

**CENTURION UNIVERSITY OF TECHNOLOGY AND MANAGEMENT, ODISHA**

**TEACHING AND EVALUATION SCHEME FOR FIRST SEMESTER DIPLOMA IN ENGINEERING COURSES**

Sr. No.	Subject Code	SUBJECT	PERIODS			EVALUATION					
			L	T	P	SESSIONAL EXAM			END SEM	PRACTICAL EXAM	TERM WORK
						TA	CT	TOTAL			
		<b>THEORY</b>									
1	DCMA1101	ENGINEERING MATHEMATICS - I	4	-	-	10	20	30	70		
2	DCHU1102	COMMUNICATIVE ENGLISH-I	5	-	-	10	20	30	70	-	-
3	DCPH1103	ENGINEERING PHYSICS	4	-	-	10	20	30	70		
4	DCEE1104	BASIC ELECTRICAL ENGINEERING	4	-	-	10	20	30	70		
5	DCCA1105	COMPUTER APPLICATION	2	-	-	10	20	30	70	-	-
		<b>TOTAL</b>	<b>19</b>	<b>-</b>	<b>-</b>	<b>50</b>	<b>100</b>	<b>150</b>	<b>350</b>	<b>-</b>	<b>-</b>
		<b>PRACTICAL / TERM WORK</b>									
6	DCHU1201	COMMUNICATIVE ENGLISH-I PRACTICAL	-	-	2	-	-	-	-	-	25
7	DCPH1202	ENGINEERING PHYSICS PRACTICAL	-	-	4	-	-	-	-	25	25
8	DCEE1203	BASIC ELECTRICAL ENGINEERING PRACTICAL	-	-	4	-	-	-	-	-	25
9	DCCA1204	COMPUTER APPLICATION PRACTICAL	-	-	4	-	-	-	-	-	25
10	DCED1205	ENGINEERING DRAWING			6					100	25
11	DCAC1206	AUTOCAD 2D	-	-	2	-	-	-	-	75	25
		<b>TOTAL</b>	<b>-</b>	<b>-</b>	<b>22</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>200</b>	<b>150</b>
		<b>GRAND TOTAL</b>	<b>19</b>	<b>-</b>	<b>22</b>	<b>50</b>	<b>100</b>	<b>150</b>	<b>350</b>	<b>200</b>	<b>150</b>

**Abbreviations: L-Lecturer, T-Tutorial, P-Practical, TA-Teachers Assessment, CT-Class Test**

**Minimum Pass Mark in each Theory subject is 35% and in each Practical subject is 50%**

# DCPH1103 ENGINEERING PHYSICS

Semester & Branch: First / Second sem Diploma in Engg.

Theory: 4 Periods per Week

Total Periods: 60 Periods per Semester

Examination: 3 Hours

Teachers Assessment: 10 Marks

Class Test : 20 Marks

End Semester Exam : 70 Marks

TOTAL MARKS : 100 Marks

## Objective :

Technology is the applied aspect of pure science which provides concepts, theories and formulae. All technological progress depends on scientific understanding of the working of nature; pure science & technology therefore, are closely interlinked. Engineering, being the science of measurement and design, has been offspring of Physics that plays the primary role in all professional disciplines of engineering. The different streams of Physics provide Fundamental Facts, Principles, Laws, and Proper Sequence of Events to streamline Engineering Problems.

## Topic wise distribution of periods

Sl. No.	Topics	Periods
1	Dimensions & Vectors	04
2	Curvilinear Motion & Kinematics	10
3	Gravitation, Planetary Motion & Simple Harmonic Motion	10
4	Sound & Acoustics	06
5	Heat & Thermodynamics	06
6	Optics	04
7	Magnetostatics & Electrostatics	06
8	Current Electricity & Electromagnetism	08
9	Electromagnetic Induction	03
10	Modern Physics	03
	<b>TOTAL</b>	<b>60</b>

**1. DIMENSIONS AND VECTORS** - Dimension & Dimensional Formula of Physical Quantities- Definition and concepts. Principle of Homogeneity, Checking the correctness of physical equations, Resolution of vectors, Dot Product and Cross Product of vectors, Simple Numericals.

**2. CURVILINEAR MOTION & KINEMATICS** - Definition & concepts- Projectile Motion, Angle of projection, Trajectory, Maximum Height, Time of Flight And Horizontal Range, Condition for maximum range of the projectile, Friction-Definition of Static, Limiting and Dynamic friction, Laws of limiting Friction, Methods to reduce friction, Simple numericals.

**3. GRAVITATION, PLANETARY MOTION & Simple Harmonic Motion** – Kepler' s Laws of Planetary motion-Statement with explanation, Variation of acceleration due to gravity with latitude, altitude & depth, Definitions-Uniform Circular motion, angular displacement, angular velocity and angular acceleration, Simple harmonic motion-Definition and parameters of S.H.M.-amplitude, frequency and time period, Explanation of SHM as a projection of a uniform circular motion on any diameter and Derivation of velocity and acceleration of a particle executing SHM.

