Unit test-01

(P-2) B.Sc. I (Maths)

Q.1 संबंध को परिभाषित कीजिए। माना कि पूर्णांक के समुच्चय I पर एक सम्बन्ध R इस प्रकार परिभाषित है कि $xRy \Leftrightarrow 5/(x-y)$, अर्थात $(x-y)$, 5 से विभाज्य है। तब R, I पर एक तुल्यता संबंध है

$R \subseteq A \times A$

तथा $S \subseteq A \times A$

$A \times B = \{(a,b) / a \in A, b \in B\}$

① $(x,x) \in R$ या $(x,x) \in S$

$\Rightarrow (x,x) \in R \cap S$, $\forall x \in A$

②

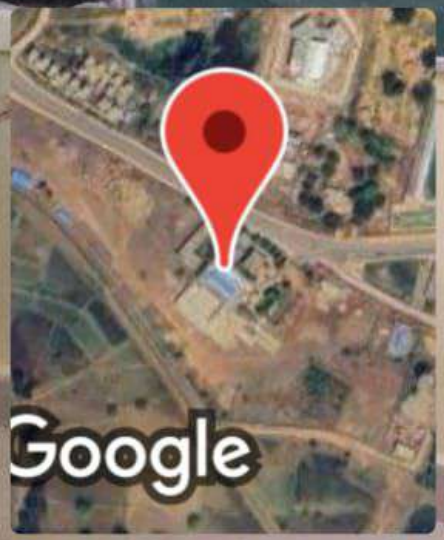
Q2. यदि समुच्चय A में R एक तुल्यता सम्बन्ध है तो Prove that R^{-1} भी A में एक तुल्यता सम्बन्ध है।

Q3. यदि R और S समुच्चय A में दो तुल्यता सम्बन्ध हो तो Prove that $R \cap S$ भी A में एक तुल्यता सम्बन्ध है।

Q.4 Show that प्रतिचित्रण $f: R \to R$ जो कि $f(x) = 3x+5$ द्वारा परिभाषित है one-one and onto है

Q.5. यदि $f: X \to Y$ और A तथा B समुच्चय Y के दो उपसमुच्चय हो तो Prove that (1.) $f^{-1}(A \cup B) = f^{-1}(A) \cup f^{-1}(B)$

(2.) $f^{-1}(A \cap B) \subseteq f^{-1}(A) \cap f^{-1}(B)$

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Unit test
B.Sc. I (Maths)
Paper - II

विभागाध्यक्ष
गणित विभाग
शास.पन्नूलाल चन्द्राकर
कला एवं विज्ञान महाविद्यालय
पाटन,जि.- दुर्ग (छ.ग.)

1	गायत्री	गायत्री साहू
2	भारती	भारती साहू
3	कनक	कनक ध्रुव
4	कविता साहू	Kavita
5	चारुलता	चारुलता
6	संजना भारती	Sanjana
7	गुन्जा बंधोर	Gunjan
8	मुस्कान सोनवानी	Muskan
9	हर्षा देशलहरा	Harsha
10	वान्या वर्मा	Jay
11	मयंक कुमार	Mayank
12	भोपराम साहू	Bhojram
13	किशन कुमार	
14	आर्यन चन्द्राकर	Aryan
15	हितेश देवांगन	Hitesh
16	सत्यम साहू	Satyam
17	करण देवांगन	Karan

25-7-23


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Date - 17/08/23 B.Sc. I st UNIT TEST - 2

Calculus (P-I).

S.No.	Name	Sign.
(1)	कविता साहू	Kavita.
(2)	वासलता	वासलता
(3)	खुशबू	खुशबू
(4)	रोशन लाल	
(5)	गुन्जा बांधोर	Gunja
(6)	हर्षा देशलहरा	Harsha
(7)	तान्या वर्मा	Tanya
(8)	ईश्वर साहू	ईश्वर साहू
(10)	करण देवांगन	Karan
(11)	अमन कुमार	
(12)	हितेश देवांगन	Hitesh.
(13)	भोजराम साहू	
(14)	विशाल	
(15)	मयंक कुमार	MKSahu
(16)	आर्यन चन्द्राकर	Aryan
(17)	शुभम कुमार	
(18)	शत्रुघ्न यादव	

17-8-23

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शास.चन्दूलाल चन्द्राकर
कला एवं विज्ञान महाविद्यालय
पाटन,जि.- दुर्ग (छ.ग.)

