



राष्ट्रीय प्रौद्योगिकी संस्थान मेघालय
NATIONAL INSTITUTE OF TECHNOLOGY MEGHALAYA
(An Institute of National Importance under MoE)

Bijni Complex, Laitumkrah, Shillong – 793003 (India)
Website: www.nitm.ac.in

NITMGH/AA/Notice-Student/2021-2022/39

Dated: 13-08-2021

NOTIFICATION

This is to inform to all concerned that the *Comprehensive Examination Autumn 2021* will be held on **16th August 2021** through online mode in pursuance of the Academic Calendar vide No- NITMGH/AA/Academic Calendar/2021-22/17, dated-09/07/2021.

The scholars listed below are eligible to appear the *Online Comprehensive Examination 2021* to be held on 16th August, 2021. The syllabi for the same is given in *Annexure-I*.

Sl no	Dept	Roll No	Name of the scholar	Category
1	CS	P20CS001	Saurabh Kaushal	Part Time(Sponsored)
2	CY	P20CH002	Kakali Baruah	Full Time Project Fellow
3	CY	P20CH003	Silpi Sikha Borah	Full Time Project Fellow

In this connection, the concerned scholars are advised to remain in touch with the concerned supervisor(s) and HoD. Further the concerned scholars are advised to ensure the network connectivity and other related equipment beforehand in order to avoid the unnecessary interruption during the Examination.

This issues with the approval of the Competent Authority.

Asst.Registrar (AA)

Encl: As stated above.

Copy forwarded to:

- 1) AR (DR), for kind information of the Director.
- 3) All Deans, for kind information.
- 5) All HoDs , for information and needful
- 6) PIC (AA-PG&R)
- 7) All Faculty Members, for information and needful.
- 8) E-Notice board.
- 9) Concerned file , for record.

GUIDELINES FOR PREPARATION OF ONLINE COMPREHENSIVE PH.D EXAMINATION

Autumn 2021

1. The Dept will take the responsibility to conduct the online examination as per schedule. In this regard HoD may choose coordinator(s) based on the research groups.
2. The question papers should be preferably numerical/analytical type as much as possible depending on the syllabus framed by Dept research groups. The question paper should be discussed at dept research group level before submitting a copy to PIC(PG&R).
3. All the Research groups need to submit the questions papers to their coordinators and the HoD will mailed a copy of the question papers to the PIC(PG&R) by 14-08-2021 for verification and compliance.
4. For conduction of exam a Google platform will be used.
5. The Question paper should consist of 2 parts. Part-A will consists of 30 objective type question s with duration of ½ hour and each question carries 1 mark. Part-B should consist of 10 questions (subjective type) with duration of 2 hours. A scholar need to attempt 7 out of 10 questions and each question carries 10 marks.
6. The Dept Research groups will finalize the distribution of marks on subject wise for common courses.
7. After submission of Part-A only Part-B will be shared to the scholars as per schedule.
8. The question papers should be set in such a way that the students can finish their writing within the prescribed time.
9. The coordinators/HOD will conduct the examination (as per the schedule) using Google Classroom platform (under assignment category). The students will upload the hand-written scan copy of the answer scripts in the interface.
10. Question paper template is attached for this purpose
11. Exam schedule as follows.

Date	Question Type	Duration	Answer to be uploaded (allowable Time)
16/08/2021	Part-A	10am -10:30 am	10:50 am
	Part-B	11:30 am-01:30 pm	01:50 pm



National Institute of Technology, Meghalaya

Ph.D. Comprehensive Examination- (Spring/Autumn 20__)

Group: Image and Video Processing

Dept.: ECE

Time: ½ hrs.

Total marks: 30

Part A

Answer all the questions 30x1=30

SI.no	Choose the correct answer.	Answer
1	DIT algorithm divides the sequence into a. Positive and negative values b. Even and odd samples c. Upper higher and lower spectrum d. Small and large samples	
2	The computational procedure for Decimation in frequency algorithm takes a. $\log_2 N$ stages b. $2\log_2 N$ stages c. $\log_2 N^2$ stages d. $\log_2 N/2$ stages	
3	The similarity between the Fourier transform and the z transform is that a. Both convert the frequency spectrum domain to the discrete-time domain b. Both convert the discrete-time domain to frequency spectrum domain c. Both convert analog signal to digital signal d. Both convert digital signal to analog signal	
4	Which mathematical notation specifies the condition of periodicity for a continuous time signal? a. $x(t) = x(t + T_0)$ b. $x(n) = x(n + N)$ c. $x(t) = e^{-\alpha t}$ d. None of the above	
30		



National Institute of Technology, Meghalaya
Ph.D. Comprehensive Examination- (Spring/Autumn 20__)
Group: Image and Video Processing Dept.: ECE **Time: 2 hrs.**
Total marks: 70


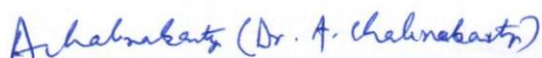
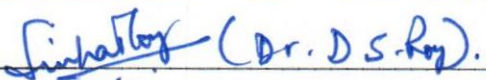

