

Scheme of Teaching and Examination for VI Semester DIPLOMA in ELECTRICAL & ELECTRONICS ENGINEERING

THEORY

Sl. No.	SUBJECTS	SUBJECT CODE	TEACHING SCHEME		EXAMINATION - SCHEME						
			Periods per Week	Periods in one Session (Year)	Hours of Exam.	Terminal Exam. (A) Marks	Final Exam. (B) Marks	Total Marks (A+B)	Pass Marks Final Exam.	Pass Marks in the Subject	
1.	Professional Studies & Entrepreneurship	00601	06	60	03	20	80	100	26	36	
2.	Power System II	20602	06	60	03	20	80	100	26	36	
3.	Electric Traction	20603	06	60	03	20	80	100	26	36	
4.	Electrical & Electronics Measurement	39604	06	60	03	20	80	100	26	36	
5.	Elective*		06	60	03	20	80	100	26	36	
(i)	Modern Communication & its Application	39605A									
(ii)	Electrical M/C Design	20605B									
(iii)	Network Theory	20605C									
(iv)	Data Base Management	20605D									
Total:-			30						500		

PRACTICAL

Sl. No.	SUBJECTS	SUBJECT CODE	TEACHING SCHEME		EXAMINATION - SCHEME						
			Periods Per Week	Periods in one Session (Year)	Hours of Exam.	Marks Internal Exam. (A)	Marks External Exam. (B)	Total Marks (A+B)	Pass Marks Final Exam.	Pass Marks in the Subject	
6.	Electric Traction Lab	20606	04	50	03	10	40	50	16	21	
7.	Electrical & Electronics Measurement Lab	39607	04	60	04	10	40	50	16	21	
Total:-			08						100		

SESSIONAL

Sl. No.	SUBJECTS	SUBJECT CODE	TEACHING SCHEME		EXAMINATION - SCHEME					
			Periods per Week	Periods in One Session (Year)	Marks of Internal Examiner (X)	Marks of External Examiner (Y)	Total Marks (X+Y)	Pass Marks in the Subject		
8.	Professional Studies & Entrepreneurship	00607	04	50	20	30	50	25		
9.	Project Work & Its presentation in Seminar	21609	--	--	40	60	100	50		
Total:-			04						150	

Total Periods per Week			42		Total Marks				750		
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PROFESSIONAL STUDIES & ENTREPRENEURSHIP

Subject Code 00601	Theory			No of Period in one session : 60		
	No. of Periods Per Week			Full Marks	:	100
	L	T	P/S	Annual Exam.	:	80
	06	-	-	Internal Exam.	:	20

Rationale:

The paper has been introduced to achieve dual purpose for the students. Firstly, this course provides the basics of Professional management and secondly it also prepares the student to develop self reliance by becoming an entrepreneur.

This makes them conversant with their duties and responsibility to make them successful in their career building by developing profession expertise.

Objectives:

With the input provided in this paper, the students will be able to :-

- Acquire basic knowledge of management.
- Understand the various area of management such as human resources, marketing, finance and commercial aspect, production & material management etc.
- Understand the benefit of becoming an entrepreneur.
- Handle a project efficiently and independently.
- To avail subsidies / grants / loan etc. from various agencies.

PART-I: PROFESSIONAL STUDIES

TOPIC:

01 – INTRODUCTION:

- | | | |
|-------|---|------|
| 01.01 | Professional Ethics:
Definition, Objective, Right & Wrong, Duty & Obligation | [05] |
| 01.02 | Management:
Definition, Function and Objectives. | [05] |
| 01.03 | Leadership:
Definition, Types – Autocratic, Democratic and Laissez – faire, Functions and Characteristics of Leadership. | [05] |
| 01.04 | Motivation :
Definition, Types and Importance / Benefits | [05] |
| 01.05 | Forms of Business organization:
Sole proprietorship, Partnership, Joint Stock company and Co-operative Societies. | [05] |
| 01.06 | Supervisor’s/Technician’s role:
Concept of supervisory management, career needs, Role of Technicians in an organization. | [05] |

PART-II: ENTREPRENEURSHIP

TOPIC:

02 – INTRODUCTION:

- | | | |
|-------|--|------|
| 02.01 | Entrepreneurship:
Concept, Characteristics of a successful entrepreneurship, basic ingredients of entrepreneurship:
1. Finance 2. Technology 3. Sales and Marketing | [10] |
| 02.02 | Project Report:
Meaning, Project Identification, Project Selection, Contents of a project Report, Techno-Economic Feasibility Report (TEFR), Market Survey. | [10] |
| 02.03 | Sources of Finance:
Government, Commercial Banks, Financial institutions:
SIDBI – Small Industries development Bank of India
SFC – State Financial Corporations
IDBI – Industrial Development Bank of India
IFCI – Industrial Finance Corporation of India
ICICI – Industrial Credit Investment Corporation of India | [05] |
| 02.04 | Acts :
Indian factories Act 1948 (Main Provision Only)
Consumers Protection Act 1986 (Main Provision Only) | [05] |

03 – PROJECT WORK:

As elaborated in Sessional Paper (00607).