Date
21/07/2023

Q1) सांतत्य की जाँच $x=0$ पर कीजिए?

$$f(x) = \begin{cases} \frac{1-\cos x}{x^2} & , x \neq 0 \\ 1 & , x = 0 \end{cases}$$

Q2) सांतत्य की जाँच कीजिए $x=0$ पर

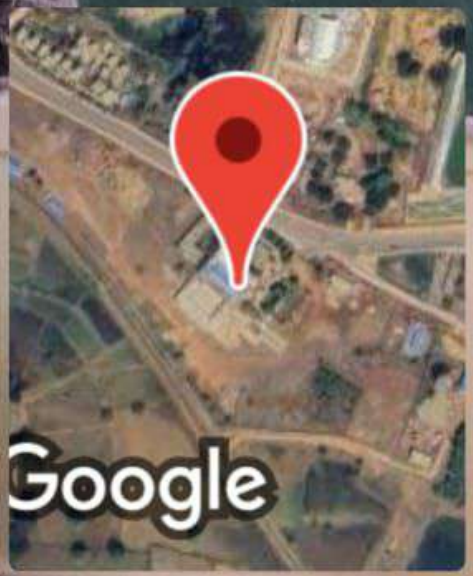
$$f(x) = \begin{cases} \frac{xe^{1/x}}{1+e^{1/x}} & , x \neq 0 \\ 0 & , x = 0 \end{cases}$$

Q3) सांतत्य की जाँच करें-

$$f(x) = \begin{cases} x \sin(\frac{1}{x}) & x \neq 0 \\ 0 & , x = 0 \end{cases}$$