**4. SOUND & ACCOUSTICS** -Longitudinal & transverse waves-Definition & comparison, Progressive and stationary wave-Definition & comparison, Different wave parameters (Amplitude, frequency, time period wave length and velocity)-Definition & derivation of related formulae, Ultrasonic-Definition, properties & applications, Doppler's effect (source at rest & listener in motion and vice-versa)-Definition, Conceptual explanation and applications.

**5. HEAT & THERMODYNAMICS** - Coefficient of Linear, Superficial & Cubical Expansion of solids-Definition & Derivation of relation between them, 1<sup>st</sup> Law of Thermodynamics-Statement & Explanation,  $C_p$  and  $C_v$  - Definition & Derivation of relation between them, Mechanical Equivalent of heat-Definition and explanation, Thermal conductivity- Definition, S.I. unit, dimension & derivation of formula.

**6. OPTICS** - Refractive Index-Definition and conceptual explanation. Refraction through a prism. Total internal reflection & Critical Angle-Definition, Explanation and applications (mirage, looming etc.). Fiber Optics- Definition, concept and applications.

**7. MAGNETOSTATICS & ELECTROSTATIC** - Coulomb's Laws in Magnetism-Statement with explanation, Definitions-Unit Pole, Magnetic Field Intensity, Magnetic Lines of Force, Magnetic Flux, Flux Density, Electric field Intensity, Electric Potential, Capacity of a conductor, Capacitance. Derivation of formula for capacity of a Parallel Plate Capacitor and the effect of dielectric on it. Numerical problems on Grouping of capacitors in series & parallel.

**8. CURRENT ELECTRICITY & ELECTRO-MAGNETISM** - Kirchoff's Laws-Statement with explanation, application to Wheatstone Bridge, Electro-magnetism- Biot Savart's Law (Statement with explanation), Formula for magnetic field induction due to current through a straight wire and at the centre of a circular coil (Formula with concept). Motion of a charged particle inside a uniform magnetic field, Expression for the force acting on a current carrying straight conductor placed in a uniform magnetic field, Fleming's Left Hand Rule-Statement, explanation and vector diagram, Simple numerical .

**9. ELECTRO-MAGNETIC INDUCTION** - Faraday's Laws of Electromagnetic Induction-Statement with explanation. Lenz's Law, Fleming's Right Hand Rule- Statement, explanation and vector diagram.

**10. MODERN PHYSICS**- Concept of Photoelectric Effect, Einstein's Photoelectric equation, Laws of photoelectric emission, Application of Photo cells, LASER, characteristics of LASER, Principle of LASER, Applications of LASER.

**Books Recommended:**

1. Text Book of +2 Physics – Vol-I & II by Barik, Das & Sharma (Klayani Publishers).
2. Engineering Physics by Gaur & Gupta (Dhanpat Rai & Co., New Delhi)
3. Fundamental of Physics - Halliday, Resnick & Walker (Willey Toppan Publishers)
4. Engineering Physics – B. L. Theraja ( S. Chand Publishers, New Delhi)
5. Modern physics- R. Murugesan (S. Chand Publication)
6. Fiber Optics-D.A.Hill
7. Fundamental of Physics for +2 Vol-I & II- V.K Mehta, Rohit Mehta (S. Chand Publication)

# DCMA1101 ENGINEERING MATHEMATICS - I

Semester & Branch: First sem Diploma in Engg.  
 Theory: 5 Periods per Week  
 Total Periods: 75 Periods per Semester  
 Examination: 3 Hours

Teachers Assessment: 10 Marks  
 Class Test : 20 Marks  
 End Semester Exam : 70 Marks  
 TOTAL MARKS : 100 Marks

**Objective:**

1. This subject helps the students to develop logical thinking which is useful in comprehending the principles of all to the subjects.
2. Analytical and systematic approach towards any problem is developed through learning of this subject.
3. Mathematics being a versatile subject can be used at every stage of human life.

**Topic wise distribution of periods**

Sl. No.	Subject	Unit	Topic	Periods
A	Algebra	1	Complex Numbers	08
		2	Binomial Theorem	08
		3	Determinants	05
		4	Matrices	05
		5	Partial Functions	04
B	Trigonometry	6	Trigonometry	16
C	Two Dimensional Geometry	7	Analytical Geometry in Two Dimension (Straight Line)	12
		8	Circle	07
D	Vector	9	Vector Algebra	10
			<b>TOTAL</b>	<b>75</b>

**1. COMPLEX NUMBERS**

- 1.1 Define real and imaginary number.
- 1.2 Define complex numbers conjugate, Modulus and amplitude of a complex number.
- 1.3 State and explain Properties of complex number.
- 1.4 Determination of three cube roots of unity and their properties.
- 1.5 Express complex number in polar form (without proof) & State De' Moiver's theorem and its application for determination of nth roots of unity.
- 1.6 Problems on above (1.1 – 1.5)

