

# Academic Calendar of VTU, Belagavi for B. E. I Semester of 2019-2020 (Jul 2019 – Jan 2020)

I Sem B. E. / B. Tech. / B. Arch.	
Commencement of ODD Semester	09.08.2019
Last Working day of ODD Semester	21.12.2019 (Includes 11 days induction programme)
Practical Examinations	23.12.2019 To 03.01.2020
Theory Examinations	06.01.2020 To 28.01.2020
Internship Viva-Voce	-
Professional training / Organization study	-
Commencement of EVEN Semester	10.02.2020

## NOTE

- I Semester B. E/ B. Tech / B. Arch Students shall compulsorily undergo **Induction Program** for a period of 3 Weeks (two phases) as per the schedule given by VTU. First phase 11 days in the beginning of first semester and second phase 10 days in the beginning of second semester.
1. College Time Table shall be arranged for five and a half week days and planned to accommodate EDUSAT transmission slots, the schedule of which will be notified separately.
  2. The faculty/staff shall be available to undertake any work assigned by the university.
  3. If any of the above date is declared to be a holiday then the corresponding event will come into effect on the next working day.
  4. Notification regarding Calendar of Events relating to the conduct of University Examination will be issued by the Registrar (Evaluation) from time to time.

30.7.2019  
REGISTRAR

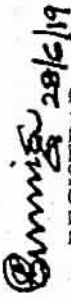
# Academic Calendar of VTU, Belagavi for ODD Semester of 2019-2020 (Jul 2019 - Jan 2020)

	I Sem B. E. / B. Tech. / B. Arch. (Tentative)	III, V & VII Sem B. E. / B. Tech. III, V, VII & IX Sem B. Arch.	III & V Sem MCA	III Sem MBA	III Sem M. Tech.	III Sem M. Arch.
Commencement of ODD Semester	01.08.2019	29.07.2019	29.07.2019	08.08.2019	26.08.2019	08.09.2019
Last Working day of ODD Semester	29.11.2019	30.11.2019	30.11.2019	05.12.2019	23.12.2019	06.01.2020
Practical Examinations	03.12.2019 To 13.12.2019	03.12.2019 To 13.12.2019	03.12.2019 To 07.12.2019	-	-	-
Theory Examinations	16.12.2019 To 04.01.2020	16.12.2019 To 07.02.2020	09.12.2019 To 28.12.2019	09.12.2019 To 04.01.2020	27.12.2019 To 10.01.2020	08.01.2020 To 22.01.2020
Internship Viva-Voce	-	-	-	-	12.01.2020 To 19.01.2020	-
Professional training / Organization study	-	-	-	-	-	-
Commencement of EVEN Semester	27.01.2020	10.02.2020	27.01.2020	27.01.2020	27.01.2020	01.02.2020

### NOTE

- VII Semester B. E. / B. Tech students shall have to undergo Internship for a period of four Weeks.
- I Semester B. E. / B. Tech / B. Arch Students shall compulsorily undergo Induction Program for a period of 3 Weeks (two phases) as per the schedule given by VTU.  
First phase 11 days in first semester and second phase 10 days in second semester.

1. College Time Table shall be arranged for five and a half week days and planned to accommodate EDUSAT transmission slots, the schedule of which will be notified separately.
2. The faculty/staff shall be available to undertake any work assigned by the university.
3. If any of the above date is declared to be a holiday then the corresponding event will come into effect on the next working day.
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 REGISTRAR

# CALCULUS AND LINEAR ALGEBRA

Semester	: I	CIE Marks	: 40
Course Code	: 18MAT11	SEE Marks	: 60
Teaching Hours/week (L:T:P)	: 3:2:0	Exam Hours	: 03
Credits : 04			

**Course Learning Objectives:** This course Calculus and Linear Algebra (18MAT11) will enable students:

- To familiarize the important tools of calculus and differential equations that are essential in all branches of engineering.
- To develop the knowledge of matrices and linear algebra in a comprehensive manner.

## MODULE-I

**Differential Calculus-1:** Review of elementary differential calculus, Polar curves - angle between the radius vector and tangent, angle between two curves, pedal equation. Curvature and radius of curvature- Cartesian and polar forms; Centre and circle of curvature (All without proof-formulae only) –applications to evolutes and involutes.

(RBT Levels: L1 & L2)

## MODULE-II

**Differential Calculus-2:** Taylor's and Maclaurin's series expansions for one variable (statements only), indeterminate forms - L'Hospital's rule. Partial differentiation; Total derivatives-differentiation of composite functions. Maxima and minima for a function of two variables; Method of Lagrange multipliers with one subsidiary condition. Applications of maxima and minima with illustrative examples. Jacobians-simple problems.

(RBT Levels: L1 & L2)

## MODULE-III

**Integral Calculus:** Review of elementary integral calculus. Multiple integrals: Evaluation of double and triple integrals. Evaluation of double integrals- change of order of integration and changing into polar co-ordinates. Applications to find area volume and centre of gravity  
Beta and Gamma functions: Definitions, Relation between beta and gamma functions and simple problems.

(RBT Levels: L1 & L2)

## MODULE-IV

**Ordinary differential equations (ODE's) of first order:**  
Exact and reducible to exact differential equations. Bernoulli's equation.

Applications of ODE's-orthogonal trajectories, Newton's law of cooling and L-R circuits. Nonlinear differential equations: Introduction to general and singular solutions ; Solvable for p only; Clairaut's and reducible to Clairaut's equations only. **(RBT Levels : L1, L2 & L3)**

### MODULE-V

**Linear Algebra:** Rank of a matrix-echelon form. Solution of system of linear equations – consistency. Gauss-elimination method, Gauss –Jordan method and Approximate solution by Gauss-Seidel method. Eigen values and eigenvectors-Rayleigh's power method. Diagonalization of a square matrix of order two.

**(RBT Levels : L1, L2 & L3)**

#### Textbooks:

1. B.S. Grewal: Higher Engineering Mathematics, Khanna Publishers, 43rd Ed., 2015.
2. E. Kreyszig: Advanced Engineering Mathematics, John Wiley & Sons, 10th Ed.(Reprint), 2016.

#### Reference books:

1. C.Ray Wylie, Louis C.Barrett : "Advanced Engineering Mathematics", 6th Edition, 2. McGraw-Hill Book Co., New York, 1995.
2. James Stewart : "Calculus –Early Transcendentals", Cengage Learning India Private Ltd., 2017.
3. B.V.Ramana: "Higher Engineering Mathematics" 11th Edition, Tata McGraw-Hill, 2010.
4. Srimanta Pal & Subobh C Bhunia: "Engineering Mathematics", Oxford University Press, 3rd Reprint, 2016.
5. Gupta C.B., Singh S.R. and Mukesh Kumar: "Engineering Mathematics for Semester I & II", Mc-Graw Hill Education (India) Pvt.Ltd., 2015.

#### Web links and Video Lectures:

1. <http://nptel.ac.in/courses.php?disciplineID=111>
2. [http://www.class-central.com/subject/math\(MOOCs\)](http://www.class-central.com/subject/math(MOOCs))
3. <http://academicearth.org/>
4. VTU EDUSAT PROGRAMME - 20

**Course Outcomes:** On completion of this course, students are able to:

**CO1 :** Apply the knowledge of calculus to solve problems related to polar curves and its applications in determining the bentness of a curve.

**CO2 :** Learn the notion of partial differentiation to calculate rates of change of multivariate functions and solve problems related to composite functions and Jacobians.