Q4) $x=1$ पर अवकलनीयता की जाँच कीजिए।

$f(x) = |x| + |x-1|$



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RUSA 2018-19 75
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Unit - Test - II
Q. ① Derive an expression for rotational constant for diatomic molecules
② Briefly explain the classification of molecules in terms of their internal rotational mechanisms
(OR)
Q. ① How pure rotational spectrum is obtained? Explain line spacing obtained in spectrum
② Discuss in details about selection rule for rotational spectrum of rigid diatomic molecules
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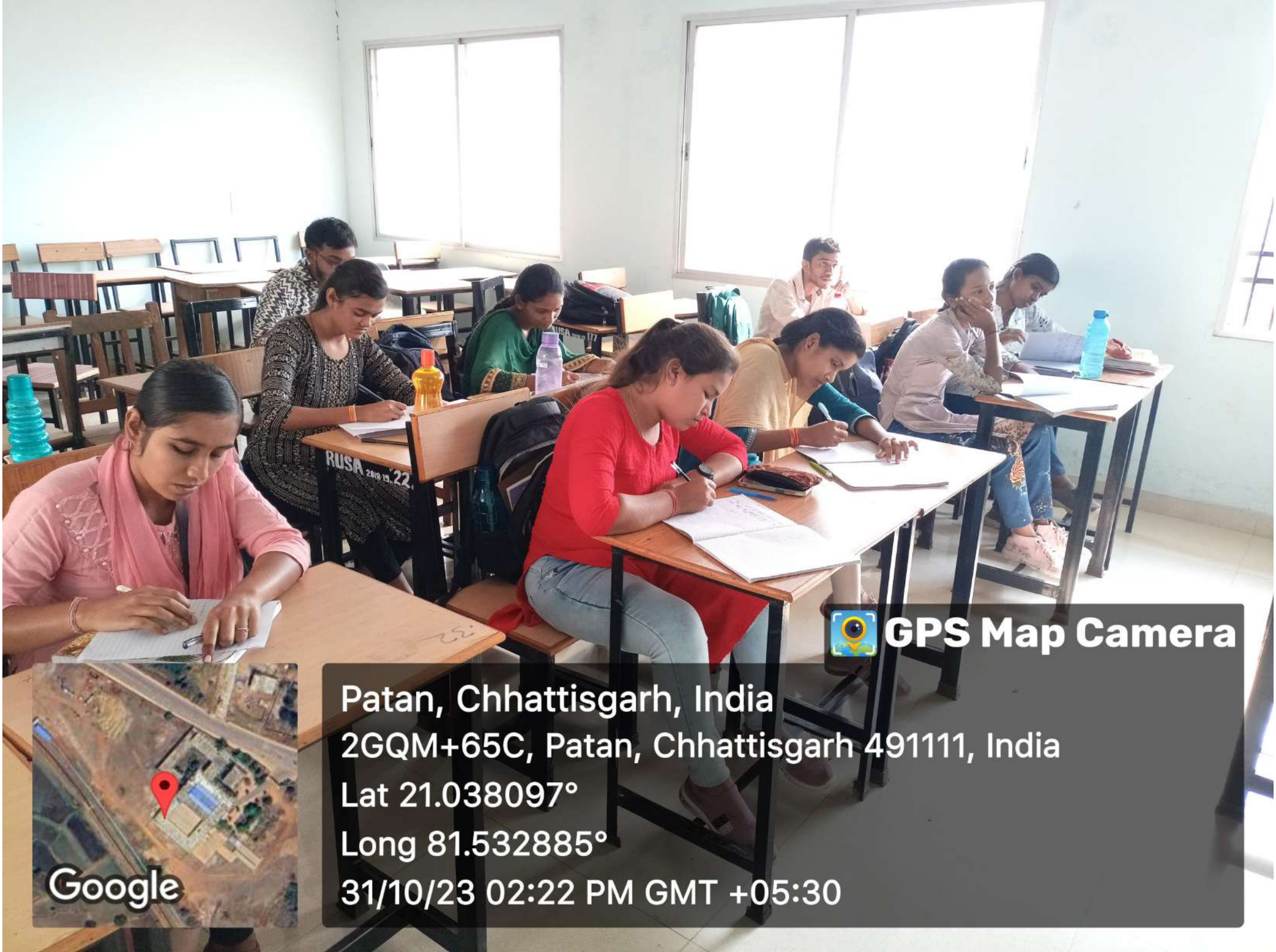
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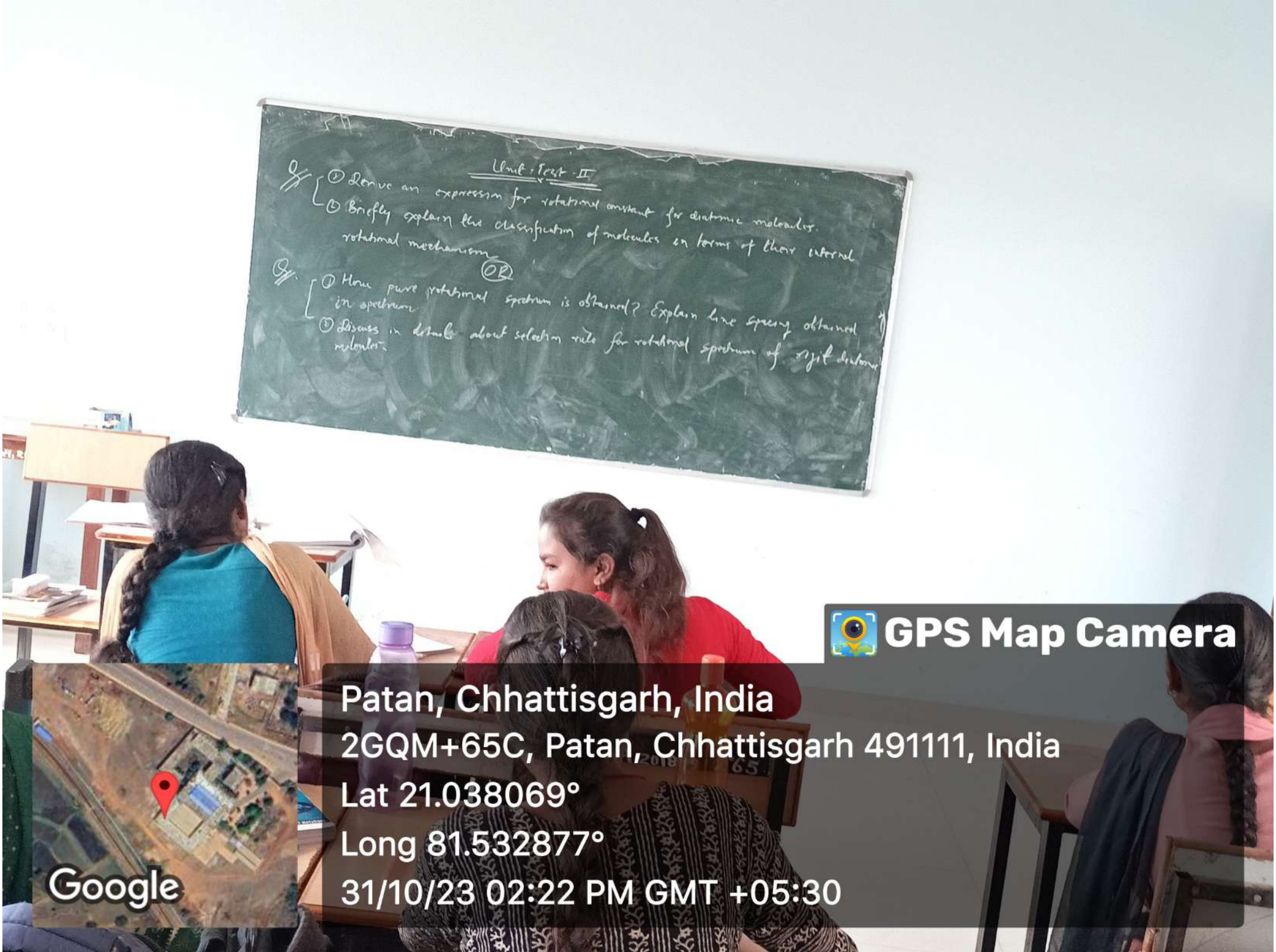
Unit - Test - II
Q. (1) Derive an expression for rotational constant for diatomic molecules.
(2) Briefly explain the classification of molecules in terms of their internal rotational mechanisms.
(OR)
Q. (1) How pure rotational spectrum is obtained? Explain line spacing obtained in spectrum.
(2) Discuss in details about selection rule for rotational spectrum of rigid diatomic molecules.
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Unit - First
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Unit - Test - II
Q. ① Derive an expression for rotational constant for diatomic molecules
② Briefly explain the classification of molecules on terms of their external rotational mechanism
OR
Q. ① How pure rotational spectrum is obtained? Explain line spacing obtained on spectrum
② Discuss in details about selection rule for rotational spectrum of rigid diatomic molecules
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Unit Test – 1
M.Sc. IV Semester (Chemistry)
Unit IV : Atomic Absorption Spectroscopy
(Total Marks 20)
1. Explain the principle, instrumentation, and applications of atomic absorption spectroscopy. (10)
(OR)
What is hyphenated technique, describe the principle, instrumentation, and applications of any one hyphenated technique.
2. Describe the principle, instrumentation, and applications of GC-MS . (10)
(OR)
Write short notes on (Any two)
1. Graphite furnace 2. Cold vapors atomizer 3. Hallow cathode lamp.
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Unit Test – 1
M.Sc. IV Semester (Chemistry)
Unit IV : Atomic Absorption Spectroscopy
(Total Marks 20)
(OR)
(OR)
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(i) डील्स एल्डर अभिक्रिया पर टिप्पणी लिखिए।