**2. BINOMIAL THEOREM**

- 2.1 Factorial notation, Permutation, combination Working formula of  $p(n,r)$  &  $C(n,r)$
- 2.2 Establish the following formulae
  1.  $P(n,r) = r! C(n,r)$
  2.  $C(n,r) = C(n,n-r)$
  3.  $C(n,r) + C(n,r-1) = C(n+1,r)$
  4.  $C(n,0) = C(n,n) = 1$
  5.  $C(n,r) / C(n,r-1) = (n-r+1) / r.$
- 2.3 Statement of Binominal Theorem for positive integral index only.
- 2.4 Establish the formula for General terms, middle term/ terms and term independent of x.
- 2.5 Establish the relationship between Binomial co-efficient such as

i)  $C_0 + C_1 + C_2 + \dots + C_n = 2^n$

ii)  $C_1 + C_3 + C_5 + \dots = 2^{n-1}$

iii)  $C_0 + C_2 + C_4 + \dots = 2^{n-1}$

2.6 Problems on above (2.1 – 2.5)

### 3. DETERMINANTS

3.1 Define determinant (second and third order).

3.2 Explain minor ( $M_{ij}$ ) of  $a_{ij}$ , CO-factor ( $C_{ij}$ ) of  $a_{ij}$ , Explain  $C_{ij} = (-1)^{i+j} M_{ij}$ .

3.3 Study properties of determinants.

3.4 Cramer's Rule : (solutions of simultaneous equations of two and three unknown).

3.5 Problems on above (3.1 – 3.4).

### 4. MATRICES

4.1 Define matrix and its representation state its order.

4.2 State types of matrices with examples.

4.3 Perform Addition, subtraction and multiplication of a matrix with a scalar and multiplication of two matrices (upto third order only).

4.4 Explain transpose, adjoint and inverse of a matrix upto third order.

4.5 Solution of simultaneous equations by matrix method (linear equations in two and three unknowns).

4.6 Problems on above (4.1 – 4.5)

### 5. PARTIAL FRACTIONS

5.1 Define algebraic fractions, partial fractions and types of partial fractions.

5.2 Partial fraction of a proper fraction having denominator.

(i) Linear non-repeated (ii) Some Linear factors repeated along with non-repeated factors.

(ii) Quadratic factors non-repeated (iv) Quadratic c factors repeated.

5.3 Problems on above (5.1 – 5.2)

### 6. TRIGONOMETRY

6.1 Preliminary ideas of Trigonometrical functions, Circular functions and their Identity.

6.2 Trigonometrical ratios.

6.3 Compound angles, multiple & sub-multiple angles like  $2A$ ,  $3A$ ,  $A/2$ ,  $A/3$

6.4 Study properties of triangles and establish Sine and Cosine formulae only.

6.5 Define inverse circular functions and study its characteristic properties.

6.6 Problems on above (6.1 – 6.5)

### 7. ANALYTICAL GEOMETRY IN-TWO DIMENSIONS (STRAIGHT LINE)

7.1 Define co-ordinates of point on a plane in Cartesian and rectangular co-ordinates.

7.2 Derive the formula for

1. Distance between two given points.

2. Division point in the ratio  $m : n$  between two given points both externally and internally.

3. Area of the triangle whose vertices are given.

7.3 Define slope of a line and find angle between two lines, Conditions of perpendicularity and parallelism of two lines.

- 7.4 Define locus and equation of locus from the given conditions.
- 7.5 Derive standard forms of straight lines.
1. Slope intercept form.
  2. Slope point form.
  3. Two point forms.
  4. Intercept form.
  5. Normal / Perpendicular form.
  6. General equation of straight line.
  7. Transformation of general form  $ax + by + c = 0$  into slope, intercept and normal form.
- 7.6 Determine point of intersection of two straight lines.
- 7.7 Derive equation of straight lines.
- (a) Passing through a point and parallel to a line.
  - (b) Passing through a point and perpendicular to a line.
  - (c) Passing through the point of intersection of two straight lines.
- 7.8 Determine perpendicular distance from a point to a line.
- 7.9 Problems on above (7.1 – 7.8)

## 8. CIRCLE

- 8.1 Find equation of circle with given centre (h, k) and radius r.
- 8.2 Derive general equation of a circle and determine its centre and radius.
- 8.3 Find equation of a circle passing through three non-collinear points.
- 8.4 Find equation of a circle, whose end points of a diameter being given.
- 8.5 Problems on above (8.1 – 8.4)

## 9. VECTOR ALGEBRA

- 9.1 Define scalar and vector, distinguish between Scalar and vector quantities, given examples and explain geometrical representation of a vectors.
- 9.2 Explain types of vectors.
- 9.3 State magnitude and direction of vector.
- 9.4 Explain addition and subtraction of vectors and Multiplication of a vector by scalar.
- 9.5 Define position vector of a point and explain resolution of vectors into components.
- 9.6 Explain scalar product of two vectors, geometrical meaning of scalar product and properties of scalar products.
- 9.7 Find angle between two vectors, scalar & vector projection in a given direction.
- 9.8 Define vector product of two vectors.
- 9.9 Explain geometrical meaning of vector product and properties of a vector product.
- 9.10 Problems on above (9.1 – 9.9).