Books Recommended:

1. Essential of Management, Tata McGraw Hill, Publishing Company Ltd., New Delhi. - Herald Koonz & Cyril O' Donnel.
2. Business Organization and Management, S. C. Chand and Company (Pvt.) Ltd., Ram Nagar, New Delhi - M. C. Shukla.
3. Managerial Economics, Sultan Chand & Sons, New Delhi - R. L. Vashney & K. L. Maheshwari
4. Project Appraisal and Follow up, Govind Prakashan, Mumbai. - D. P. Sharda
5. Modern Marketing Management, Progressive Corporation Pvt. Ltd., P51, Mahatma Gandhi Road, Bombay-400 001 - Dr. Rustam S. Davar
6. A hand book for new entrepreneurs (with special reference to science and technology target group) - Entrepreneurship Development Institute of India, 83-A, Swastic Society Navrangpura, Ahmedabad, PIN-380 009.

Reference Books:

1. Leadership in Organisation - Published by I.S.T.E. Mysore
2. Motivation - Published by I.S.T.E. Mysore
3. Motivation - I.I.T. Kanpur - Published by I.S.T.E. Mysore
4. A Hand book on Project Appraisal and follow up, Govind Prakashan, 204, Saraswati Kunj, 90, S. V. Road, Goregoan, Bombay-400 062. - D. P. Sarda
5. Bihar Industrial Policy - Government of Bihar, Department of Industries.
6. Entrepreneurship Guide - Bihar State Financial Corporation, Fraser Road, Patna-800 001.

POWER SYSTEM - II

Subject Code 20602	Theory			No of Period in one session : 60		
	No. of Periods Per Week			Full Marks	:	100
	L	T	P/S	Annual Exam.	:	80
	06	-	-	Internal Exam.	:	20

Rationale :

The whole network of Electrical Power sumptuous right from its generations, transmission & distribution to utilization has important stages of switch gear and circuit breakers. There are occasions of occurring various fault in different stages of the system during operations. There must be remedial approach to rectify such faults through relays.

Objective:

An Electrical Diploma holder must have the knowledge of functioning of switch gear control system as well as those of relays and faults finding circuits.

The proposed syllabus of Power System-II includes the relevant topics with the objectives of building up the skill of students. This will help them to face the situations when attached with responsibility.

<u>S.No.</u>	<u>Topics</u>	<u>Periods</u>
Part-I		
01	Switch Gear	(07)
02	Fault Clearing & C. B. Ratings	(08)
03	HRC Fuses & their applications	(04)
Part-II		
04	Fault Calculations	(08)
05	Reactors	(06)
06	Symmetrical Faults	(04)
07	Symmetrical Components	(04)
08	Un Symmetrical Faults	(05)
Part-III		
09	Introduction of Protective Relaying	(04)
10	Relays and Protection	(10)
Total :		(60)

CONTENTS:-

Part-I

TOPIC: 01 –SWITCH GEAR:

[07]

- 01.01 Introduction of switch gear, classification of circuit breakers. Air circuit breaker, Air blast circuit breaker.
- 01.02 Arc formation in circuit breakers. Models of Arc Extensions.
- 01.03 Insulation requirements of circuit breakers. Causes of failure of its insulations
- 01.04 Features of circuit breakers. Auto Reclosure. Maintenance of circuit breaker.

TOPIC: 02 –FAULT CLEARING AND C. B. RATINGS:

[08]

- 02.01 Sudden short circuit of R-L series circuit problems.
- 02.02 Circuit breaker rating, Breaking Capacity, Making Capacity, Short time current ratings, Rated interrupting time.
- 02.03 Recovery voltage, Restriking voltage, Rate of rise of restriking voltage. Current chopping problems.

TOPIC: 03 – HRC FUSES AND THEIR APPLICATIONS :

[04]

- 03.01 Types of devices with fuse construction of Rewirable and HRC fuses.
- 03.02 Action of HRC fuse. Characteristics of HRC fuse cut off, current Limiters.
- 03.03 Selection of fuse for different applications.

Part-II

TOPIC: 04 –:FAULT CALCULATIONS: [08]

- 04.01 Types of faults, procedure of fault calculation. Representations of Power System, Per unit method. Advantages of per unit system.
- 04.02 Selection of bases. Determination of base impedance in single and three phase systems.
- 04.03 Problems on fault calculations.

TOPIC: 05 –REACTORS: [06]

- 05.01 Construction and use of Reactors.
- 05.02 Different types of Reactors, their advantages and disadvantages.
- 05.03 Methods of locating Reactors. Problems.

TOPIC: 06 –SYMMETRICAL FAULTS: [04]

- 07.01 Percentage Reactance and short circuit currents. Problems.
- 07.02 Fault MVA and Fault current. Problems.