(ii) डाइ-ईन का वर्गीकरण कर प्रत्येक को उदाहरण सहित समझाइये।

(iii) मारकोनीकाफ के नियम को क्रियाविधि सहित समझाइये।

(iv) ऐसीटीलीन के अम्लीय स्वभाव को समझाइये

(v) संयुग्मित डाइ-ईनो में इलेक्ट्रोफिलिक योग एवं मुक्त मूलक योग को क्रियाविधि सहित समझाइये।


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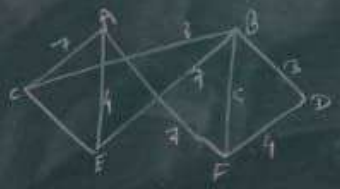
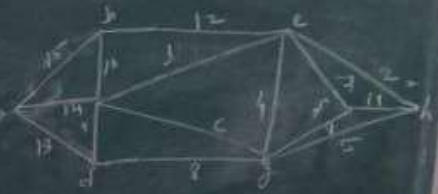
M.Sc II Sem Unit test-3

Paper-5 (ADM-II)

Exam Date - 11/03/24

Q.5 (i) or (ii)





Solve any 4:-

1. Write short notes on Dijkstra Algorithm.
2. Write short notes on Kruskal Algorithm.
3. Write short notes on Chinese postman Problem
4. Write shortest cut matrix representation of a graph (Directed & undirected graph)
5. Find the minimum spanning tree for weighted graph using kruskal Algorithm.
6. Find the circuit matrix of the following graph

M.Sc.-II Sem Unit Test-3 Mathematics
Paper-5 (Advance Discrete mathematics-II)
UNIT-3 Exam Date-09-03-2024 (Saturday)

Note - Solve any 5-Questions

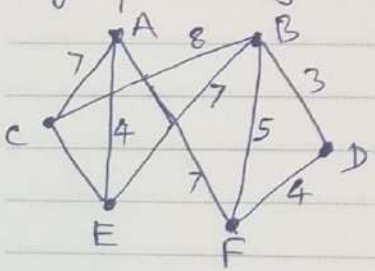
Q1 - Write short notes on Dijkestra Algorithm.

Q2 - Write short notes on Kruskal Algorithm

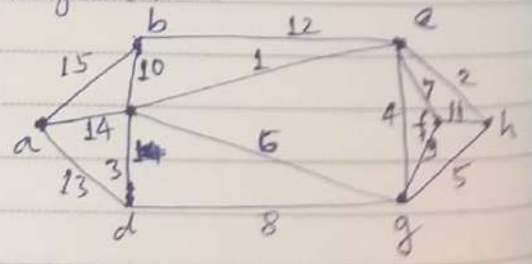
Q3 - Write shortnotes on Chinese Postman problem.