### Books Recommended

1. Elements of Mathematics – Vol -1 & II (Odisha State Bureau of Text Book Preparation & Production)

### Reference Books

1. A Text book of Engineering Mathematics by Dr. Chittaranjan Mallick & S.Mallick (Kalyani Publisher)

# DCEE1104 BASIC ELECTRICAL ENGINEERING

Semester & Branch: First / Second sem Diploma in Engg.

Theory: 4 Periods per Week

Total Periods: 60 Periods per Semester

Examination: 3 Hours

Teachers Assessment: 10 Marks

Class Test : 20 Marks

End Semester Exam : 70 Marks

TOTAL MARKS : 100 Marks

## Objective

1. To be familiar with A.C. fundamental and circuits.
2. To be familiar with basic principle and application of energy conversion devices such as D.C. Machine, A.C. Motor (both 1- phase & 3- phase & 1 phase Transformer).
3. To be familiar with the generation of electrical power.
4. To be acquainted with wiring and protective devices.
5. To be familiar with circulation and commercial billing of electrical power & energy.

## Topic wise distribution of periods

Sl. No.	Topics	Periods
1	Fundamentals	09
2	Magnetic circuit	04
3	A.C. Theory	13
4	Generation Elect. Power	04
5	Conversion of Electrical Energy	15
6	Wiring and Power Billing	06
7	Measuring Instrument	06
8	Renewable energy	03
	<b>TOTAL</b>	<b>60</b>

## 1. FUNDAMENTALS

- 1.1 Concept of current flow.
- 1.2 Concept of source and load.
- 1.3 State Ohm's law and concept of resistance.
- 1.4 Relation of V, I & R in series circuit.
- 1.5 Relation of V, I & R in parallel circuit.
- 1.6 Division of current in parallel circuit.
- 1.7 Effect of power in series & parallel circuit.
- 1.8 Star – Delta Transformation & Delta - Star Transformation.
- 1.9 Superposition Theorem, Thevenin Theorem, Maximum Power Transfer Theorem.
- 1.10 State and explain Kirchhoff's Law.
- 1.11 Solve simple problems on Kirchhoff's law.
- 1.12 State and explain Faraday's laws of electromagnetic induction, Flemings Left hand rule and Right hand rule.

## 2. MAGNETIC CIRCUITS

- 2.1 Electricity & Magnetism.
- 2.2 Magnetic Materials & B-H Curves.
- 2.3 Permeability, Reluctance.
- 2.4 Solutions of Simple magnetic Circuits.

### **3. A.C. THEORY**

- 3.1 Generation of alternating emf.
- 3.2 Difference between D.C. & A.C.
- 3.3 Define Amplitude, instantaneous value, cycle, Time period, frequency, phase angle, phase difference.
- 3.4 State and explain RMS value, Average value, Amplitude factor & Form factor with Simple problems.
- 3.5 Represent AC values in phasor diagrams.
- 3.6 Explain AC through pure resistance inductance & capacitance
- 3.7 Explain AC through RL, RC, RLC series circuits.
- 3.8 Solve simple problems on RL, RC & RLC series & Parallel circuits.
- 3.9 Explain impedance triangle and power triangle.
- 3.10 Complex impedance & power using j- operator.

### **4. GENERATION OF ELECTRICAL POWER**

- 4.1 State briefly different electrical power generating plants. (Hydro electric, Thermal & Nuclear).
- 4.2 Block diagram of Hydro electrical, Thermal and Nuclear power plant & brief explanation.

### **5. CONVERSION OF ELECTRICAL ENERGY**

- 5.1 Introduction of DC machines.
- 5.2 Main parts of DC machines.
- 5.3 Principle of operation of DC generator, Classification of DC generators.
- 5.4 EMF equation of generator.
- 5.5 Simple problem on relation of load current, armature current and field current.
- 5.6 Principle of operation of DC motor.
- 5.7 Classification of DC motor.
- 5.8 Motor equation and Simple problem on relation of load current, armature current and field current.
- 5.9 Uses of different types of DC generators & motors.
- 5.10 Necessity of different types of starter used in DC motor.
- 5.11 Principle of operation of single phase induction motors.
- 5.12 Types and uses of single phase induction motors.
- 5.13 Introduction to poly phase circuit, advantages & comparison with single phase.
- 5.14 Line & phase quantities in star – delta network.
- 5.15 Three phase power Calculation (For balance circuit).
- 5.16 Main parts of 3-phase induction motors.
- 5.17 Principle of operation of 3-phase induction motors.
- 5.18 Types and uses of 3-phase induction motors.

### **6. WIRING AND POWER BILLING**

- 6.1 Types of wiring and their comparison.
- 6.2 Layout of household electrical wiring (single line diagram showing all the important component in the system).
- 6.3 List out the basic protective devices used in house hold wiring.
- 6.4 Calculate energy consumed in a small electrical installation.