TOPIC: 07 –SYMMETRICAL COMPONENTS: [04]

- 07.01 Symmetrical Components of 3- ϕ systems.
- 07.03 Problems.

TOPIC: 08 –UNSYMMETRICAL FAULTS: [05]

- 08.01 Sequence Impedances, Sequence networks of alternator, Voltage equations.
- 08.02 Single line L-G fault, L-L-G & 3- ϕ fault in alternator.
- 08.03 Zero sequence diagrams of Generators and Transformers.
- 08.04 Problems.

Part-III

TOPIC: 09 –INTRODUCTION OF PROTECTIVE RELAYING: [04]

- 09.01 Introduction, importance and functions of Protective relaying.
- 09.02 Primary and back-up protection.
- 09.03 Selectivity, Relay time, Fault Clearing time, Sensitivity, Stability, Reliability, Trip Circuit (Only Definitions)

TOPIC: 10 –RELAYS & PROTECTIONS: [10]

- 10.01 Protection of Alternators, Merz Price Protection
- 10.02 Protection of Transformers, Buchalz Relay (or gas actuated relay)
- 10.03 Bus-bar feeder and transmission, over current protection.
- 10.04 Directional (or over current or Earth fault) Relay

Books Recommended:

- 1. Switch Gear and Protections - Sunil S. Rao
- 2. Electric Power (Generation, Transmission, Distribution Protection) - Soni Gupta & Bhatnagar
- 3. Electric Power (Hindi) - D. R. Nagpal

Reference Book :

- 1. Principles of Power System, S. Chand & Co., New Delhi - V. K. Mehta
- 2. Electrical Power System, New Age International Pvt. Ltd. Publishers, New Delhi - C. L. Wadhwa

ELECTRIC TRACTION

Subject Code 20603	Theory			No of Period in one session : 60		
	No. of Periods Per Week			Full Marks		
	L	T	P/S	Annual Exam.	:	100
	06	-	-	Internal Exam.	:	80
					20	

Rationale :

With the fast moving development of Electrical world some expertisations are expected in the specialized topics.

The electric traction is the back bone of the material handling and different production stages of the industries. Electric Traction is also an easing aspect of transportation and helpful in improving the social and cultural out look of man kind as a whole. Electric Traction make any nation more and more competent in its industrial and developmental outlook. With this in view the subject is being introduced in the Part-III diploma in Electrical Engineering. It will help gain knowledge and build confidence when dealing with the problems of traction in the world of work.

Objective:

The role of electrical technician in Electric Traction system is most important. As such the syllabus has been formed to cover up the required aspects. The students opting for specialization in traction will definitely have a better and improved knowledge and skill when they are taught about the contents of the proposed syllabus.

<u>S.No.</u>	<u>Topics</u>	<u>Periods</u>
01	Electric Drive	(02)
02	Traction System	(08)
03	Electrification Systems	(05)
04	Traction Motors	(25)
05	Braking	(15)
06	Traction Mechanism	(05)
Total :		(60)

CONTENTS:

TOPIC: 01 – ELECTRIC DRIVE:

Introduction of Electric Drive, Advantages and Disadvantages of Electric Drive.

[02]

TOPIC: 02 –TRACTION SYSTEM:

Introduction of Electric Traction, Types of Electric Traction, Ideal traction system, Various systems of traction their advantages and disadvantages, Electrification of Track their advantages and disadvantages.

[08]

TOPIC: 03– ELECTRIFICATION SYSTEMS:

Different types of Electrification systems, Methods of supplying power to railway trains, Applications of systems for Railway Electrification.

[05]

TOPIC: 04 – TRACTION MOTORS :

Introduction of Traction motors, Characteristics of traction motors, Torque-Armature current characteristics of D. C. Motors, Speed-Torque Characteristics of D. C. motors, Speed Armature current characteristics of D. C. Motors, A. C. Series motors, Comparison between series and shunt motors with regard to other suitability for traction, Series and shunt motors for traction services, Torque-slip characteristics of three phase induction motor, Single Phase series motors(only advantages and disadvantages regarding electric traction, Traction effort and Horse Power of motors problems.

[25]

TOPIC: 05 –:BRAKING:

Introduction of Braking, Advantages and disadvantages of electric braking, types of Electric braking, Definition of plugging, Application of plugging on D. C. shunt motor, D. C. series motor. Definition of Rheostatic braking, Application of Rheostatic braking on D. C. shunt motor, D. C. series motor, Definition of Regenerative braking, Application of Regenerative braking on D. C. shunt motor, D. C. series motor.

[15]

TOPIC: 06 –TRACTION MECHANISM:

Crest speed, Average speed, Schedule speed, Factors affecting schedule speed of a Train, Tractive effort, and Mechanics of Train movement.