Q4 - Write shortnotes on matrix representation of a graph (Directed & undirected graph)

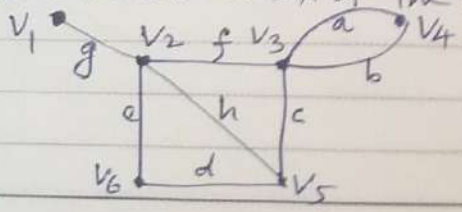
Q5 - Find the minimum spanning tree for weighted graph using Kruskal Algorithm:



OR



Q6 - Find the circuit matrix of the following graph

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Test-03
M.Sc. I (Maths)
Paper- I (AAA)
Q.1. State and Prove Jordan-Holder theorem.
Q.2. A group G is Solvable iff G(k) = {e} for positive integer k.
Q.3. Every finite group has a Composition Series.
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UNIT TEST-1 M.Sc-II Sem (Maths)

Date - 27-02-2024 Paper-5 (Discrete Maths)

Note - Solve five questions from following:

Q1 - Give short notes on

(i) Konigsberg bridge problem (ii) Isomorphic Graph

(iii) Complete graph = (K_n) (iv) Bipertite Graph = $(K_{m,n})$

Q2 - Prove that in any graph the number of vertices of odd degree is always even.

Q3 - State and prove Hand Shaking Lemma

Q4 - Prove that the maximum number of edges in a simple graph with n-vertices is $= \frac{n(n-1)}{2}$

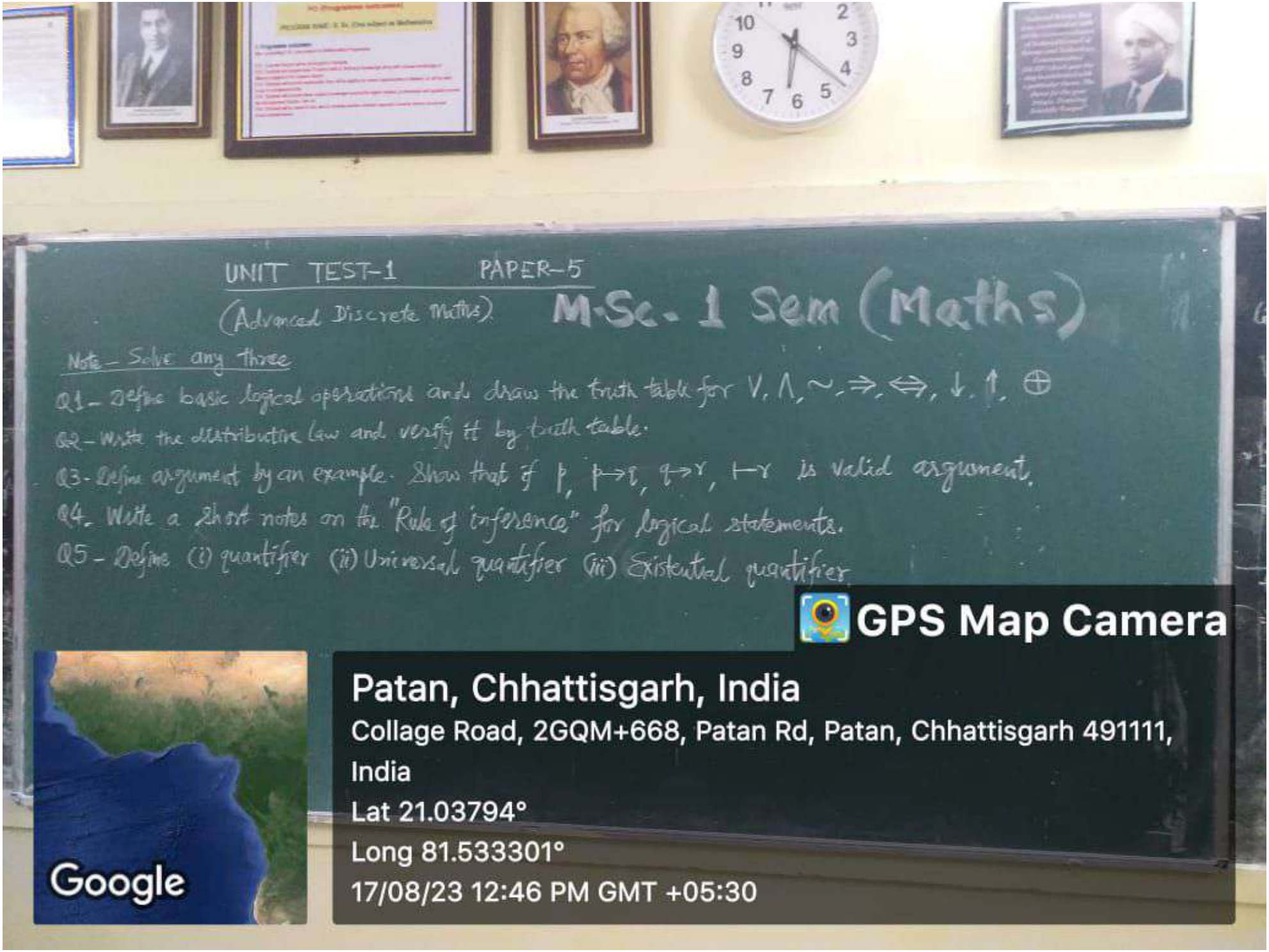
Q5 - Let G be a simple graph with n-vertices. If G has k-components, then the maximum number of edges that G can have are