AIT		College Calendar of Events		Format No.	ACD01
				Issue No.	01
				Rev. No.	00
Academic Year :		2019-20	Semester :	Even	
Sl.No.	Date	Events			Remark
1	27/01/2020	Commencement of 4 <sup>th</sup> Semester M.Tech. classes.			
2	31/01/2020	After availing the vacation all the faculty members reported back to the duty			
3	03/02/2020 to 07/02/2020	FDP on FPGA and Embedded design flow on Zynq using Vivado in Department of Electronics and Communication Engineering.			
4	05/02/2020 to 06/02/2020	Faculty Development Program on " Microcontroller & Embedded Systems" in Department of Information Science & Engineering			
5	07/02/2020	Interdisciplinary Internal Faculty Development Program for faculty of all the Departments in Department of Mechanical Engineering.			
6	10/02/2020	Commencement of 2 <sup>nd</sup> , 4 <sup>th</sup> , 6 <sup>th</sup> , 8 <sup>th</sup> Semester B.E. and 4 <sup>th</sup> semester MBA classes.			
7	10/02/2020 to 20/02/2020	Induction Programme for 2 <sup>nd</sup> Semester B.E. Students.			
8	14/02/2020	Commencement of 2 <sup>nd</sup> Semester MBA classes.			
9	20/02/2020	Technical Talk on "Different Products Of ULTRATECH CEMENT Industry" in Department of Civil Engineering.			
10	21/02/2020	Holiday, Mahashivarathri.			
11	05/03/2020	Commencement of 2 <sup>nd</sup> Semester M.Tech. classes.			
12	20/03/2020 to 21/03/2020	Workshop on "Selenium Test Automation Tool" in Department of Information Science & Engineering.			
13	22/03/2020 to 24/03/2020	First Test Cycle for B.E Students.			
14	25/03/2020	Holiday, Chandramana Ugadhi.			
15	27/03/2020	Work Shop on "AUTO DESK Products in Civil Engineering"			
16	30/03/2020	Announcement of 1 <sup>st</sup> Test I.A Marks for B.E Students.			
17	31/03/2020	Project Exhibition in Department of Mechanical Engineering.			
18	03/04/2020 to 04/04/2020	Fourth National Conference on Emerging trends and Advances in Information technology and 2 <sup>nd</sup> State Level Project Exhibition in Department of Computer Science & Engineering.			
19	05/04/2020	National Conference on "Emerging Trends In Business & Economy" in Department of Management Studies (MBA)			
20	06/04/2020	Holiday, Mahaveera Jayanthi.			
21	10/04/2020	Holiday, Good Friday.			
22	14/04/2020	Holiday, Dr. Ambedkar Jayanthi.			
23	18/04/2020	Seminar on "Cyber Security and Cyber Forensics" in Department of Information Science & Engineering.			

24	23/04/2020 to 25/04/2020	Second Test Cycle for B.E Students	
25	30/04/2020	E-belaku National Level Symposium in Department of Electrical & Electronics Engineering.	
26	30/04/2020	Announcement of 2 <sup>nd</sup> Test I.A Marks for B.E Students.	
27	01/05/2020	Holiday, Labours day.	
28	04/05/2020	Awareness program for girls on health & hygienic in Department of Electronics and Communication Engineering.	
29	08/05/2020	One Day National Conference on Recent Advances in Civil Engineering and Technology ( RACET-2020)	
30	20/05/2020	Last working day for 4 <sup>th</sup> Semester M.Tech. classes.	
31	25/05/2020	Holiday, Kutub-A-Ramzan.	
32	26/05/2020 to 28/05/2020	Third Test Cycle for B.E Students	
32	30/05/2020	Announcement of 3 <sup>rd</sup> Test I.A Marks for B.E Students.	
33	01/06/2020	Last working day for 2 <sup>nd</sup> , 4 <sup>th</sup> , 6 <sup>th</sup> and 8 <sup>th</sup> Semester B.E and 4 <sup>th</sup> semester MBA classes.	
34	03/06/2020 to 11/06/2020	Theory Examinations for 8 <sup>th</sup> Semester B.E and 4 <sup>th</sup> semester M.Tech. students.	
35	03/06/2020 to 13/06/2020	Practical Examinations for 2 <sup>nd</sup> , 4 <sup>th</sup> and 6 <sup>th</sup> Semester B.E Students.	
36	03/06/2020 to 28/06/2020	Theory Examinations for 4 <sup>th</sup> semester MBA students.	
37	05/06/2020	Last working day for 2 <sup>nd</sup> Semester MBA classes.	
38	08/06/2020 to 20/06/2020	Theory Examinations for 2 <sup>nd</sup> Semester MBA students.	
39	15/06/2020 to 20/06/2020	Viva Voce for 8 <sup>th</sup> semester B.E. students.	
40	15/06/2020 to 20/07/2020	Theory Examinations for 2 <sup>nd</sup> , 4 <sup>th</sup> and 6 <sup>th</sup> Semester B.E Students.	
41	22/06/2020	Last working day for 2 <sup>nd</sup> Semester M.Tech. classes.	
42	25/06/2020 to 30/06/2020	Practical Examinations for 2 <sup>nd</sup> Semester M.Tech. students.	
43	01/07/2020 to 11/07/2020	Theory Examinations for 2 <sup>nd</sup> Semester M.Tech. students.	
44	27/07/2020	Commencement of Odd Semester for B.E. and MBA students.	
45	03/08/2020	Commencement of Odd Semester for M.Tech. students.	

Note: Add any other events like Guest Lecture, National / International Conference , seminars, etc., in individual department calendar of events.

Copy to:

1. All HOD'S
2. Placement Officer
3. Establishment Section
4. Spansos Team.

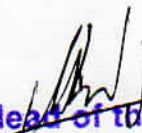
  
**Dr. C. T. PRINCY DEVA**  
 B.E., M.Tech., Ph.D.  
 Principal  
 Adichunchanagiri Institute of Technology  
 CHIKKAMAGALURU-577102

DEPARTMENT OF CHEMISTRYFaculty Workload2021 Scheme

Sl No	Name of the faculty	Designation	Theory in Hrs	Lab in Hrs	Total
1	Dr. Dinesh N D	Professor and HOD	5	12	17
2	Dr Nalina E	Assoc Professor	5	12	17
3	Dr C R Gnanendra	Assoc Professor	5	12	17
4	Syed Nizamuddin	Assit Professor	5	12	17

2022 Scheme

Sl No	Name of the faculty	Designation	Theory in Hrs	Lab in Hrs	Total
1	Dr. Dinesh N D	Professor and HOD	4	12	16
2	Dr Nalina E	Assoc Professor	4	12	16
3	Dr C R Gnanendra	Assoc Professor	6	14	20
4	Syed Nizamuddin	Assit Professor	6	14	20

  
 Head of the Department  
 Department of Chemistry  
 A.I.T. Chikkamaççikur

## ENGINEERING CHEMISTRY

Course Code	<b>21CHE12/22</b>	CIE Marks	50
Teaching Hours/Week (L:T:P: S)	2:2:0	SEE Marks	50
Total Hours of Pedagogy	40	Total Marks	100
Credits	03	Exam Hours	3Hour

Course Objectives: The course will enable the students to

**CLO1:** Impart the basic knowledge of chemistry and its principles involved in electrochemistry, energy storage devices and its commercial applications.

**CLO2:** Understand the basic principles of corrosion and its prevention, metal finishing and its technological importance

**CLO3:** Master the knowledge of synthesis, properties and utilization of engineering materials like polymers & Nano materials.

**CLO4:** Apply the knowledge of Green Chemistry principles for production of chemical compounds understanding the concepts of alternative energy sources.