[05]

Books Recommended:

- | | |
|---|----------------------------|
| 1. Utilization of Electrical Power | - Tuli, Soni and Bhatnagar |
| 2. Utilization and Traction | - G. C. Garg |
| 3. Electric Traction | - Hazra and Choudhary |
| 4. Utilization of Electric Power and Traction, Khanna Publication | - G. C. Garg |

Electrical & Electronics Measurement

Subject Code 39604	Theory			No of Period in one session : 60		
	No. of Periods Per Week			Full Marks	:	100
	L	T	P/S	Annual Exam.	:	80
	06	-	-	Internal Exam.	:	20

1. Electrical Measurement:-

(i) Units & Dimensions:

Fundamental & Derived units, Types of units, and dimensions. 04

(ii) Measurement of Resistance: 08

Measurement of low, Medium and high resistance each by one method, Megger.

(iii) Measurement of Inductance & capacitance: 08

Maxwell bridge, Schering bridge, mutual inductance measurement.

(iv) Measuring Instruments: 10

Classification, Deflecting & Controlling Torque, Damping force, Moving Iron and moving coil Instruments, Inductions type, Ammeter shunt and Instrument Transformer i.e C.T & P.T., Measurement of 1- ϕ power by Ammeter & voltmeter 3- ϕ power by two and three wattmeter method.

2. Electronics Measurement:

(i) Electronics voltmeter, VTVM, Rectifier Amplifier and amplifier rectifier type VTVM, Transistor voltmeter,

Electronic galvanometer, 06

(ii) Digital Measuring Instruments:- Digital analog systems, Digital frequency meter and voltmeter, Period and time interval measurement. 06

(iii) Classification of Transducer linear variable differential transducer, Tachometer strain gauges, Thermistor

06

(iv) Black body, Measurement of Luminous intensity, photo emissive and conductive cell, photo voltaic cell. 06

(v) Data Acquisition system (DAS): Components of digital & Analog DAS, Digital to Analog Converter, Encoder, PLC. 06

Modern Communication & its Application

Subject Code 39605A	Theory			No of Period in one session : 60		
	No. of Periods Per Week			Full Marks	:	100
	L	T	P/S	Annual Exam.	:	80
	06	-	-	Internal Exam.	:	20

1. Introduction:-

- (1.1) Introduction to Elective communication system, - (08)
- (1.2) classification of radio wave,
- (1.3) Amplitude modulation,
- (1.4) Frequency modulation,
- (1.5) Phase modulation.
- (1.6) Related concepts and simple problem.

2. Waveguide:-

- (2.1) Introduction to TEM/TE/TM. - (08)
- (2.2) Comparison of wave guide with two wire Transmission line,
- (2.3) Definition and interpretation of cut off frequency of a wave guide, wave length, phase velocity and group velocity. Simple related problems.

3. Microwave components:-

- (3.1) Introduction, - (04)
- (3.2) Construction and working principle of Pin diode, Gunn diode, IMPATT, and TRAPATT diode.

4. Propagation of waves:-

- (4.1) Modes of propagation - (08)
- (4.2) Ground wave, sky wave, space wave propagation,
- (4.3) Fading, ionospheric layer, virtual height, skip distance.

5. Satellite communication System:-

- (5.1) Introduction to satellite communication system, - (08)
- (5.2) Satellite orbits,
- (5.3) Basic components of satellite communication system, commonly used frequencies in satellite communication in India.

6. Radar System:-

- (6.1) Basic Radar system, - (08)
- (6.2) radar range,
- (6.3) pulsed radar system,
- (6.4) PPI,
- (6.5) MTI,
- (6.6) Doppler effect,
- (6.7) MTI principle,
- (6.8) Radar beacons,
- (6.9) LORAN.

7. - (06)

- (7.1) Cellular phones,
- (7.2) Basic idea,
- (7.3) Working Principle,
- (7.4) Close circuit TV camera,
- (7.5) Operation and its application.

Recommended Books :-

- (i) Communication System-Mg Graw Hill. - Kenedy
- (ii) Principles of Communication - B.P. Lathi-
- (iii) Principles of Communication. Kataria & Sons- - A.K. Gautam-

ELECTRICAL MACHINE DESIGN

Subject Code 20605B	Theory			No of Period in one session : 60		
	No. of Periods Per Week			Full Marks	:	100
	L	T	P/S	Annual Exam.	:	80
	06	-	-	Internal Exam.	:	20

Rationale :

Objective:

CONTENTS:

<u>S.No.</u>	<u>Topics</u>	<u>Periods</u>
01	Elementary Design of Rotating Machines	(05)
02	Design of D. C. Machines(Series & Shunt types)	(10)
03	Design of Transformer(1- ϕ & 3- ϕ types)	(15)
04	Design of 1- ϕ & 3- ϕ induction motors of various ratings	(15)
05	Design Synchronous Machine	(15)
Total :		(60)

Books Recommended:

1. Electrical Machine Design - A. K. Sawhney

NETWORK THEORY

Subject Code 20605C	Theory			No of Period in one session : 60		
	No. of Periods Per Week			Full Marks	:	100
	L	T	P/S	Annual Exam.	:	80
	06	-	-	Internal Exam.	:	20

Rationale :

Objective:

<u>S.No.</u>	<u>Topics</u>	<u>Periods</u>
01	Basic Circuit Elements & Waveforms	(07)
02	Mesh and Node Analysis	(09)
03	Fourier Series	(06)
04	Laplace Transform & their application	(07)
05	Resonance	(03)
06	Two-Port Network	(12)
07	Passive Network Synthesis	(10)
08	Introduction of First order & Second order System with Examples	(06)
Total :		(60)

CONTENTS:

TOPIC: 01 – BASIC CIRCUIT ELEMENTS & WAVEFORMS: **[07]**

- 01.01 Circuit components
- 01.02 Standard Input Signals
- 01.03 Sinusoidal Signals

TOPIC: 02 –MESH AND NODE ANALYSIS: **[09]**

- 02.01 Kirchoff's Laws.
- 02.02 Source Transformation.
- 02.03 Mesh & Node analysis.
- 02.04 Magnetic coupling.

TOPIC: 03– FOURIER SIERIES: **[06]**

- 03.01 All forms of Fourier Series including trigonometry, Exponential etc.
- 03.02 Fourier Transform.

TOPIC: 04 –LAPLACE TRANSFORM & THEIR APPLICATION: **[07]**

- 04.01 Introduction.
- 04.02 Laplace transformation.
- 04.03 Application of Laplace transform in the solution of Linear Differential Equation.
- 04.04 Inverse Laplace Transform.

TOPIC: 05 –RESONANCE: **[03]**

- 05.01 Series Resonance
- 05.02 Parallel Resonance

TOPIC: 06 –TWO-PORT NETWORK:**[12]**

- 06.01 Introduction.
- 06.02 Open Circuit Impedance Parameters.
- 06.03 Short Circuit Admittance
- 06.04 Two Port Symmetry

TOPIC: 07 –PASSIVE NETWORK SYNTHESIS:**[10]**

- 07.01 Introduction.
- 07.02 Positive real function.
- 07.03 Two Terminal R-L Network.
- 07.04 Two Terminal R-C Network.

TOPIC: 08 –INTRODUCTION OF FIRST ORDER & SECOND ORDER SYSTEMS [06]**WITH EXAMPLES:****Books Recommended:**

- 1. Network & System - D. Roy Choudhury
- 2. Network & System - G. K. Mittal
- 3. Network & System - Vulkenberg
- 4. Network & System - Dacsur & Kuo

DATABASE MANAGEMENT SYSTEM

Subject Code 20605D	Theory			No of Period in one session : 60		
	No. of Periods Per Week			Full Marks	:	100
	L	T	P/S	Annual Exam.	:	80
	06	-	-	Internal Exam.	:	20

Rationale:

This subject will allow students to develop understanding of the basic concepts of data in general and Relational Database System in particular. The students will learn Database concept, Data Structure, Data Models, various approaches to Database design, strengths of relational model, Normalization.

Objective:

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

- Develop Database System to handle the real world problem.
- Understand Database design and normalization techniques.
- Use Standard Query Language and its various versions.
- Understand Importance

<u>S.No.</u>	<u>Topics</u>	<u>Periods</u>
01	Introduction to Database Systems(DBMS)	(04)
02	Database Architecture and Modelling	(04)
03	Entity Relationship Model	(03)
04	Relational Model	(04)
05	Relational Algebra and Relational Calculus	(06)
06	Introduction to SQL	(12)
07	Database Normalization	(06)
08	Backup and Recovery	(06)
09	Database Security and Integrity	(05)
10	Design and Development of Database Applications on Commercial RDBMS Platforms	(10)
Total :		(60)

CONTENTS:

<u>TOPIC: 01 – INTRODUCTION TO DATABASE MANAGEMENT SYSTEMS (DBMS):</u>	[04]
Why Database, Characteristics of Data in Database, DBMS, What is database Advantage of DBMS	
<u>TOPIC: 02 – DATABASE ARCHITECTURE AND MODELLING:</u>	[04]
Conceptual, physical and logical database models, Role of DBA, Database Design	
<u>TOPIC: 03 – ENTITY RELATIONSHIP MODEL:</u>	[03]
Components of ER Model, ER Modelling Symbols, Super Class and Sub Class types. Attribute Inheritance. Specialization, Generalization, Categorization.	
<u>TOPIC: 04 – RELATIONAL DBMS:</u>	[04]
Introduction to Relational DBMS. RDBMS Terminology.	
<u>TOPIC: 05 – RELATIONAL ALGEBRA AND RELATIONAL CALCULUS:</u>	[06]
Relational Algebraic operations, Tuple Relational Calculus, Domain Relational Calculus	

TOPIC: 06 – INTRIDUCTION TO SQL: [12]

History of SQL. Characteristics of SQL. Advantages of SQL. SQL in Action SQL data types and Literals. Types of SQL commands. SQL Operators and their precedence. Tables, Views and Indexes. Queries and Sub queries. Aggregate functions. Insert, Update and Delete operations. Joins, Unions, Intersection, Minus, Cursors in SQL, Embedded SQL.