## **7. MEASURING INSTRUMENTS**

- 7.1 Introduction to measuring instruments.
- 7.2 Torques in instruments.
- 7.3 State different uses of PMMC type of instruments (Ammeter & Voltmeter).
- 7.4 State different uses of MI type of instruments (Ammeter & Voltmeter).
- 7.5 Draw the connection diagram of A.C/ D.C Ammeter, voltmeter, energy meter and wattmeter. (Single phase only).

## **8. INTRODUCTION TO RENEWABLE POWER GENERATION**

- 8.1 Solar, Wind & Tidal

### **Books Recommended**

1. Basic Electrical Engineering by T.K. Nagsarkar & M.S. Sukhija (Oxford University Press)
2. ABC of Electrical Engineering by Jain & Jain (Dhanpat Rai Publication).

### **Reference Books**

1. Fundamentals of Electrical Engineering and Electronics by J.B Gupta.
2. Basic Electrical Engineering by V.N. Mittle (TMH).
3. Electrical Technology by Edwar Hughes (Pearson Education, New Delhi).
4. Basic Electrical Engineering by Chakraborty (Mgrew Hill).
5. Basic Electrical Engineering by V.K. Mehata, Rohit Mehata.
6. A Text Book of Electrical Technology Vol. I & II by B.L. Theraja & A.K.Theraja.

# DCCA1105 COMPUTER APPLICATION

Semester & Branch: First / Second sem Diploma in Engg.  
Theory: 4 Periods per Week  
Total Periods: 60 Periods per Semester  
Examination: 3 Hours

Teachers Assessment: 10 Marks  
Class Test : 20 Marks  
End Semester Exam : 70 Marks  
TOTAL MARKS : 100 Marks

## Objective:

The students will get to know about the fundamentals of computer. They will get acquainted with various components of computer hardware, software etc. Idea on Role of operating system and its usability will also be known. Knowledge on word processing, electronic spreadsheet, presentation software and Internet will also be acquired. The students will be given brief knowledge about Programming methodology and C programming.

## Topic wise distribution of periods

Sl. No.	Topics	Periods
1	Computer Organisation	05
2	Computer Software	07
3	Computer Network and Internet	08
4	File Management and Data Processing	05
5	Problem Solving Methodology	05
6	Overview of C Programming language	15
7	Advanced features of C	15
	<b>TOTAL</b>	<b>60</b>

### 1. COMPUTER ORGANISATION

Introduction to Computer  
Evolution of Computers  
Generation of Computers  
Classification of Computers  
Basic Organisation of Computer (Functional Block diagram)  
Input Devices, CPU & Output Devices.  
Computer Memory and Classification of Memory

### 2. COMPUTER SOFTWARE

Software concept  
System software  
Application software  
Overview of Operating System  
Objectives and Functions of O.S  
Types of Operating System  
Batch Processing, Multiprogramming, Time Sharing OS  
Features of DOS, Windows and UNIX  
Programming Languages  
Compiler, Interpreter  
Computer Virus  
Different Types of computer virus  
Detection and prevention of Virus  
Application of computers in different Domain

### **3. COMPUTER NETWORK AND INTERNET**

Networking concept, Protocol, Connecting Media,  
Data Transmission mode

Network Topologies,  
Types of Network

Networking Devices like Hub, Repeater, Switch, Bridge, Router, Gateway & NIC

Internet Services like E-Mail, WWW, FTP, Chatting, Internet Conferencing, Electronic  
Newspaper & Online Shopping

Different types of Internet connectivity and ISP

### **4. FILE MANAGEMENT AND DATA PROCESSING**

Concept of File and Folder

File Access and Storage methods.

Sequential, Direct, ISAM

Data Capture, Data storage

Data Processing and Retrieval

### **5. PROBLEM SOLVING METHODOLOGY**

Algorithm, Pseudo code and Flowchart

Generation of Programming Languages

Structured Programming Language

Examples of Problem solving through Flowchart

### **6. OVERVIEW OF C PROGRAMMING LANGUAGE**

Constants, Variables and Data types in C

Managing Input and Output operations.

Operators, Expressions, Type conversion & Typecasting

Decision Control and Looping Statements (If, If-else, If-else-if, Switch, While, Do-while, For,  
Break, Continue & Goto)

Programming Assignments using the above features.

### **7. ADVANCED FEATURES OF C**

Functions and Passing Parameters to the Function (Call by Value and Call by Reference)

Scope of Variables and Storage Classes

Recursion Function and Types of Recursion

One Dimensional Array and Multidimensional Array

String Operations and Pointers

Pointer Expression and Pointer Arithmetic

Programming Assignments using the above features.