**CLO5:** Understand the basic concepts of water chemistry & theory, basic principle and applications of volumetric analysis and analytical instruments.

### Pedagogy (General Instructions):

These are sample Strategies, which teacher can use to accelerate the attainment of the various course outcomes.

1. Lecturer method (L) does not mean only traditional lecture method, but different type of teaching methods may be adopted to develop the outcomes.
2. Show Video/animation films to explain methods of synthesis of nanomaterials.
4. Encourage collaborative (Group Learning) Learning in the class
5. Ask at least three HOTS (Higher order Thinking) questions in the class, which promotes critical thinking
6. Adopt Problem Based Learning (PBL), which fosters students' Analytical skills, develop thinking skills such as the ability to evaluate, generalize, and analyse information rather than simply recall it.
7. Topics will be introduced in a multiple representation.
8. Show the different ways to solve the same problem and encourage the students to come up with their own creative ways to solve them.
9. Discuss how every concept can be applied to the real world - and when that's possible, it helps improve the students' understanding.

### Module-1

#### Electrochemistry and energy storage systems:

Electrochemistry: Introduction, EMF of cell, Free Energy, Single electrode potential-Derivation of Nernst equation, Numerical problems based on Nernst Equation ( $E$ ,  $E^\circ$  &  $E_{\text{cell}}$ ).

Reference Electrodes: Introduction, construction, working and applications of calomel electrode, selective electrodes: Introduction, construction, working and applications of Glass electrode, determination of pH using Glass electrode.

**Energy storage Systems:** Introduction, Classification of batteries (primary, secondary and reserve batteries). Construction, working and applications of Li-ion batteries. Advantages of Li-ion battery.



**ENGINEERING MATHEMATICS-III**

(Common to all Branches)

Course Code : 17MAT31  
 Contact Hours/Week : 04  
 Total Hours: 50  
 Semester: III

CIE Marks : 40  
 SEE Marks: 60  
 Exam Hours:03  
 Credits: 04(4:0:0)

**Course Objectives:**

The objectives of this course is to introduce students to the mostly used analytical and numerical methods in the different engineering fields by making them to learn Fourier series, Fourier transforms and Z-transforms, statistical methods, numerical methods to solve algebraic and transcendental equations, vector integration and calculus of variations.

MODULES	RBT Levels	No. of Hrs
<p><b>MODULE-I</b>  <b>Fourier Series:</b> Periodic functions, Dirichlet's condition, Fourier Series of periodic functions with period <math>2\pi</math> and with arbitrary period <math>2c</math>. Fourier series of even and odd functions. Half range Fourier Series, practical harmonic analysis-Illustrative examples from engineering field.</p>	L1 & L2	10
<p><b>MODULE-II</b>  <b>Fourier Transforms:</b> Infinite Fourier transforms, Fourier sine and cosine transforms. Inverse Fourier transform.  <b>Z-transform:</b> Difference equations, basic definition, z-transform-definition, Standard z-transforms, Damping rule, Shifting rule, Initial value and final value theorems (without proof) and problems, Inverse z-transform. Applications of z-transforms to solve difference equations.</p>	L1 & L2	10
<p><b>MODULE- III</b>  <b>Statistical Methods:</b> Review of measures of central tendency and dispersion. Correlation-Karl Pearson's coefficient of correlation-problems. Regression analysis- lines of regression (without proof) -problems  <b>Curve Fitting:</b> Curve fitting by the method of least squares- fitting of the curves of the form, <math>y = ax + b</math>, <math>y = ax^2 + bx + c</math> and <math>y = ae^{bx}</math>.  <b>Numerical Methods:</b> Numerical solution of algebraic and transcendental equations by Regula- Falsi Method and Newton-Raphson method.</p>	L1 & L2	10
<p><b>MODULE IV</b>  <b>Finite differences:</b> Forward and backward differences, Newton's forward and backward interpolation formulae. Divided differences- Newton's divided difference formula. Lagrange's interpolation formula and inverse interpolation formula (all formulae without proof)-Problems.  <b>Numerical integration:</b> : Simpson's <math>(1/3)^{th}</math> and <math>(3/8)^{th}</math> rules, Weddle's rule (without proof) -Problems.</p>	L1 & L2	10
<p><b>MODULE-V</b>  <b>Vector integration:</b>                      Line integrals-definition and problems, surface and volume integrals- definition, Green's theorem in a plane, Stokes and Gauss-divergence theorem(without proof) and problems.  <b>Calculus of Variations:</b> Variation of function and Functional, variational problems. Euler's equation, Geodesics, hanging chain, problems.</p>	L2 & L3  L2 & L3	10

**Course Outcomes:** On completion of this course, students are able to:

1. Know the use of periodic signals and Fourier series to analyze circuits and system communications.
2. Explain the general linear system theory for continuous-time signals and digital signal processing using the Fourier Transform and z-transform.
3. Employ appropriate numerical methods to solve algebraic and transcendental equations.
4. Apply Green's Theorem, Divergence Theorem and Stokes' theorem in various applications in the field of electro-magnetic and gravitational fields and fluid flow problems.
5. Determine the extremals of functionals and solve the simple problems of the calculus of variations.

### **Question Paper Pattern:**

**Note:-** The SEE question paper will be set for 100 marks and the marks will be proportionately reduced to 60.

- The question paper will have **ten** full questions carrying equal marks.
- Each full question consisting of **20** marks.
- There will be **two** full questions (with a **maximum** of four sub questions) from each module.
- Each full question will have sub question covering all the topics under a module.
- The students will have to answer **five** full questions, selecting **one** full question from each module.

### **Text Books:**

1. *B.S. Grewal: Higher Engineering Mathematics, Khanna Publishers, 43<sup>rd</sup> Ed., 2015.*
2. *E. Kreyszig: Advanced Engineering Mathematics, John Wiley & Sons, 10<sup>th</sup> Ed., 2015.*

### **Reference books:**

1. *N.P.Bali and Manish Goyal: A Text Book of Engineering Mathematics, Laxmi Publishers, 7<sup>th</sup> Ed., 2010.*
2. *B.V.Ramana: "Higher Engineering Mathematics" Tata McGraw-Hill, 2006.*
3. *H. K. Dass and Er. RajnishVerma: "Higher Engineerig Mathematics", S. Chand publishing, 1<sup>st</sup> edition, 2011.*

Course Code	21PHY12/22	CIE Marks	50
Teaching Hours/Week (L:T:P: S)	2:2:0:1	SEE Marks	50
Total Hours of Pedagogy	40	Total Marks	100
Credits	03	Exam Hours	03 Hours

**Course objectives:** This course(21PHY12/22) will enable the students to

- Learn the basic concepts of Physics which are essential in understanding and solving Engineering related challenges
- Gain the knowledge of problem solving and its practical applications.
- Signify the application of sensitive instrumentation for Nano-scale system.

### Teaching-Learning Process (General Instructions)

These are sample Strategies, which teacher can use to accelerate the attainment of the various course outcomes.

1. Apart from conventional lecture methods various types of innovative teaching techniques through videos, animation films may be adopted so that the delivered lesson can progress the students in theoretical, applied and practical skills in physics.
2. State the necessity of physics in engineering studies and offer real life examples.
3. Seminars and Quizzes may be arranged for students in respective subjects to develop skills.
4. Encourage the students for group learning to improve their creativity and analytical skills.
5. While teaching show how every concepts can be applied to the real world. This helps the students to expand understanding level.
6. Support and guide the students for self-study.
7. Ask some higher order thinking questions in the class, which promotes critical thinking.
8. Inspire the students towards the studies by giving new ideas and examples.