TOPIC: 07 – DATABASE NORMALISATION: [06]

Keys, Relationships, First Normal Form, Functional dependencies, Second Normal Form, Third Normal Form, Boyce-Codd Normal Form, Fourth Normal Form, Fifth Normal Form, Case Study

TOPIC: 08 – BACK UP AND RECOVERY: [06]

Database backups. Why plan backups? Hardware protection and redundancy. Transaction logs. Importance of backups. Database recovery. Data Storage. Causes of failures. Recovery concepts and terminology. Recovery facilities. Recovery techniques. Detached transaction actions, Disaster Database Management System

TOPIC: 09 – DATABASE SECURITY AND INTEGRITY: [05]

Types of Integrity constraints. Restrictions on Integrity constraints. Data security risks. Complex user management requirements. Dimensions of security. Data security requirements. Database users. Protecting data within the database. Granting and revoking privileges and roles. System viability factors. Authenticating users to the database.

TOPIC: 10 – DESIGN AND DEVELOPMENT OF DATABASE APPLICATIONS ON COMMERCIAL RDBMS PLATFORMS: [10]

Student is expected to achieve a level of competence in at least one of the standard commercial RDBMS products under desktop or multi-user environment to be able to develop a small to medium application; the student must also acquire skills for independently designing on-line database applications. The skills required for design and developments are; Database design. Applications design. SQL. Embedded SQL. Trouble-shooting. Performance tuning and documentation.

In application design, focus should be on on-line applications in database environments; the students should get sufficient insight into issues in menu design, screen design, data validations in data entry screens, report designs and an overview of GUI design. These skills must be demonstrated through the course project including the project report and viva-voce.

Concepts of DBMS will be implemented by using the popular relational DBMS package such as ORACLE/ MS-SQL.

Books Recommended:

Text Books

1. Database Management Systems, First Edition, 2002, Vikas Publishing House - A. Leon & M. Leon
2. Fundamentals of Database Systems, Third Edition, 2000, Addison Wesley - R. Elmasri, S. Navathe

Reference Books:

1. Database System Concepts, Third Edition, 1997, McGraw-Hill Internation - H. Korth, A. Silberschatz
2. An Introduction to Database Systems, Galgotia Publication - B. Desai
3. Database Processing: Fundamentals, Design Implementation, Prentice Hall of India. - D.K. Kroenke
4. Database Management Systems, First Edition, 1996, McGraw Hill - P. Bhattacharya and A.K. Majumdar
5. Database System Concepts, Fourth Edition, 1997, Tata McGraw Hill - Abraham Silberschutz, Henry Korth & S. Sudarshan

ELECTRIC TRACTION LAB

Subject Code 20606	Practical			No of Period in one session : 50		
	No. of Periods Per Week			Full Marks		
	L	T	P/S	Annual Exam.	:	50
	-	-	2	Internal Exam.	:	40
					10	

Rationale:

The background of theoretical knowledge about Electric Traction has been imparted in the theoretical portions.

However, the electrical diploma holders will require to handle various traction equipments in the field whenever they are given charge of. So, it is essential that the students are able to handle the model equipments physically.

Objectives:

The coverage of syllabus of the subject is made in such a way that the students will get thorough knowledge of handling the machines & instruments. By performing such experiments they will gain confidence to face the problems from front and take proper steps for their rectification and removal. The students will be able to understand the theory that they have read, better by performing the prescribed experiments besides developing better skill.

Name of Experiments:

- 01 Determination of control of D. C. Shunt motor by thyristor control method.
- 02 Study of speed-time curves for Train movement.
- 03 Determination of Tractive force-speed characteristics of a slip-ring Induction motor.
- 04 Study of Rheostatic Braking in a D. C. Shunt motor.
- 05 Study of Rheostatic Braking in an Induction motor.
- 06 Determination of Torque-slip characteristics of three phase Induction motor.
- 07 Study of Regenerative braking in a D. C. Shunt motor/D.C. series motor.
- 08 Determination of Tractive force speed characteristics of a D. C. series motor under different diverter positions.
- 09 Study of systems of Electrification for Traction purposes.
- 10 Determination of speed-current characteristics of D. C. shunt motor.
- 11 Determination of speed-torque characteristics of D. C. series motor.
- 12 Study of Train movement mechanism.