Part-B

Sl.no	Answer any 7 out of 10 Questions	
1		
2		
3		
4		
5		

(Only for the Courses relating to Research Domains for both Full Time & Sponsored Part Time)**Date of Comprehensive Exam: 16th August 2021****Department: Computer Science and Engineering****1) Research/Specialization Group: 1****(Name of the Group)** Computer Network & Security**Syllabus Content** {should be an extract from the course syllabus (not the entire syllabus) which will be helpful for the research work of the scholar}:

- (a) Course Code and Course Name : Course Code and Course Name: CS 701 :Advanced Data Structures and Algorithms Syllabus:** Array, Linked List, Stack, Queue, Double-Ended Queue, Search Trees, Height-Balanced Trees (or AVL Trees), Weight-Balanced Trees, Red-Black Trees, Splay Trees, Skip List, Balanced Search Trees as Heaps, Hash Tables and Collision Resolution, Hash Functions, Hash Trees, Selection Sort, Bubble Sort, Merge sort, Quicksort, Heapsort, Bucket and Radix Sort, Basic Algorithm Paradigms – Divide and Conquer, Greedy Algorithms, Dynamic Programming with examples, Minimum Spanning Trees.
- (b) Course Code and Course Name: CS 517 : Soft Computing Syllabus:**
Fuzzy Sets and Membership Function, Fuzzy If-Then Rules, Fuzzy Models, Fuzzy Logic Controller, Neural Networks- Backpropagation, Extended Backpropagation for Recurrent Networks, Genetic Algorithm, Particle Swarm Optimization, Ant Colony Optimization.
- (c) Course Code and Course Name: CS 521 : Number Theory and Cryptography Syllabus:** Mathematics of symmetric key and non-symmetric key cryptography, Encryption algorithms- DES, AES, hash functions-MD5, SHA, Signatures- RSA, ring signature, group signature, blind signature, aggregate signature, Elliptic curve Cryptography.
- (d) Course Code and Course Name: CS 514: Cloud Computing Syllabus:** Virtualization: Basic concept– Hypervisor- Types of virtualization- hardware, operating system, server, storage- Features of virtualization- Advantages and disadvantages of different types of virtualization. Cloud Architecture: Types of deployment models-Private, Public, Hybrid, Community, Types of service models-laas, PaaS, SaaS.

Signatures and Names of DRC Members:

- | | |
|--|---|
| 1. <u> [Dr. Deepak Kumar]</u> | 4. <u> (Dr. A. Chakrabarty)</u> |
| 2. <u> (Dr. D.S. Roy).</u> | 5. _____ |
| 3. <u> (Dr. A.P. Singh)</u> | 6. _____ |


Signature of DRC Chairman

Syllabi for Comprehensive Examination of Eligible Ph. D Scholars

(Only for the Courses relating to Research Domains for both Full Time & Sponsored Part Time)

Date of Comprehensive Exam: 16th August 2021

Department: Chemistry

1) Research/Specialization Group: 1

(Name of the Group) Physical Chemistry

Course Code & Course Name: CH 701 [Analytical Methods in Chemistry] (Marks 70)

Syllabus Content

Statistical Analysis: Evaluating Data Significant figures, types of error, sources of errors and their effect upon the analytical results, precision, accuracy, mean deviations and standard deviation, statistical treatment of analytical data, method of least squares and methods for reporting analytical data.

Optical Methods: Atomic absorption spectroscopy, steady state and time resolved fluorescence spectrometry, linear and circular dichroism, X-ray methods: X-ray absorption and X-ray diffraction, photoelectron spectroscopy, scanning electron microscopy (SEM), transmission electron microscopy (TEM) and Raman spectroscopy.

Thermal Methods

Theory, instrumentation, and applications of thermogravimetric analysis (TGA), differential thermal analysis (DTA), differential scanning calorimetry (DSC), thermometric titrations.

Course Code & Course Name: HS 711 [Research Methodology] (Marks 30)

Syllabus Content

Fundamentals of Research: Meaning and Concepts of Research; Characteristics and Objectives of Research; Criteria of Good Research; Languages of Research; Types of Research; Psychological Tips; Motivation in Research; The Scholar and the Mentor; Institute Rules and Guidelines

The Research Process: Review of Literature; Identifying the Research Problem; Research Hypotheses; Sampling and Data Analysis; Interpretation of Results and Claims

Scholarly Writing: Characteristics of Scholarly Writing; Standard Guidelines; Critical Reviews; Research Proposals; Research Reports; Thesis/Dissertations; Research Papers; Impact Factor of Journals; Citation and Acknowledgement; Plagiarism and Self-Plagiarism; Reproducibility and Accountability.

2) Research/Specialization Group: 2

(Name of the Group) Stimuli-responsive materials

Course Code & Course Name: CH 701 [Analytical Methods in Chemistry] (Marks 70)

Sharma
05/08/2021

Chh
05/8/21

Chh
5/8/2021

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5/8/21
Chh
5/8/21