### Module-1

#### Oscillations and Waves:

08 Hours

**Free Oscillations:** Basics of SHM, derivation of differential equation for SHM, Mechanical simple harmonic oscillators (spring constant by series and parallel combination), Equation of motion for free oscillations, Natural frequency of oscillations.

**Damped Oscillations:** Theory of damped oscillations (derivation), over damping, critical & under damping (only graphical representation), quality factor.

**Forced Oscillations:** Theory of forced oscillations (derivation) and resonance, sharpness of resonance.

**Shock waves:** Mach number, Properties of Shock waves, Construction and working of Reddy shock tube, applications of shock waves, Numerical problems.

Teaching-Learning Process	Chalk and talk, Power point presentation, Videos
	<b>Practical Topics:</b>
	1.Spring in series and parallel combination
<b>Self-study Component:</b> Basics of SHM	

### Module-2

#### Modern Physics & Quantum Mechanics:

08 Hours

Introduction to blackbody radiation spectrum- Wien's law, Rayleigh Jean's law, Stefan-Boltzmann law and Planck's law (qualitative). Deduction of Wien's law and Rayleigh Jeans law from Planck's law. Wave-Particle dualism, de-Broglie hypothesis, de-Broglie wavelength, Heisenberg's uncertainty principle and its physical significance. Application of uncertainty principle-Non-existence of electron in the nucleus (relativistic case), Wave function-Properties, Physical significance, Probability density, Normalization, Eigen values and Eigen functions, Time independent Schrödinger wave equation, Particle in a box- Energy Eigen values and probability densities, Numerical problems.

Teaching-Learning Process	Chalk and talk, Power point presentation, Videos
	<b>Practical Topics:</b>
	1.Verification of Stefan's Law
<b>Self-study Component:</b> Wave-Particle dualism, de-Broglie hypothesis, de-Broglie wavelength	

### Module-3

**Lasers & Optical Fibers:**

**Lasers:** Interaction of radiation with matter, Einstein's coefficients (derivation of expression for energy density), Requisites of a Laser system. Conditions for Laser action. Principle, Construction and working of CO<sub>2</sub> semiconductor Lasers. Application of Lasers in Defence (Laser range finder) and medical applications- Eye surgery and skin treatment.

**Optical Fibers:** Propagation mechanism, angle of acceptance, Numerical aperture, Modes of propagation, Types of optical fibers, Attenuation and Mention of expression for attenuation coefficient. Discussion of block diagram of point to point communication. Optical fiber sensors- Intensity based displacement sensor and Temperature sensor based on phase modulation. Merits and demerits. Numerical problems.

Teaching-Learning Process

Chalk and talk, Power point presentation, Videos

**Practical Topics:**

1. wavelength of LASER source
2. Optical fiber

**Self-study Component:** Properties of Laser and comparison with ordinary source

**Module-4****Electrical Conductivity in Solids:**

**Classical free electron theory:** Drude- Lorentz theory & Assumptions, Expression for electrical conductivity (derivation), Failures of classical free-electron theory.

**Quantum free electron theory** Assumptions, Density of states (no derivation), Fermi-energy, Fermi factor, temperature dependence, Fermi - Dirac Statistics, Expression for electrical conductivity (derivation), Merits of Quantum free electron theory.

**Physics of Semiconductors:** Fermi level in intrinsic semiconductors, Expression for concentration of electron in conduction band, Holes concentration in valance band (only mention the expression), Conductivity of semiconductors (derivation), Hall effect, Expression for Hall coefficient (derivation).

**Dielectrics:** Electric dipole, Dipole moment, Polarization of dielectric materials, Types of polarizations. Qualitative treatment of Internal field in solids for one dimensional infinite array of dipoles (Lorentz field). Clausius-Mossotti equation (derivation). Numerical problems.

Teaching-Learning Process

Chalk and talk, Power point presentation, Videos

**Practical Topics:**

1. Fermi Energy of a material
2. Resistivity of a material

**Self-study Component:** Electric dipole, Dipole moment, Polarization of dielectric materials

**Module-5****Material Characterization Techniques and Instrumentation:**

Introduction to materials: Nanomaterials and nanocomposites. Principle, construction and working of X-ray Diffractometer, crystal size determination by Scherrer equation. Principle, construction, working and application of Atomic Force Microscope (AFM), X-ray Photoelectron Spectroscopy (XPS), Scanning Electron Microscope (SEM).

Transmission Electron Microscope (TEM) Numerical problems.

Teaching-Learning Process

Chalk and talk, Power point presentation, Videos

**Self study Component:** X-ray diffractometer.

**Course outcome (Course Skill Set)**

At the end of the course the student will be able to :

1. Interpret the types of mechanical vibrations and their applications, the role of Shock waves in various fields
2. Demonstrate the quantisation of energy for microscopic system.
3. Apply LASER and Optical fibers in opto electronic system.
4. Illustrate merits of quantum free electron theory and applications of Hall effect.
5. Analyse the importance of XRD and Electron Microscopy in Nano material characterization.



# Adichunchanagiri Institute of Technology

AIT, Chikkamagaluru  
Department of Chemistry  
I - Internal Assessment

Semester: 1-CBCS 2018

Date: 7 Feb 2021

Subject: ENGINEERING CHEMISTRY (18CHE12)

Time: 09:15 AM - 10:15 AM

Faculty: Dr Gnanendra C R

Max Marks: 50

## Instructions to Students :

Note : Answer any five full questions.

### Answer any 5 question(s)

Q.No		Marks	CO	BT/CL
1	Define single electrode potential and derive the Nernst equation for single electrode potential.	10	CO1	L1
2	What are reference electrodes ? Explain the construction and working of calomel electrode.	10	CO1	L1
3	Define corrosion. Explain electrochemical theory of corrosion taking rusting of iron .	10	CO2	L1
4	Explain any five factors which affect the rate of corrosion.	10	CO2	L3
5	a) What do you mean by metal finishing ? Mention any five technological importance of metal finishing. b) Write a note of decomposition potential.	10	CO2	L1
6	What is electroless plating ? Explain electroless plating of copper. Mention its applications.	10	CO2	L1
7	a) Describe the process of galvanization. b) An electrochemical cell consists of cadmium electrode dipped in 0.001M CdSO <sub>4</sub> and copper electrode in 0.5M CuSO <sub>4</sub> . Write the cell representation, cell reaction and calculate the emf of the cell at 298K. Give the standard electrode potentials of Cd & Cu are -0.4V & 0.34V Respectively.	10	CO1	L3
8	a) What are electrolyte concentration cells? Calculate the EMF of the given concentration cell at 298K. Ag/AgNO <sub>3</sub> (0.018M)//AgNO <sub>3</sub> (1.2M)/Ag. b) Explain sacrificial anodic method of corrosion control of iron pipes.	10	CO1	L3

**SCHEME AND SOLUTIONS**

Subject: ENGINEERING CHEMISTRY

Subject code: 18CHE12

**Note :** Answer any five questions by selecting at least one question from 6 & 7.

Answers giving equivalent meaning shall also be considered.