Books Recommended:

- | | |
|---|------------------------|
| 1. Electric Traction | - Hazra and Choudhary. |
| 2. Laboratory Expects in Electrical Power, Khanna Publishers. | - C. S. Indulkay. |
| 3. Utilization of Electrical Power and traction, Khanna Publishers. | - G.C. Garg. |
| 4. Study of Electrical Appliances and Drives, Khanna Publishers. | - K. B.Bhatia. |

Electrical & Electronics Measurement Lab

Subject Code 39607	Theory			No of Period in one session : 60		
	No. of Periods Per Week			Full Marks	:	50
	L	T	P/S	Annual Exam.	:	40
	06	-	-	Internal Exam.	:	10

- | | | |
|-------|---|--------|
| 1. | Measurement of Resistance (Low, medium) by using Kelvin Double bridge method. | (06) |
| 2. | Measurement of Insulation Resistance of Live mains. | (03) |
| 3. | Calibration of Ammeter by D.C. Potentiometers. | (06) |
| 4. | Measurement of Inductance by using Maxwell's wein Bridge and Hay Bridge. | (06) |
| 5. | Measurement of Capacitance by Schering Bridges. | (03) |
| 6. | Extension of Range of Ammeter and Voltmeter. | (06) |
| 7. | Calibration of Wattmeter. | (06) |
| 8. | Testing of Energy Meter. | (06) |
| 9. | Measurement of Single phase power without using wattmeter. | (03) |
| 10. | Study of Transducers. | (03) |
| 11. | Study of Digital Multimeter. | (03) |
| 12. | Display of Electrical Signals by C.R.O. | (03) |
| 13. | Measurement of Frequency by voltage Signal by C.R.O. | (03) |
| 14. | Study of Digital Voltmeter (DVMS.) | (03) |
| Total | | (60) |

Books Recommended:-

- | | |
|---|---------------|
| 1. Laboratory Expects in Electrical Power ----- | C.S. Indulkay |
| 2. Study of Electrical Appliances & Drives ----- | K.B.Bhatia |
| 3. Text Book & Laboratory Course in Electrical ----- | S.G. Jarnekar |
| 4. Electrical & Electronics Measuring Instruments ----- | A.K. Sawhney |
| 5. A Course in Electronics & Electrical Measurements & Instrumentation ---- | J.B. Gupta |

PROFESSIONAL STUDIES & ENTREPRENEURSHIP

Subject Code 00607	Sessional			No of Period in one session : 50		
	No. of Periods Per Week			Full Marks	:	50
	L	T	P/S	Annual Exam.	:	30
	-	-	04	Internal Exam.	:	20

Rationale:

The paper has been introduced to achieve dual purpose for the students.

Firstly, this course provides the basics of Professional management and secondly it also prepares the student to undertake independent venture by becoming an entrepreneur.

This makes them conversant with their duties and responsibility to make them successful in their career building.

Objectives:

With the input provided in this paper, the students will be able to :-

- Acquire basic knowledge of management.
- Understand the area of management such as human resources, marketing, finance and commercial aspect.
- Understand the benefit of becoming an entrepreneur.
- Handle a project efficiently and in dependently.

To prepare a Project Report on any of the followings:-

<u>S.No.</u>	<u>Topics</u>
01	Project Identification and formulation Report.
02	Project Profile/Pre-feasibility Report.
03	Techno-economical Feasibility Report (TEFR).
04	Market Survey Report.

CONTENTS

S.NO. TOPICS

TOPIC – 01 : PROJECT IDENTIFICATION AND FORMULATION REPORT:

- ◆ Introduction.
- ◆ Collection of Data.
- ◆ Compilation of Data.
- ◆ Analysis and Assimilation of Data.
- ◆ Product Selection.
- ◆ Report Finalisation and Report Writing.

TOPIC - 02 : PROJECT PROFILE/PRE-FEASIBILITY REPORT :

- ◆ Introduction of the product.
- ◆ Market.
- ◆ Man Power (Personnel Required).
- ◆ Manufacturing Process.
- ◆ Plant and Machinery.
- ◆ Cost of Project.
- ◆ Means of Finance.
- ◆ Cost of Production.
- ◆ Annual Turnover.
- ◆ Profit.
- ◆ Profit on Investment.

TOPIC – 03: TECHNO-ECONOMICAL FEASIBILITY REPORT (TEFR).

- ◆ Introduction on product.
- ◆ Market Prospects and Marketing.
- ◆ Location.
- ◆ Manufacturing Programme and Annual Turnover.
- ◆ Manufacturing Process.
- ◆ Cost of Project.
- ◆ Means of Finance.
- ◆ Requirement of Raw materials, Consumables, Utilities and Working Capital.
- ◆ Organisational Structure, Management and Man Power.
- ◆ Project Implementation Schedule.
- ◆ Profitability and Cash Flow.

TOPIC - 04 : MARKET SURVEY REPORT:

- ◆ Data Collection & Processing through Primary & Secondary Sources- Questionnaire method, e-mail, by post, by phone.
- ◆ Present Status.
- ◆ Growth of the Industry.
- ◆ Import and Export.
- ◆ Present market Demand.
- ◆ Forecast.
- ◆ Future Prospect/Scope.
- ◆ Market Segmentation.