$$\frac{(n-k)(n-k+1)}{2}$$

Q6 - Write short Notes on:

(i) Subgraph (ii) Complement of a subgraph

(iii) Degree of a vertex (iv) Simple graph


UNIT TEST-1 PAPER-5
(Advanced Discrete Maths) M.Sc. 1 Sem (Maths)
Note – Solve any three
Q1 – Define basic logical operations and draw the truth table for $\vee, \wedge, \sim, \Rightarrow, \Leftrightarrow, \downarrow, \uparrow, \oplus$
Q2 – Write the distributive law and verify it by truth table.
Q3 – Define argument by an example. Show that if p, $p \to q$, $q \to r$, $\vdash r$ is valid argument.
Q4. Write a short notes on the "Rule of inference" for logical statements.
Q5 – Define (i) quantifier (ii) Universal quantifier (iii) Existential quantifier
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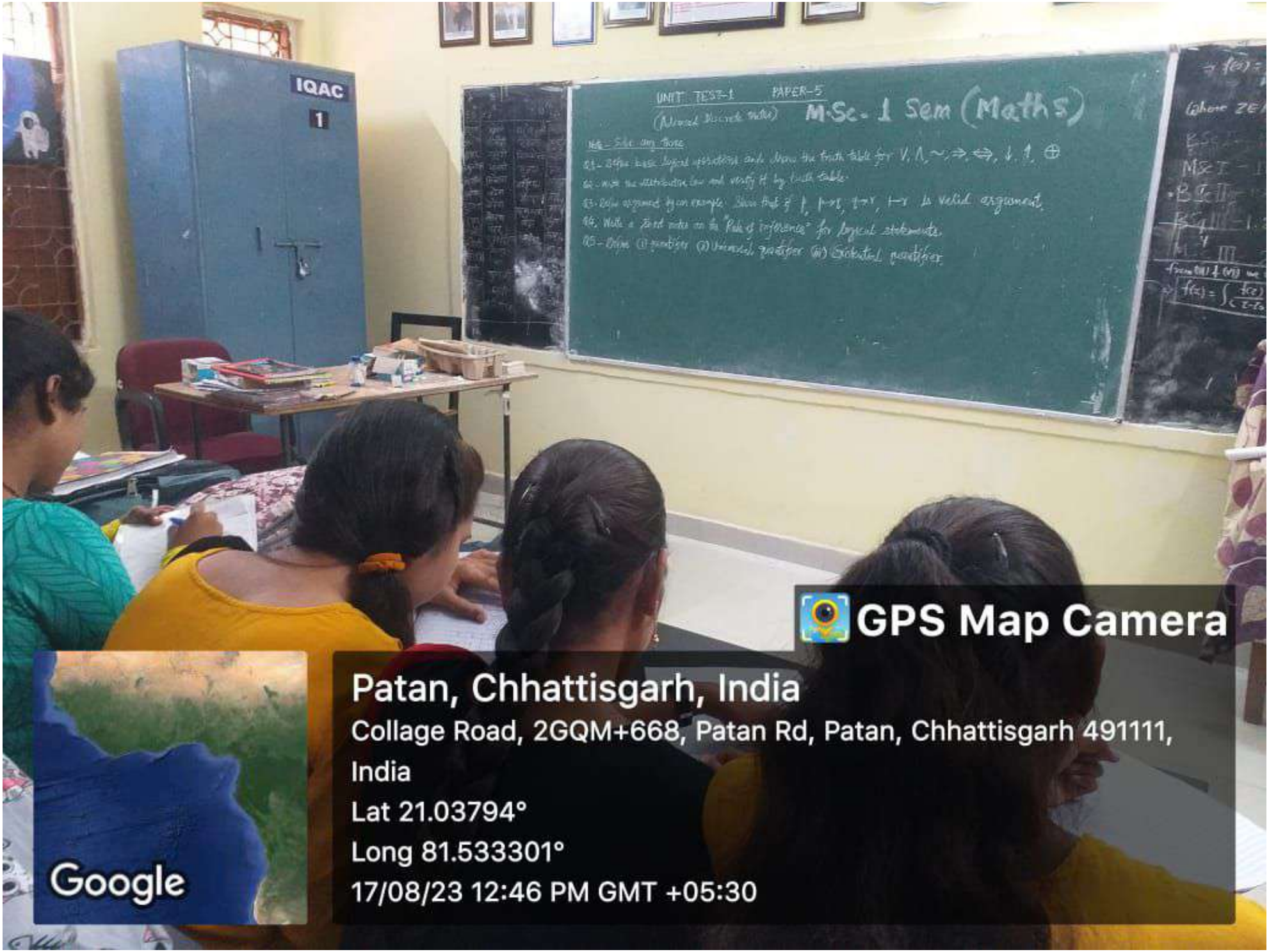
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UNIT TEST-1 PAPER-5
M.Sc. 1 Sem (Maths)
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Date - 17/08/2023 M.Sc. I st sem