Q. No.	SOLUTION	Marks Distribution	Total Marks
1	<p>Defination - The standard electrode potential is defined as the potential of an electrode measured at 298K and at unit metal ion concentration</p> <p>Derivation <math>-\Delta G = W_{max}</math></p> <p>Under standard condition; <math>-\Delta G^\circ = nE^\circ F</math></p> <p>where <math>E^\circ</math> is std., reduction potential</p> $M^{n+} + ne^- \rightleftharpoons M$ $\Delta G = \Delta G^\circ + RT \ln K_c$ $E = E^\circ + \frac{0.0591}{n} \log [M^{n+}]$	<p>2Marks</p> <p>1Marks</p> <p>1Marks</p> <p>2Marks</p> <p>2Marks</p> <p>2Marks</p>	10Marks
2	<p><b>Reference electrode:</b> electrodes whose potential is known and are used to determine the potential od experimental electrode</p> <p>Calomel Electrode: Figure</p> <p>Explanation:</p> <p>Working: <math>2Hg_{(aq)} + 2Cl^- \rightleftharpoons Hg_2Cl_2(s) + 2e^-</math></p> <p>Applications</p>	<p>2Marks</p> <p>2Marks</p> <p>2Marks</p> <p>2Marks</p> <p>2Marks</p>	10Marks
3	<p>Corrosion is defined as "the destruction or deterioration and consequent loss of metals or alloys through chemical or electrochemical attack by the surrounding environment".</p> <p><b>Electrochemical theory of corrosion</b></p> <p>At anode: <math>Fe \longrightarrow Fe^{+2} + 2e^- \text{-----(1)}</math></p> <p>At cathode:</p> <p>1. Liberation of hydrogen: <math>2H^+ + 2e^- \longrightarrow H_2 \text{-----(2)}</math></p> <p>Equation (1) +(2)</p> $Fe + 2H^+ \longrightarrow Fe^{+2} + H_2$ <p>2. Absorption of oxygen: <math>1/2 O_2 + H_2O + 2e^- \longrightarrow 2OH^- \text{-----(3)}</math></p> <p>Equation (1) + (3)</p> $Fe + 1/2 O_2 + H_2O \longrightarrow Fe^{+2} + 2OH^{-1}$	<p>2Marks</p> <p>1Marks</p> <p>2Marks</p> <p>2Marks</p>	10Mark

	<p><b>Formation of rust:</b> <math>\text{Fe}^{2+} + 2\text{OH}^{-1} \longrightarrow \text{Fe}(\text{OH})_2</math></p> <p><math>4\text{Fe}(\text{OH})_2 + \text{O}_2 + \text{H}_2\text{O} \longrightarrow 2(\text{Fe}_2\text{O}_3 \cdot 3\text{H}_2\text{O}) + \text{H}_2</math></p>	1Marks 2Marks	
4	<u>Explanation:</u> Any five factors	2Marks each	10Ma
5	<p>a. <b>METAL FINISHING:</b> Metal finishing is the process of deposition of a layer of one metal on the surface of substrate. Any five Technological importance of metal finishing</p> <p>b. Note on decomposition potential</p>	1Marks 1Marks each 4Marks	10Ma
6	<p><b>ELECTROLESS PLATING:</b> It is a technique of depositing a metal from its salt solution on a catalytically active surface of the substrate by controlled reduction of metal ions using a suitable reducing agent without the use of electricity.</p> <p><b>ELECTROLESS PLATING OF COPPER:</b> <b>Surface preparation:</b> Bath composition: Reaction: Cathode ; <math>\text{Cu}^{2+} + 2\text{e}^- \rightarrow \text{Cu}</math> Anode ; <math>2\text{HCHO} + 4\text{OH}^{-1} \rightarrow 2\text{HCOO}^- + 2\text{H}_2\text{O} + \text{H}_2 + 2\text{e}^-</math> Overall reaction; <math>\text{Cu}^{2+} + 2\text{HCHO} + 4\text{OH}^- \rightarrow \text{Cu} + 2\text{HCOO}^- + 2\text{H}_2\text{O} + \text{H}_2</math></p>	2Marks 2Marks 3Marks 3Marks	10Ma
7	<p>a. <b>Galvanization:</b> Diagram: Discription</p> <p>b. Cell representation: <math>\text{Cd} / \text{Cd}^{2+} 0.001\text{M} // \text{Cu}^{2+} 0.5\text{M} / \text{Cu}</math> Cell reaction: <math>\text{Cd} \rightarrow \text{Cd}^{2+} + 2\text{e}^-</math> <math>\text{Cu}^{2+} + 2\text{e}^- \rightarrow \text{Cu}</math> <math>\text{Cd}(\text{s}) + \text{Cu}^{2+}(\text{aq}) \rightarrow \text{Cd}^{2+}(\text{aq}) + \text{Cu}(\text{s})</math> WKT <math>E_{\text{cell}} = E_{\text{cathode}} - E_{\text{anode}} = 0.34 - (-0.4) = 0.74\text{v}</math></p> $E = E^\circ - \frac{0.0591}{n} \log \frac{[\text{products}]}{[\text{reactants}]}$ $E = E^\circ + \frac{0.0591}{n} \log \frac{[\text{Cd}^{+2}]}{[\text{Cu}^{+2}]}$ $E = 0.74 + \frac{0.0591}{2} \log \frac{[0.001]}{[0.5]}$ $E = 0.6909\text{v}$	2Marks 2Marks 1Marks 2Marks 1Marks 1Marks 1Marks	10Ma

Answer any 5 question(s)

Q.No		Marks	CO	PO	BT/CL
1	Define SHM. Derive equation of motion of SHM.	4	CO1	PO1	L1
2	Give the theory of Damped oscillation and Hence mention the three cases with graph.	4	CO1	PO1	L2
3	Derive the expression for equivalent spring constant in series and parallel combination.	4	CO1	PO1	L2
4	Explain the construction and working of Reddy's Shock tube with neat diagram. Mention the application of Shock waves.	4	CO1	PO2	L2
5	Derive the expression for Amplitude and Phase in case of forced vibration.	4	CO1	PO1	L2
6	Explain Planck's law. Deduce Wien's law and Rayleigh Jean's law from Planck's law	4	CO2	PO1	L1
7	State Heisenberg's Uncertainty principle. S.T. electron does not exist inside the nucleus.	4	CO2	PO2	L2
8	a). Evaluate resonance frequency of a Spring of Force constant 1836 N/m carrying a mass of 3 Kg. b). Calculate the de-Broglie wavelength associated with an electron with a K.E. of 2000 eV.	4	CO1, CO2	PO3	L3



## I - Internal Assessment (Scheme of evaluation)

Semester: 1-CBCS 2021

Date: 22 Jan 2022

Subject: ENGINEERING PHYSICS (21PHY12)

Time: 12:00 PM - 01:00 PM

Max Marks: 20

Q No	Scheme	Marks
1	Definition	1
	Derivation	3
2	Derivation	3
	Three cases	1
3	For Series combination	2
	For Parallel combination	2
4	Construction	1
	Working of Reddy's Shock tube	1
	Diagram.	1
	Application of Shock waves.	1
5	Expression for Amplitude	2
	Phase in case of forced vibration	2
6	Explain Planck's law.	2
	Deduce Wien's law and	1
	Rayleigh Jean's law	1
7	Statement.	1
	To prove electron does not exist inside the nucleus.	3
8	a) Formula	1
	Substitution and answer	1
	b) Formula	1
	Substitution and answer	1

Adichunchanagiri Institute of Technology, Chikkamagaluru  
DEPARTMENT OF CHEMISTRY  
II - INTERNAL ASSESSMENT

Semester: 1-CBCS 2018  
Subject: CALCULUS AND LINEAR ALGEBRA (18MAT11)  
Faculty: Mr Vinaya K U

Date: 5 Mar 2021  
Time: 09:15 AM - 10:15 AM  
Max Marks: 50

*Answer any 2 questions!*

Q.No

Marks

CO

Expand  $\log(\sec x)$  upto the term containing  $x^6$  using Maclaurin's series.