Structure and Union (Only concepts, No Programming)

### **Books Recommended**

1. Computer Fundamentals and Programming in C by Reema Thareja, Oxford University Press
2. Programming in ANSI C by A.N Kamthane, Pearson Education
3. Computer Application by Kalyani Publisher
4. Let us C by Y. Kanetkar, BPB
5. Computer Fundamentals, by E. Balaguruswamy, TMH

# DCHU1102 COMMUNICATIVE ENGLISH - I

Semester & Branch: First sem Diploma in Engg.  
Theory: 2 Periods per Week  
Total Periods: 30 Periods per Semester  
Examination: 3 Hours

Teachers Assessment: 10 Marks  
Class Test : 20 Marks  
End Semester Exam : 70 Marks  
TOTAL MARKS : 100 Marks

## Aim:

To increase communication skills of a student  
To develop their ability to comprehend written and verbal English  
To improve their comprehension in English

## Objective:

To comprehend the given passage  
To answer correctly the questions on seen and unseen passages  
To increase the vocabulary  
To apply rules of grammar for flawless writing

## Pre-Requisite:

Perfection in speaking, reading and writing English  
Perfection in the basic grammar in English

## Topic wise distribution of periods

Sl. No.	Topics	Periods
1	Text	14
2	Application of Grammar	10
3	Paragraph Writing	02
4	Vocabulary Building	04
	<b>TOTAL</b>	<b>30</b>

## 1. TEXT

### [Reading comprehension]

- A. Sub-skills of reading comprehension are to be worked out and tested through an unseen passage in about 200-500 words.  
A student should get acquainted with sub-skills of reading for the purpose of:  
Skimming the gist  
Scanning for necessary information  
Close reading for inference and evaluation  
Main idea and supporting points  
Guessing the meaning of un-familiar words  
Note-making
- B. The following chapters from “**Invitation to English**”, **Book-1** for +2 students of CHSE, Odisha, **2012 edition** is to be covered in the class room:  
**The Legend behind a Legend** by Hariharan Balkrishnan  
**The Portrait of a Lady** by Khuswant Singh  
**To My True Friend** by Elizabeth Tizard  
**Daffodils** by William Wordsworth

[Pre-reading (**Self- study**)

The student is to make self-study for understanding the meaning of new words from the text and for identifying part of speech of the above mentioned texts.

The student is to answer two / three general questions in about 100-120 words from these chapters in the end examination.

## **2. APPLICATION OF GRAMMAR**

Articles and Determiners

Verbs, Modals

Tenses

Voice-change

Subject-verb Agreement

## **3. PARAGRAPH WRITING**

The student should be able to excel in the area of written communication

Paragraph writing Definition, meaning and method

To write coherent, logical and unified paragraphs constructed on the following

Patterns:

General- Specific

Process- Description

## **4. VOCABULARY BUILDING**

Word formation

Technical Jargon

Use of synonyms, antonyms and homonyms.

One word substitute

### **ASSIGNMENTS (10 Marks)**

The Teachers Assessment will consist of 05 (five) assignments

#### **List of Assignments:**

##### **1. Building Vocabulary** (01 assignment)

- a. Taking words from glossary given in the text book (i.e. "Invitation to English", Book-1) at the end of each chapter
- b. Technical Jargons: Identifying technical words from subject books and using them in sentences.

##### **2. Grammar** (01 assignment)

- a. Inserting correct parts of speech on the sentences given by the teacher
- b. Punctuating the sentences given by the teacher

##### **3. Paragraph Writing** (01 assignment)

##### **4. News Paper Report Writing** (01 assignment)

Writing any 02 events from the news paper as it is / narrating events on situations given by the teacher

##### **5. Error in English** (01 assignment)

Finding out error and re-writing sentences given by the teacher.

Use of Synonyms, Antonyms, Homonyms

One word substitute

#### **Books Recommended**

1. Communication Skills by Sanjay Kumar and Puspalata, Oxford University Press
2. Invitation to English, Book-1, (for +2 students), (2012 edition), CSHE, Odisha
3. Communicative English by Abhisek Arora, Kalyani Publishers

# DCPH1202 ENGINEERING PHYSICS PRACTICAL

Semester & Branch: First / Second sem Diploma in Engg.  
Practical: 4 Periods per Week  
Total Periods: 60 Periods per Semester  
Examination: 4 Hours

Practical Exam : 25 Marks  
Term Work : 25 Marks  
TOTAL MARKS : 50 Marks

## **A student should complete at least 8 (Eight) experiments in a Semester**

1. Measurement of volume of a solid/hollow cylinder by VERNIER CALIPERS.
2. Measurement of cross-sectional area of a wire by Screw Gauge.
3. Measurement of radius of curvature of a spherical surface by a Spherometer.
4. Determination of Specific gravity of insoluble solid heavier than water by physical balance by equal oscillation method.
5. Determine the refractive Index of a prism by drawing i-D curve.
6. Tracing of Lines of force due to a bar magnet with N-pole pointing North & N-pole pointing South and locate the neutral points.
7. Determination of g by simple pendulum.
8. Verification the laws of resistance by connecting two given standard resistances in series & in parallel using Ohm's Law.
9. Measurement of specific resistance of wire by a Meter Bridge.
10. Determination of focal length of convex lens by u-v method.
11. Determination of co-efficient of Friction by inclined Plane Method

## **Books Recommended:**

1. Engineering Practical Physics by S. Panigrahi, B. Mallick, S. Publisher

# DCEE1203 B A S I C ELECTRICAL ENGINEERING PRACTICAL

Semester & Branch: First / Second sem Diploma in Engg.  
Practical: 4 Periods per Week  
Total Periods: 60 Periods per Semester

Term Work : 25 Marks  
TOTAL MARKS: 25 Marks

**Important:** The demonstration plan should be prepared and thoroughly explained (both theory and steps of practice). Five to ten questions should be assigned to the students to assess the overall gain of the objectives. The following experiments are to be conducted in the laboratory.