UNIT - TEST-1 (Paper-5)

(Advanced Discrete Maths) Date 17-8-2023

S.No.	Name	Sign.
1.	Vidya	Vidya
2.	Jageili Sahu	Jageili Sahu
3.	Pallavi Verma	Pallavi
4.	Ritu Dewangan	Ritu
5.	Khileshwari tandan	खिलेश्वरी
6.	Rajeshwari Sahu	Rajeshwari
7.	Garima Sahu	गरिमा
8.	Bhuneshwari	भुनेश्वरी
9.	Amrita Sahu	Amrita
10.	Nandita Sahu	Nandita
11.	Geetima charadhari	Geetima
12.	Hema	हेमा
13.	Madhuri Sen	madhuri
14.	Amkit Kumar	Amkit
15.	Umakant	Umakant
16.	Pavitra Verma	Pavitra

17/8/2023

विभागाध्यक्ष
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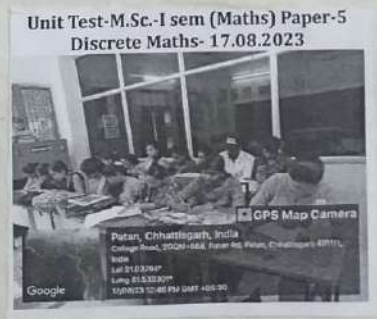
शास.च.दलाल चन्द्राकर
कला एवं विज्ञा[illegible]महाविद्यालय
पाटन,जि.- दुर्ग (छ.ग.)

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Theo.

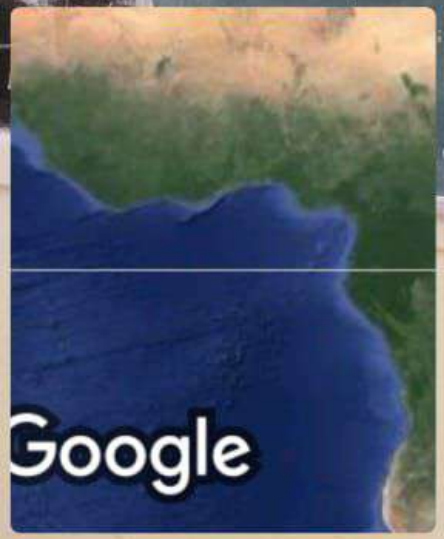
Date - 02/09/23.

Unit test - 03

Real Analysis

① State and prove Taylor's theorem.

② State and prove Implicit function theorem.



GPS Map Camera

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Long 81.533244°

02/09/23 12:57 PM GMT +05:30

M.Sc. I Sem. Date - 02/09/23.

Unit Test - 03.

Paper - (02) [Real Analysis].

S.No.	Name	Sign.
(1)	पल्लवी वर्मा	पल्लवी वर्मा
(2)	शीतु देवांगन	शीतु देवांगन
(3)	शजेश्वरी साहू	शजेश्वरी साहू
(4)	खिलेश्वरी टण्डन	खिलेश्वरी टण्डन
(5)	अंकित कुमार उमालोत	
(6)	हेमा	Hema
(7)	नमिता	Namolita
(8)		

02/09/2023.

Priya Chandrakar.

02-9-23

विभागाध्यक्ष
गणित विभाग
शास.घन्दूलाल चन्द्राकर
कला एवं विज्ञान महाविद्यालय
पाटन,जि.- दुर्ग (छ.ग.)


Mathematics
Mathematics Lab
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Test-II

M.Sc. I Sem

Paper - IV (Complex Analysis)

Date - 14-08-2023

S.No.	Name	Sign
1.	Priyanka Verma	Priyanka
2.	Jagriti Sahu.	Jagriti
3.	Pallavi Verma	Pallavi
4.	Ritu Dewangan	Ritu
5.	Khileshwari Tandan	खिलेश्वरी
6.	Rajeshwari Sahu	Rajeshwari
7.	Garima Sahu	गरिमा
8.	Nandita Sahu	Nandita
9.	Hema	हेमा
10	Madhuri Sen	madhuri

14-8-23

विभागाध्यक्ष
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पाटन,जि. दुर्ग (छ.ग.)