10

CO2

OR

Using Maclaurin's series prove that  $\sqrt{1 + \sin 2x} = 1 + x - \frac{x^2}{2} - \frac{x^3}{6} + \frac{x^4}{24} + \dots$

10

CO2

Evaluate  $\lim_{t \rightarrow 0} \left| \frac{a^t + b^t + c^t}{3} \right|^{1/t}$

10

CO2

OR

If  $u = f\left(\frac{z}{y}, \frac{y}{z}, \frac{z}{x}\right)$ , prove that  $x \frac{\partial u}{\partial x} + y \frac{\partial u}{\partial y} + z \frac{\partial u}{\partial z} = 0$

10

CO2

Find the maximum and minimum value of the function  $x^3 + 3xy^2 - 15x^2 - 15y^2 + 72x$

10

CO2

OR

If  $u = x + 3y^2 - z^3$ ,  $v = 4x^2yz$ ,  $w = 2z^2 - xy$  find  $\frac{\partial(u,v,w)}{\partial(x,y,z)}$  at  $(1, -1, 0)$

10

CO2

If the temperature of the air is  $30^\circ\text{C}$  and a metal ball cools from  $100^\circ\text{C}$  to  $70^\circ\text{C}$  in 15 minutes. Find how long will it take for the metal ball to reach a temperature of  $40^\circ\text{C}$ .

10

CO4

OR

A series circuit with resistance  $R$ , inductance  $L$  and electromotive force  $E$  is governed by the differential equation  $L \frac{di}{dt} + Ri = E$ , where  $L$  and  $R$  are constants and initially the current  $i$  is zero. Find the current at any time  $t$ .

10

CO4

Solve:  $y \left(\frac{dy}{dx}\right)^2 + (x-y) \frac{dy}{dx} - x = 0$

10

CO4

OR

Solve the equation  $(yx - y)(py + x) = 2p$  by reducing into Clairaut's form taking the substitution  $X = x^2$ ,  $Y = y^2$

10

CO4

Scheme & Solution - I<sup>st</sup> Interim  
 (Calculus and Linear Algebra - 18MAT21)

Formula - ①,  $y(0) = 0, y'(0) = 0, y_2(0) = 1, y_3(0) = 0, y_4(0) = 2, y_5(0) = 0$   
 $y_6(0) = 16 \rightarrow$  (67), Substitution - ②  
 $1+7+2=10$

Formula - ①,  $y(0) = 1, y_1(0) = 1, y_2(0) = -1, y_3(0) = -1, y_4(0) = 1$  - ⑦  
 Substitution - ②  
 $1+7+2=10$

3) Writing  $K = 100$  form  $\rightarrow$  ①, take log on both side and then  
 applying L-Hospital rule and getting  $K = (abc)^{1/3}$  - ①+3+6

4) take  $P = \frac{x}{y}, Q = \frac{y}{z}, R = \frac{z}{x} \rightarrow$  ①. Getting  $x \frac{\partial u}{\partial x} = \frac{x}{y} \frac{\partial u}{\partial y} - \frac{z}{x} \frac{\partial u}{\partial z}$   
 $y \frac{\partial u}{\partial y} = \frac{y}{z} \frac{\partial u}{\partial z} - \frac{x}{y} \frac{\partial u}{\partial x}, z \frac{\partial u}{\partial z} = \frac{z}{x} \frac{\partial u}{\partial x} - \frac{y}{z} \frac{\partial u}{\partial y}$  and finally adding  $1+3+3=7=10$

5) getting stationary points  $(5, 1), (5, -1), (4, 0), (6, 0)$  - ④  
 $AC - B^2 = 36 > 0$ . Max point at  $(4, 0)$ .  $AC - B^2 = 36 > 0 = \text{Min. at } (6, 0)$  - ④  
 (A < 0)

6)  $\frac{\partial(u, v, w)}{\partial(x, y, z)} = \begin{vmatrix} 1 & 6y & -3z^2 \\ 8xz & 4x^2z & 4x^2y \\ -y & -x & 4z \end{vmatrix}$  - ④  
 Min value  $f(4, 0) = 112$ , Min value  $f(6, 0) = 108$  - ②  $4+4+2=10$

7) Writing  $T = 30 + 70e^{-kt}$  - ②,  $k = 0.0373 \rightarrow$  ②. Max  $T = 40$   
 $t = 52.2$  minutes - ⑥  
 $2+2+6=10$

8) Writing in the form  $\frac{di}{dt} + \frac{R}{L}i = \frac{E}{L}$  - ①. Getting

$i = \frac{E}{R} + Ce^{-\frac{Rt}{L}}$  - ⑤. Using condition  $i = 0$

$t = 0, C = -\left(\frac{E}{R}\right)$  - ②. Finally  $i = \frac{E}{R}(1 - e^{-\frac{Rt}{L}})$  -  
 $1+5+2+1=9$

9) getting  $P=1$  or  $P=-x/y$  — (3)

Let  $P=1$  i.e.  $y-x-C=0$  — (3) ( $P = \frac{dy}{dx}$ )

$P = -\frac{x}{y}$  solving and getting  $(x^2+y^2-C)=0$  — (3)

Sol<sup>n</sup>:  $(y-x-C)(x^2+y^2-C)=0$  — (1)  $3+3+3+1$

10) getting  $P = \frac{\sqrt{x}}{\sqrt{y}}$   $P$  where  $P = \frac{dy}{dx}$  — (4)

substituting  $P$  in given getting  $Y = PX - \frac{2P}{P+1}$  — (4)

replace  $P$  by  $C$ ,  $X$  by  $x^2$ ,  $Y$  by  $y^2$  getting solution } — (2)

$$y^2 = cx^2 - \frac{2c}{c+1}$$

$$4+4+2$$



IA / CIE Report June / July - 2022 Examination.