1. Calculate equivalent resistance in series and parallel combinations and find relation between  $V, I$  &  $R$ .
2. Determine the resistance, impedance and inductance of a choke coil.
3. Determine the capacitance and capacitive reactance ( $X_c$ ) of a unknown Capacitor.
4. Determine the power factor by direct and indirect methods in a AC single phase RLC series circuit.
5. Measure Energy of a single phase – A.C. circuit by help of ammeter, voltmeter and power factor meter.
6. Measure Energy of a single phase – A.C circuit by help of an energy meter.
7. Start & run a D.C. Motors. (Shunt & Series & Compound).
8. Connect and run the 3 – Phase Induction motor. (Sq. cage & Slipring).
9. Polarity Test & Transformation ratio of single phase Transformer.
10. Prepare an electrical switch board to control two light points, one plug point, one fan point and fuse.
11. Connect and test a fluorescent lamp.
12. Measure the Earth Resistance of a pipe Earthling.

# DCCA1204 COMPUTER APPLICATION

Semester & Branch: First / Second sem Diploma in Engg.  
Practical: 4 Periods per Week  
Total Periods: 60 Periods per Semester

Term Work : 25 Marks  
TOTAL MARKS : 25 Marks

- 1. BASIC COMPUTER OPERATION** **2 periods**  
Identification of different components of Computer  
Switch on and Booting Process  
Shut down, Restart of compute
- 2. OPERATING SYSTEM** **13 periods**  
Basic DOS commands (CLS, DIR, DATE, TIME, VERSION, MD, CD, RD, DEL, COPY, REN, USE OF WILD CARDS, PATH)  
Basic Windows OS operations (DESKTOP, ICONS,, START BUTTON, TASK BAR)  
MOUSE OPERATIONS- SINGLE CLICK, DOUBLE CLICK, DRAG  
MAXIMIZE, MINIMIZE, RESTORE  
Windows Explorer, My Computer  
Files and Folders, Copy, Cut, Paste  
Utilities: Word, notepad, paint, calculator etc
- 3. WORKING WITH MS-OFFICE** **20 periods**  
Basic operations of Word Processing Package. (MS-Word / Apache Open Office Writer)  
Basic operations of Electronic Spread Sheet Package. (MS-Excel / Apache Open Office Calc)  
Basic operations of Presentation Package (MS- Power point / Apache Open Office Impress)  
(Create, Edit, Format, Save, Print/View in the above three packages)
- 4. WORKING WITH INTERNET** **10 periods**  
Getting acquainted with Internet connection, Browser, website  
URL, webpage, http, WWW, net browsing  
Creating E-Mail Id, sending and receiving E-mail Chatting
- 5. C PROGRAMMING** **15 periods**
  1. Write a Program in C to find the greatest number among three integers.
  2. Write a Program in C to find the average of n numbers by using for loop.
  3. Write a Program in C to compute  $(a + b)^3$
  4. Write a Program in C to convert time in seconds to time in hours, minutes and seconds.
  5. Write a program in C to find the sum of the following series.  $1+1/x+1/x^2+.....+1/x^n$
  6. Write a program in C to determine whether a number is prime or not?
  7. Write a program in C to compute simple interest and compound interest of a given principal, rate of interest and time period.
  8. Write a program in C to check whether a given number is palindrome or not?
  9. Write a program in C to compute the sine series.
  10. Write a program in C to accept row wise and column wise element in a two dimensional array and print them.
  11. Write a program in C to find the number of times an element occurs in an array.
  12. Write a program in C to find the vowels in a given string.
  13. Write a program in C to find the factorial of a number, by using recursion.
  14. Write a program in C to find the sum of Fibonacci series, by using function.
  15. Write a program in C to accept a number from keyboard and print it in reverse order of entry, by using function.



# DCED1205 ENGINEERING DRAWING

Semester & Branch: First / Second sem Diploma in Engg.

Practical: 6 Periods per Week

Total Periods: 90 Periods per Semester

Examination: 4 Hours

End Semester Exam : 100 Marks

Term Work : 25 Marks

TOTAL MARKS : 125 Marks

## Objective

After completion of the study of Engg. Drawing the student should be able to

1. Understand the importance of Engineering Drawing.
2. Demonstrate the use of different drawing instrument.
3. Make free hand lettering and numbering.
4. Practice of dimensioning of drawing.
5. Undertake different geometric constructions, projections of straight line, planes and solids.
6. Take up different orthographic projections.
7. Draw sectional views, development of surface of different solids.
8. Develop the concept of building drawing.
9. Prepare 2D engineering drawing using Auto CAD software.