Books Recommended:-

1. Essential of Management, Tata McGraw Hill, - Herald Koonz & Cyril O' Donnel.
Publishing Company Ltd., New Delhi.
2. Business Organisation and Management, S. C. Chand - M. C. Shukla
and Company (Pvt.) Ltd., Ram Nagar, New Delhi
3. Managerial Economics, Sultan Chand & Sons, New - R. L. Vashney & K. L. Maheshwari
Delhi
4. Project Appraisal and Follow up, Govind Prakashan, - D. P. Sharda
Mumbai.
5. Modern Marketing Management, Progressive - Dr. Rustam S. Davar
Corporation Pvt. Ltd., P51, Mahatma Gandhi Road,
Bombay-400 001
6. A hand book for new entrepreneurs (with special - Entrepreneurship Development Institute
reference to science and technology target group) of India, 83-A, Swastic Society
Navrangpura, Ahmedabad, PIN-380 009.
7. Student discipline - Published by I.S.T.E. Mysore
8. Communication Skill - Published by I.S.T.E. Mysore
9. Decision Making - Published by I.S.T.E. Mysore
10. Pollution Control in Industry - Published by I.S.T.E. Mysore
11. S.S.M. in Environmental Engineering - Published by I.S.T.E. Mysore
12. Leadership in Organisation - Published by I.S.T.E. Mysore
13. Small Enterprise Management - Published by I.S.T.E. Mysore
14. Motivation - Published by I.S.T.E. Mysore
15. Fundamentals of Environmental Pollution - Krishnan and Kannan
16. Enviromental Engineering, T.T.T.I., Madras - Tata Mcgraw Hill
17. Motivation I.I.T. Kanpur - Published by I.S.T.E. Mysore
18. Mine Management - V.N. Singh, Bangle Prining Press Ranchi
19. Hand book on Project Appraisal and follow up, Govind - D. P. Sarda
Prakashan, 204, Saraswati Kunj, 90, S. V. Road,
Goregoan, Bombay-400 062.
20. Bihar Industrial Policy - Government of Bihar, Department of
Industries.
21. Entrepreneurship Guide - Bihar State Financial Corporation, Fraser
Road, Patna-800 001.
22. Management Economics, S. Chand & Sons, 4792/23, - R. L. Varshney & G. L. Maheshwari
Dariaganj, New Delhi-110 002.
23. Management Principles & Practices, S. Chand & Sons, - L. Prasad & S. S. Gulshan
4792/23, Dariaganj, New Delhi-110002.

PROJECT WORK AND ITS PRESENTATION IN SEMINAR

Subject Code 21609	Sessional			No of Period in one session : 50		
	No. of Periods Per Week			Full Marks	:	100
	L	T	P/S	Annual Exam.	:	60
	-	-	-	Internal Exam.	:	40

Rationale :

The Project work and its presentation in seminar is an important subject for a Diploma holder technician. The course is designed to help a students develop confidence, skill in report writing, skill to analyse, design, estimating and costing, deciding a process etc, the course will also help in developing communication skill, skill of quality documentation.

Objective:

A student will be able to:

- Identify a Problem
- Analyse the Problem
- Develop logical approach to solution of a Problem.
- Design of a product
- Make estimate of materials and processes and calculate the cost of production and decide the price of the product.
- Manufacture / assemble /fabricate the product in the workshop.
- Test the product for its quality.
- Prepare a project report (Computer printed / typed)
- Present in the form of seminar.

CONTENTS

<u>S.No.</u>	<u>Topics</u>
01	To make a bridge rectifier.
02	To make/assemble a voltage stabilizer.
03	To make/assemble stabilizer for refrigerator.
04	To make a timer circuit IC 555.
05	Electronic Regulator for Ceiling Fan.
06	To fabricate a circuit for characteristics for NPN/PNP transistors.
07	Bi-stable Multivibrator
08	Half & Full adder, subtractor & Comparator.
09	8:1 Multiplexer.
10	Realising Railway Signaling System.

REPORT WRITING:

A report must include

<u>S.No.</u>	<u>Topics</u>
01	Introduction.
02	Design.
03	Estimating of materials.
04	Calculation of cost of the materials.
05	Operation time estimation.
06	Cost of Operation.
07	Process of Manufacture / Assembly / fabrication.
08	List of tools/equipments used with specification.

A project on live industrial problems that may be—

- Technical
- Human Relation
- Welfare
- Safety
- Any other

The Project Report should consist of :-

- 01 Introduction.
- 02 Problem statement.
- 03 Background of Industry.
- 04 Organisational set –up.
- 05 Plant Lay –out.
- 06 Reason for selecting a problem.
- 07 Analysis of Problem.
- 08 Probable solution.
- 09 Best solution possible.
- 10 Any other.

Project work/ project report should be presented in the form of a seminar for developing confidence and communication skill among the students.

NOTE:-

Project work will be allotted to the students just in the beginning of the session. Each student will be given a separate work under the supervision of a teacher. Total number of students may be divided among the number of teachers available. The teacher concerned will select separate problem for each student under him and allot it to him at the beginning of the session. The work allotted should be completed within the scheduled time, i.e. by the end of the session. Problems selected should preferably conform to the syllabus. If it is outside of the syllabus then it must be within the field of electronics engineering.