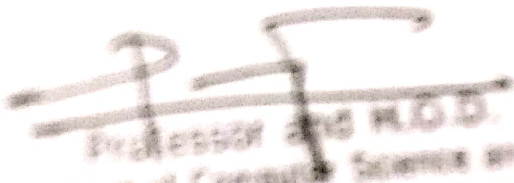
ADICHUNCHANAGIRI INSTITUTE OF TECHNOLOGY CHICKMAGALURU

Branch : AI Scheme : 2021 Semester : 2

Sl NO.	USN	21MAT21	21PHY22	21CHE22	21ELE23	21PSP23	21CNV24	21ELN24	21EVN25	21EME25	21CHEL26	21PHYL26	21CPL27	21EEL27	21EGH28	21IDT29	21SFH29	STUDENT SIGNATURE	
1	4AI21AJ001	36	42	-	38	-	40	-	50	-	-	45	-	48	42	50	-	Ashish	
2	4AI21AJ002	38	44	-	41	-	44	-	50	-	-	44	-	49	42	50	-	Ashish	
3	4AI21AJ003	39	44	-	42	-	43	-	50	-	-	45	-	48	39	50	-	Ashish	
4	4AI21AJ004	41	-	34	-	40	-	39	-	47	46	-	48	-	43	-	48	Ashish	
5	4AI21AJ005	46	44	-	40	-	43	-	49	-	-	47	-	48	42	50	-	Ashish	
6	4AI21AJ006	38	40	-	37	-	41	-	50	-	-	48	-	46	42	50	-	Ashish	
7	4AI21AJ007	22	-	26	-	24	-	31	-	48	28	-	25	-	40	-	50	Ashish	
8	4AI21AJ008	36	-	35	-	33	-	29	-	50	35	-	43	-	37	-	50	Ashish	
9	4AI21AJ009	47	50	-	48	-	40	-	50	-	-	48	-	50	43	50	-	Ashish	
10	4AI21AJ010	45	50	-	45	-	44	-	50	-	-	50	-	47	42	50	-	Ashish	
11	4AI21AJ011	41	39	-	34	-	36	-	50	-	-	45	-	46	40	50	-	Ashish	
12	4AI21AJ012	41	45	-	42	-	42	-	50	-	-	48	-	48	39	50	-	Ashish	
13	4AI21AJ013	45	-	36	-	41	-	31	-	50	41	-	43	-	38	-	50	Ashish	
14	4AI21AJ014	39	-	36	-	28	-	31	-	47	40	-	40	-	40	-	50	Ashish	
15	4AI21AJ015	48	46	-	48	-	45	-	50	-	-	46	-	48	41	50	-	Ashish	
16	4AI21AJ016	22	0	-	28	-	31	-	47	-	-	0	-	45	34	50	-	Ashish	
17	4AI21AJ017	28	-	24	-	35	-	22	-	37	30	-	25	-	32	-	50	Ashish	
18	4AI21AJ018	48	-	48	-	45	-	45	-	50	48	-	46	-	40	-	50	Ashish	
19	4AI21AJ019	47	-	37	-	44	-	43	-	48	48	-	45	-	44	-	48	Ashish	
20	4AI21AJ020	29	36	-	42	-	39	-	50	-	-	43	-	48	41	50	-	Ashish	
21	4AI21AJ021	40	-	30	-	39	-	39	-	36	39	-	45	-	38	-	42	Ashish	
22	4AI21AJ022	38	-	44	-	37	-	37	-	48	44	-	35	-	40	-	50	Ashish	
23	4AI21AJ023	35	42	-	35	-	41	-	48	-	-	36	-	46	41	50	-	Ashish	
24	4AI21AJ024	23	-	35	-	37	-	35	-	50	40	-	50	-	43	-	50	Ashish	
25	4AI21AJ025	35	47	-	47	-	46	-	50	-	-	43	-	48	41	50	-	Ashish	
26	4AI21AJ026	50	48	-	42	-	45	-	48	-	-	48	-	44	41	50	-	Ashish	
27	4AI21AJ027	47	-	30	-	45	-	45	-	42	48	-	48	-	41	-	43	Ashish	
28	4AI21AJ028	50	48	-	48	-	48	-	50	-	-	46	-	50	41	50	-	Ashish	
29	4AI21AJ029	20	-	22	-	22	-	20	-	44	33	-	20	-	35	-	50	Ashish	
30	4AI21AJ030	22	-	22	-	27	-	26	-	30	38	-	40	-	37	-	50	Ashish	
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32	4AI21AJ032	47	39	-	41	-	44	-	50	-	-	47	-	47	41	50	-	Ashish	
33	4AI21AJ033	35	40	-	38	-	32	-	49	-	-	48	-	44	40	50	-	Ashish	
34	4AI21AJ035	30	36	-	33	-	28	-	47	-	-	47	-	41	40	50	-	Ashish	
35	4AI21AJ036	32	-	42	-	42	-	40	-	47	46	-	48	-	45	-	50	Ashish	
36	4AI21AJ037	30	39	-	33	-	42	-	50	-	-	43	-	47	40	50	-	Ashish	
37	4AI21AJ038	33	-	30	-	34	-	29	-	36	33	-	42	-	34	-	41	Ashish	
38	4AI21AJ039	45	50	-	37	-	46	-	50	-	-	50	-	48	44	50	-	Ashish	
39	4AI21AJ040	45	37	-	43	-	39	-	50	-	-	46	-	47	43	50	-	Ashish	
40	4AI21AJ041	34	42	-	30	-	41	-	50	-	-	46	-	47	40	50	-	Ashish	
41	4AI21AJ042	31	-	32	-	33	-	30	-	48	41	-	40	-	41	-	50	Ashish	
42	4AI21AJ043	44	-	27	-	42	-	39	-	41	40	-	48	-	43	-	43	Ashish	
43	4AI21AJ044	45	44	-	42	-	43	-	49	-	-	47	-	48	42	50	-	Ashish	
44	4AI21AJ045	38	-	28	-	29	-	33	-	37	32	-	35	-	38	-	42	Ashish	
45	4AI21AJ046	31	-	29	-	28	-	29	-	44	30	-	35	-	38	-	50	Ashish	
46	4AI21AJ047	33	44	-	32	-	40	-	47	-	-	49	-	44	41	50	-	Ashish	
47	4AI21AJ048	26	33	-	28	-	36	-	49	-	-	44	-	47	42	50	-	Ashish	
48	4AI21AJ049	39	-	27	-	37	-	35	-	50	44	-	29	-	39	-	49	Ashish	
49	4AI21AJ050	22	-	24	-	29	-	24	-	42	30	-	23	-	39	-	50	Ashish	
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55	4AI21AJ056	45	47	-	48	-	46	-	50	-	-	46	-	49	42	50	-	Ashish	
56	4AI21AJ057	35	34	-	31	-	34	-	50	-	-	44	-	46	36	50	-	Ashish	
57	4AI21AJ058	43	44	-	36	-	42	-	50	-	-	45	-	45	45	50	-	Ashish	
58	4AI21AJ059	48	48	-	46	-	48	-	49	-	-	50	-	49	43	50	-	Ashish	
59	4AI21AJ060	37	-	44	-	32	-	31	-	37	46	-	40	-	42	-	43	Ashish	
60	4AI21AJ061	50	50	-	45	-	38	-	50	-	-	50	-	50	40	50	-	Ashish	
61	4AI21AJ062	47	39	-	35	-	45	-	32	-	-	47	-	44	44	48	-	Ashish	
x	Faculty Signature																		Ashish

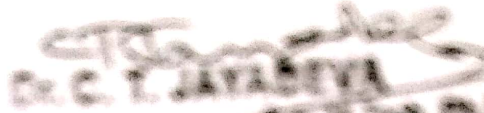
\* - values are either optional subjects or the faculty has not yet entered the marks

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Seal and Signature



Professor and H.O.D.  
Department of Computer Science and Engg  
Adichunchanagiri Institute of Technology  
CHIKKABALUR - 577102

ಇರಬೇಡಿ  
Seal and Signature



Dr. C. T. JAYAVEYA  
Principal  
Adichunchanagiri Institute of Technology  
CHIKKABALUR-577102



# Visvesvaraya Technological University

IA / CIE Report June / July - 2022 Examination.