## Topic wise distribution of periods.

Sl. No.	Topics	Periods
1	Introduction and Demonstration	03
2	Types of Lines, Lettering & Dimensioning	03
3	Scales	03
4	Curves	06
5	Orthographic Projections	21
6	Section and Developments	21
7	Isometric Projections	06
8	Building Drawing	12
9	Practices on Auto CAD	15
	<b>TOTAL</b>	<b>90</b>

(All drawings are to be made in First Angle Projection)

### 1. INTRODUCTION & DEMONSTRATION

- 1.1 Identify various sizes of drawing boards, drawing sheets as per BIS.
- 1.2 List the types of pencils, instruments, and scales (RF).
- 1.3 Demonstrate lying of drawing sheet, margin, standard layout and title block as per BIS, folding principle of drawings (blue prints, print outs etc).

### 2. TYPES OF LINES, LETTERING & DIMENSIONING

- 2.1 Demonstrate and explain the use of various types of lines.
- 2.2 Demonstrate the principle of single stroke, gothic lettering & numerals as per BIS.

### 3. SCALES

- 3.1 Significance of scales in drawing; different scales.
- 3.2 Define and draw plain sale and diagonal sale.

#### **4. CURVES**

- 4.1 Explain Conic sections with illustration, Explain terms like focus, vertex, directrix and eccentricity.
- 4.2 Draw conics sections by eccentricity method – Ellipse, Parabola and Hyperbola.
- 4.3 Draw Ellipse by concentric circle method and arc of circle method.
- 4.4 Draw parabola by Rectangle Method and Tangent Method.

#### **5. ORTHOGRAPHIC PROJECTIONS**

- 5.1 Demonstrate the principles of 1<sup>st</sup> angle and 3<sup>rd</sup> angle projections with the help of models and draw symbols.
- 5.2 Draw projection of points.
- 5.3 Draw projection of straight line (parallel to both planes, parallel to one and perpendicular to other, parallel to one and inclined to other and inclined to both reference planes).
- 5.4 Draw plane figure such as squares, rectangles, triangles, circle, Pentagon and hexagon (perpendicular to one plane and inclined to other).
- 5.5 Draw projections of solids such as prism, cylinder, cone, tetrahedron and pyramid in simple position (with axis parallel to one reference plane and perpendicular to other reference plane).

#### **6. SECTION & DEVELOPMENTS**

- 6.1 Draw the sectional projection & development of prism, cylinder, cone and pyramid in simple position by a cutting plane perpendicular to one reference plane and inclined to other reference plane.
- 6.2 Draw true shape of the cutting sections.

#### **7. ISOMETRIC PROJECTIONS**

Draw isometric view & Isometric projection of prism, pyramid, cone & cylinder with axis horizontal and vertical with construction of isometric scales.

#### **8. BUILDING DRAWING**

- 8.1 Explain terms related to building drawing.
- 8.2 Draw plan, elevation of single room building with verandah (Flat roof according to given line plan and specification).

#### **9. PRACTICES ON AUTO CAD**

- 9.1 Introduction -Settings, Limits etc.
- 9.2 Auto CAD commands-  
Draw commands (Line, circle, arc, polygon, ellipse, rectangle).  
Edit command, Dimension commands and Modify Commands for two dimensional drafting only.
- 9.3 Exercise for practice using Auto CAD.
  - 9.3.1 Orthographic projections of lines, planes and solids as per chapter 5.0.
  - 9.3.2 Isometric projection as per Chapter 7.0.

#### **Books Recommended**

1. Machine Drawing by Basudeb Bhattacharya, Oxford University Press.
2. A Text Book of Engineering Drawing by Dr. R.K. Dhawan.
3. A Text Book of Engineering Graphics & Auto CAD by K Venugopal.

#### **Reference Books**

1. A Text book of Engineering Drawing by N.D. Bhatt.
2. Engineering Drawing by P.S. Gill.
3. A Introduction to Auto CAD – 2012 by George Omura, Willey India Publishers.

# DCHU1201 COMMUNICATIVE ENGLISH-I PRACTICAL

Semester & Branch: First sem Diploma in Engg.  
Practical: 2 Periods per Week  
Total Periods: 30 Periods per Semester

Term Work : 25 Marks  
TOTAL MARKS: 25 Marks

## Topic Wise distribution of periods

Sl. No.	Topic	Periods
1	Listening Skill	10
2	Speaking Skill / Conversational Skill	20
	<b>TOTAL</b>	<b>30</b>

### 1. LISTENING SKILL

The student should be able to listen to a text read aloud in normal speed with focus on:  
Rhythm, stress and intonation

Aural  
comprehension

After listening the student can fill-in-blanks, choose a suitable title, make a summary, supply required information and be able to answer comprehension questions from the passage read aloud.

### 2. SPEAKING SKILL / CONVERSATIONAL SKILL

2.1 Reading aloud of dialogues, texts, poems, speeches focusing on rhythm, stress and intonation.

2.2 Self-introduction

2.3 Role-plays on any two- situations

2.4 Telephonic conversation

2.5 Group Discussion (GD)