14/08/2023

(Jaynendra Shrivas)


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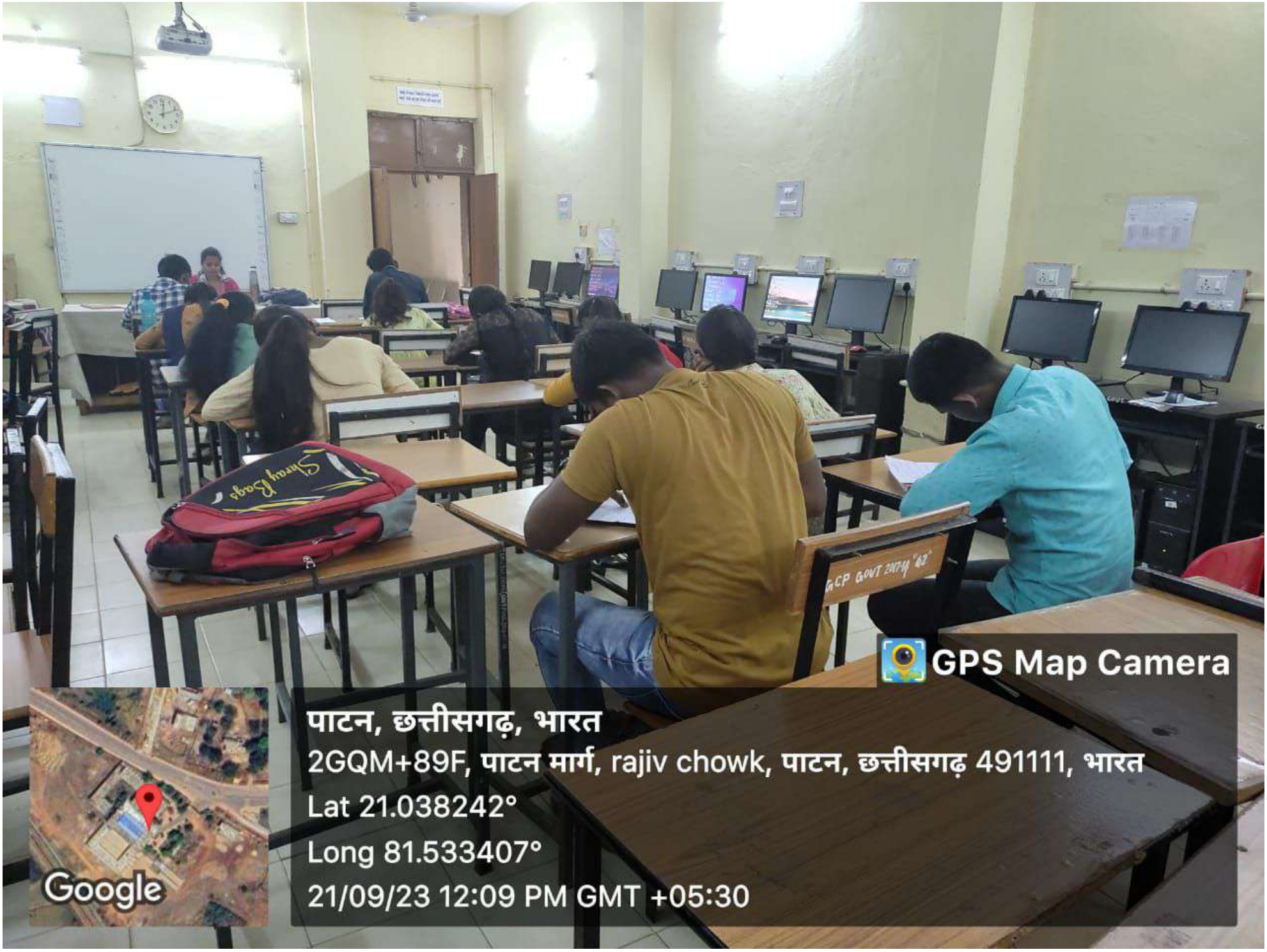
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Lat 21.038242°
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Date - 19/02/24.

Unit Test - 02 (Topology)

(1) The Product Space $X_1 \times X_2$ is connected iff both X_1 and X_2 are connected.

(2) State and Prove Tychonoff's theorem.

(3) Show that a product space X is first Countable iff each co-ordinate space is first countable.

(4) Metrizability is a Countably productive Property.


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