ADICHUNCHANAGIRI INSTITUTE OF TECHNOLOGY, CHICKMAGALUR

Branch : CV

Scheme : 2021

Semester : 2

Sl NO.	USN	21MAT21	21CHE22	21PHY22	21ELE23	21PSP23	21CIV24	21ELN24	21EME25	21EVN25	21CHEL26	21PHYL26	21CPL27	21EEL27	21EGH28	21IDT29	21SPH29	STUDENT SIGNATURE
1	4AI21CV001	35	-	45	39	-	45	-	-	50	-	44	-	48	42	50	-	Abhishek
2	4AI21CV003	34	28	-	-	31	-	33	37	-	41	-	44	-	42	-	43	Amudha
3	4AI21CV004	0	0	-	-	0	-	4	00	-	0	-	0	-	0	-	0	Amudha
4	4AI21CV005	27	27	-	-	23	-	31	43	-	34	-	25	-	39	-	50	Amudha
5	4AI21CV006	26	29	-	-	31	-	32	40	-	41	-	40	-	38	-	50	Amudha
6	4AI21CV007	38	32	-	-	33	-	35	49	-	40	-	40	-	37	-	50	Amudha
7	4AI21CV008	22	-	26	25	-	29	-	-	25	-	43	-	40	32	48	-	Amudha
8	4AI21CV009	30	28	-	-	41	-	38	38	-	34	-	40	-	41	-	43	Amudha
9	4AI21CV010	28	30	-	-	19	-	23	45	-	35	-	23	-	36	-	50	Amudha
10	4AI21CV011	26	01	-	-	22	-	20	25	-	0	-	25	-	38	-	25	Amudha
11	4AI21CV012	27	-	30	35	-	32	-	-	50	-	43	-	47	38	50	-	Amudha
12	4AI21CV013	37	-	36	37	-	46	-	-	50	-	47	-	49	41	50	-	Amudha
13	4AI21CV014	25	26	-	-	28	-	26	45	-	35	-	24	-	36	-	50	Amudha
14	4AI21CV015	32	-	37	33	-	46	-	-	47	-	47	-	48	43	50	-	Amudha
15	4AI21CV016	43	-	50	42	-	44	-	-	50	-	46	-	46	42	50	-	Amudha
16	4AI21CV018	38	37	-	-	39	-	28	48	-	40	-	40	-	34	-	50	Amudha
17	4AI21CV019	22	-	26	31	-	22	-	-	47	-	33	-	30	35	50	-	Amudha
18	4AI21CV020	44	-	44	38	-	43	-	-	49	-	48	-	47	42	50	-	Amudha
19	4AI21CV021	22	-	22	22	-	26	-	-	32	-	38	-	45	39	48	-	Amudha
20	4AI21CV022	37	26	-	-	40	-	27	41	-	45	-	36	-	39	-	49	Amudha
21	4AI21CV023	31	22	-	-	29	-	22	31	-	36	-	25	-	38	-	50	Amudha
22	4AI21CV025	37	32	-	-	39	-	29	41	-	45	-	29	-	38	-	49	Amudha
23	4AI21CV026	24	-	30	22	-	36	-	-	28	-	40	-	46	33	48	-	Amudha
24	4AI21CV027	37	-	42	29	-	38	-	-	48	-	48	-	47	37	50	-	Amudha
25	4AI21CV028	32	-	38	32	-	37	-	-	48	-	46	-	49	42	50	-	Amudha
26	4AI21CV029	0	0	-	-	0	-	0	00	-	0	-	0	-	0	-	0	Amudha
27	4AI21CV030	32	28	-	-	36	-	40	50	-	42	-	45	-	39	-	50	Amudha
28	4AI21CV031	34	-	36	32	-	42	-	-	33	-	46	-	49	37	48	-	Amudha
29	4AI21CV032	23	24	-	-	26	-	28	30	-	32	-	30	-	37	-	22	Amudha
-x-	Faculty Signature																	xxxxxx

\* - values are either optional subjects or the faculty has not yet entered the marks

*[Signature]*  
HOD 22-09-2022

*[Signature]*  
PRINCIPAL

Seal and Signature  
**Dr. M. RAME GOWDA**  
B.E., M.Tech. (IIT-B), Ph.D. (VTU)  
Professor and Head  
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**Dr. C. T. JAYADEVA**  
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|| Jai Sri Gurudev ||

Adichunchanagiri Institute Of Technology, Chikkamagaluru.

Department of Mathematics

Result Analysis of CALCULUS AND LINEAR ALGEBRA 2020-21

Sl. No.	Section	Faculties	Number of Students				Pass Percentage
			Total	Pass	Fail	Absent	
1	A	SAS	54	44	10	0	81.48
2	B	LSC	51	37	14	0	72.55
3	C	HBM+LSC	55	45	10	0	81.82
4	D	HBM+VUM	52	42	10	0	80.77
5	E	VUM+VK	46	34	12	0	73.91
6	F	VUM+AL	56	50	6	0	89.29
7	G	BKT+AL	54	45	9	0	83.33
8	H	BKT+AL	54	51	3	0	94.44
TOTAL			422	348	74	0	82.46

**HEAD OF DEPARTMENT**

Department of Mathematics

Adichunchanagiri Institute of Technology

CHIKKAMAGALURU-577 102

**Dr. C. T. JAYADEVA**

Principal

B.E.,M.Tech.,Ph.D.

Adichunchanagiri Institute of Technology

CHIKKAMAGALURU-577102





Adichunchanagiri Institute of Technology: Chikkamagaluru

Department of Chemistry

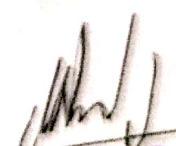
Result Analysis of A, C, E and G sections of 1<sup>st</sup> Sem 2021-22 of Engg chemistry theory and lab subjects

Sl No	Section	Subject	Appeared	Passed	Fail	Percentage	Faculty In charge
1	A	Theory	51	43	8	84	Dr. Dinesh N D
2	A	Lab	52	49	3	94	Dr. Dinesh N D
3	C	Theory	54	49	5	91	Dr. E Nalina
4	C	Lab	54	54	1	100	Dr. E Nalina
5	E	Theory	47	38	9	81	Syed Nizamuddin
6	E	Lab	47	47	0	100	Syed Nizamuddin
7	G	Theory	51	46	5	92	Dr C R Gnanendra
8	G	Lab	51	51	0	100	Dr C R Gnanendra

Consolidated Result:

Subject	Appeared	Pass	Fail	Percentage
Theory	203	176	27	87
Lab	204	199	04	98

  
**Dr. C.T. JAYADEVA**  
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|| Jai Sri Gurudev ||  
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 Department of Mathematics  
 III Semester Result Analysis 2021-22

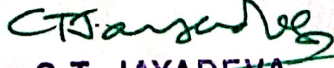
**Transform Calculus, Fourier Series and Numerical Techniques (18MAT31)**

Sl. No.	Branch/ Section	Faculty	Number of Students				Pass Percenta
			Total	Pass	Fail	Absent	
1	CS-A	Anitha L	75	63	12	0	84.00
2	CS-B	Rashmi B T	63	54	9	0	85.71
3	CV-A	Mallikarjuna H B	49	27	22	0	55.10
4	CV-B	Chitra L S	46	28	18	0	60.87
5	EC-A	Thara B K Chitra L S	57	45	12	0	78.95
6	EC-B	Thara B K Mitha V U	57	44	13	0	77.19
7	EE	Mallikarjuna H B Rashmi B T	50	34	16	0	68.00
8	IS	Mitha V U	64	55	9	0	85.94
9	ME	Vinaya K U	35	19	16	0	54.29
<b>TOTAL</b>			<b>496</b>	<b>369</b>	<b>127</b>	<b>0</b>	<b>74.40</b>

**Discrete Mathematical Structure (18CS36)**

Sl. No.	Branch/ Section	Faculty	Number of Students				Pass Percenta
			Total	Pass	Fail	Absent	
1	CS-A	Shrikanth A S and Vinaya K U	69	68	1	0	98.55
2	CS-B	Shrikanth A S and Vinaya K U	69	66	3	0	95.65
3	IS	Shrikanth A S and Vinaya K U	63	62	1	0	98.41
<b>TOTAL</b>			<b>201</b>	<b>196</b>	<b>5</b>	<b>0</b>	<b>97.54</b>

  
**HEAD OF DEPARTMENT**  
 Department of Mathematics  
 Adichunchanagiri Institute of Technology  
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