineering, Computer Science, and  
Electrical Engineering



J. Michael Fitzpatrick, PhD  
Professor Emeritus  
Computer Science, Computer Engineering, Electrical Engineering, Neurosurgery, and Radiology

**COURSE  
CERTIFICATE**



Verify at [coursera.org/verify/ZAKGKH3VZPSQ](https://coursera.org/verify/ZAKGKH3VZPSQ)

Coursera has confirmed the identity of this individual and their  
participation in the course.



# Course Completion Certificate

Ritwick Sen

has successfully completed 100% of the self-paced training course

Image Processing Onramp

  
\_\_\_\_\_  
DIRECTOR, TRAINING SERVICES

21 May 2021





# Course Completion Certificate

Ritwick Sen

has successfully completed 100% of the self-paced training course

MATLAB Onramp

  
\_\_\_\_\_  
DIRECTOR, TRAINING SERVICES

20 May 2021



# Course Completion Certificate

Ritwick Sen

has successfully completed 100% of the self-paced training course

Machine Learning Onramp

  
\_\_\_\_\_  
DIRECTOR, TRAINING SERVICES

25 May 2021



Apr 28, 2021

Ritwick Sen

has successfully completed

Programming for Everybody (Getting Started with Python)

an online non-credit course authorized by University of Michigan and offered through Coursera

A handwritten signature in black ink, appearing to read 'Charles', followed by a horizontal line.

Charles Severance  
Clinical Professor, School of Information  
University of Michigan

COURSE  
CERTIFICATE



Verify at [coursera.org/verify/77YA777TJTSR](https://coursera.org/verify/77YA777TJTSR)

Coursera has confirmed the identity of this individual and their participation in the course.