

MAHARASHTRA STATE BOARD OF TECHNICAL EDUCATION, MUMBAI																	
TEACHING AND EXAMINATION SCHEME																	
COURSE NAME : DIPLOMA IN SURFACE COATING TECHNOLOGY.																	
COURSE CODE : SC																	
DURATION OF COURSE : SIX SEMESTERS /THREE YEARS										DURATION : 16 WEEKS							
SEMESTER : FIRST SEMESTER										WITH EFFECT FROM 2007-08							
FULL TIME/PART TIME : FULL TIME										SCHEME - C							
Sr. No.	SUBJECT TITLE	SUBJECT CODE	TEACHING SCHEME			EXAMINATION SCHEME											
			TH	TU	PR	PAPER HRS.	TH		TEST	TOTAL		PR		OR		TW	
							Max	Min		Max	Min	Max	Min	Max	Min		
01	English \$	9004	03	--	02	03	80	28	20	100	40	--	-	--	--	25@	10
02	Applied Chemistry - I	9617	03	--	03	03	80	28	20	100	40	50#	20	--	--	25@	10
03	Technology Of Resins - I	9618	03	--	03	03	80	28	20	100	40	--	--	--	--	25@	10
04	Technology Of Pigment - I	9619	03	--	03	03	80	28	20	100	40	50#	20	--	--	25@	10
05	Computers Fundamentals \$	--	--	--	04	--	--	--	--	--	--	50#*	20	--	--	25@	10
TOTAL			12	--	15	--	320	--	80	400	--	150	--	--	--	125	--
STUDENT CONTACT HOURS PER WEEK (FORMAL TEACHING) : 27 Hours																	
THEORY AND PRACTICAL PERIODS OF SIXTY MINUTES EACH																	
@ - INTERNAL ASSESSMENT, # - EXTERNAL ASSESSMENT , *# - ON LINE EXAMINATION, \$ - COMMON WITH ENGINEERING & TECHNOLOGY COURSES																	
TOTAL MARKS : 675																	
ABBREVIATIONS : TH – THEORY, TU – TUTORIAL, PR – PRACTICALS, OR – ORAL, TW – TERM WORK.																	
All Practical , Oral & Term work assessment are to be done as per the prevailing norm implementation & assessment .																	

COURSE NAME : DIPLOMA IN SURFACE COATING TECHNOLOGY

COURSE CODE : SC

SEMESTER : FIRST

SUBJECT TITLE : ENGLISH

SUBJECT CODE : 9004

Teaching and Examination Scheme:

Teaching Scheme			Examination Scheme						
TH	TU	PR	PAPER HRS.	TH	TEST	PR	OR	TW	TOTAL
03	-	02	03	80	20	-	-	25@	125

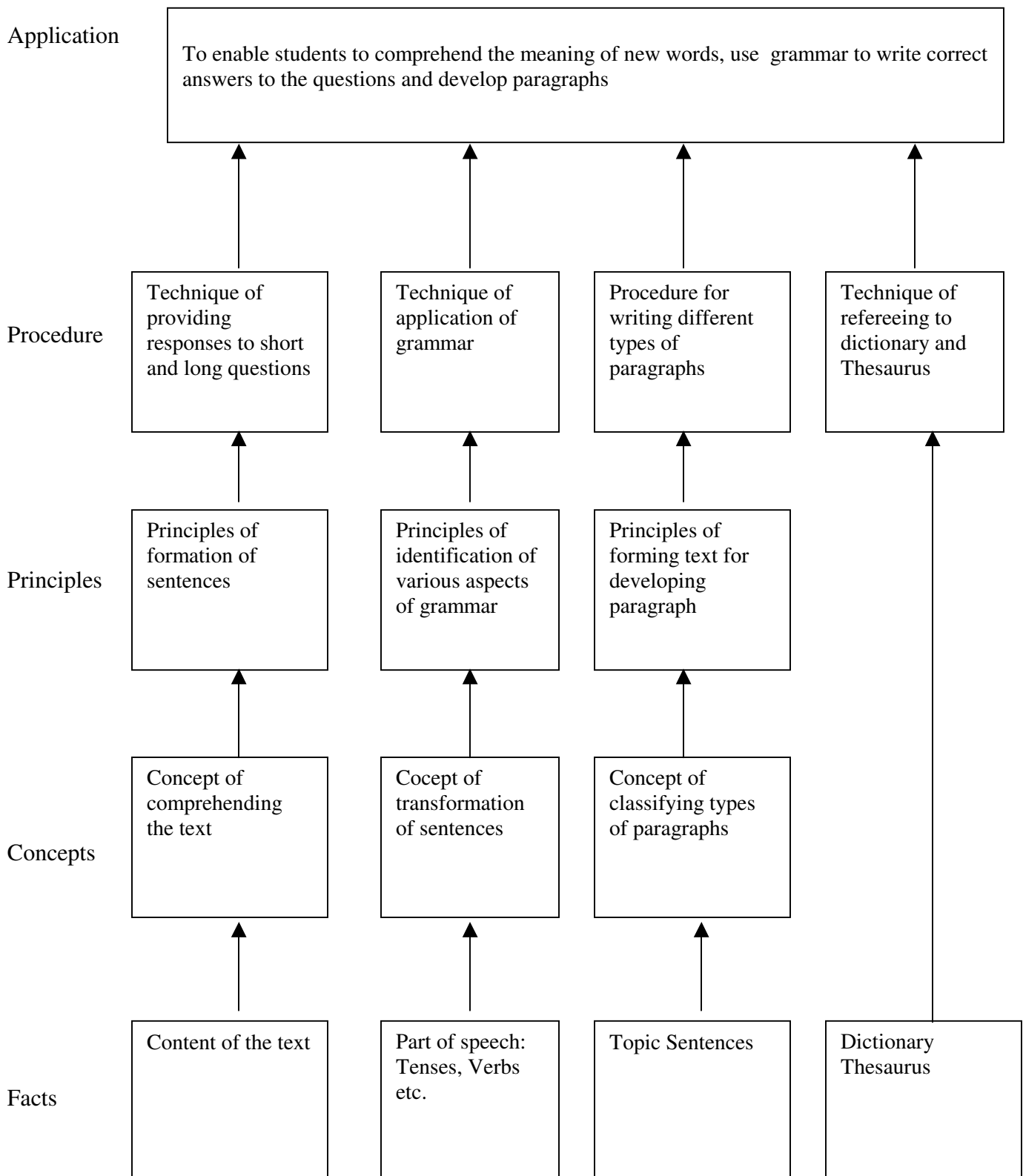
Rationale:

The snap study conducted for the role of technicians in industry revealed that diploma pass outs lack in grammatically correct written and oral communication. In order to develop the abilities in students a text has been introduced. The practical have been incorporated to provide practice to the students to develop writing skills. Further exercises have been included for improving oral communication.

Objectives:

1. Comprehend the given passage
2. Answer correctly the questions on seen and unseen passages
3. Increase the vocabulary
4. Apply rules of grammar for correct writing

Learning Structure:



CONTENTS: Theory

Name of Topic	Hours	Marks
PART I: TEXT <ul style="list-style-type: none">• Vocabulary - Understanding meaning of new words from text• Comprehension – Responding to the questions from text• Identifying parts of speech	24	40
PART II -Application of grammar <ul style="list-style-type: none">• Verbs• Tenses Do as directed (active /passive, Direct/indirect, affirmative/negative/assertive, question tag, remove too, use of article, preposition ,conjunctions, interjections, punctuation)	16	20
PART III - Paragraph writing <ul style="list-style-type: none">• Definition – Types of paragraphs• How to write a paragraph	03	10
PART IV - Vocabulary building <ul style="list-style-type: none">• Word formation• Technical jargon• Use of synonyms /antonyms/Homonyms/paronyms• One word substitute	05	10
Total	48	80

Text will consist of 10 articles/Lessons

The term work will consist of 9 assignments:

The assignments should be written in A4 size note books (100 pages ruled)

Skills to be developed for practical:

Intellectual Skills:

- 1 Skills of speaking in correct English.
- 2 Searching information.
- 3 Reporting skills.

Motor Skills:

- 1 Use of appropriate body language.
- 2 Use of mouth organs

List of Assignments:

- 1** Building of Vocabulary –(4 Hours) (2 assignments)
 - a) 25 words for each assignment from the glossary given in the text book at the end of each chapter
 - b) Technical Jargons--- (2 Hours) (1 assignment)
Identify 10 technical words from the respective branches.
Resource – (Encyclopedia/Subject Books)
- 2** Grammar (4 Hours) 2 assignments.
 - a) Insert correct parts of speech in the sentences given by the teachers.
(16 sentences—Two each, from the different parts of speech)
 - b) Punctuate the sentences given by the teachers. (10 sentences)
- 3** Conversational skills: Role plays (8 hours)
 - a) Students are going to perform the role on any 6 situations, by the teacher.
 - b) Dialogue writing for the given situations. (2 assignments)
- 4** Write Paragraphs on given topics (6 hours) (2 assignments)
Four types of paragraphs to be written in **two assignments** covering two types in one assignment.
- 5** Errors in English (4 hours) (2 assignments)
 - a) Find out the errors and rewrite the sentences given by the teacher. (20 sentences)

Learning Resources:

Books:

Sr. No.	Title	Author	Publisher
01	Contemporary English grammar, structures and composition	David Green	Macmillan
02	English grammar and composition	R. C. Jain	Macmillan
03	Thesaurus	Rodgers	Oriental Longman
04	Dictionary	Oxford	Oxford University
05	Dictionary	Longman	Oriental Longman
06	English for practical Purposes	Z. N. Patil et al	Macmillan
07	English at Workplace	Editor – Mukti Sanyal	Macmillan

COURSE NAME : DIPLOMA IN SURFACE COATING TECHNOLOGY.

COURSE CODE : SC

SEMESTER : FIRST.

SUBJECT TITLE : APPLIED CHEMISTRY-I

SUBJECT CODE : 9617

Teaching and Examination Scheme:

Teaching Scheme			Examination Scheme						
TH	TU	PR	Paper Hrs.	TH	TEST	PR	OR	TW	TOTAL
03	--	03	03	80	20	50 #	--	25 @	175

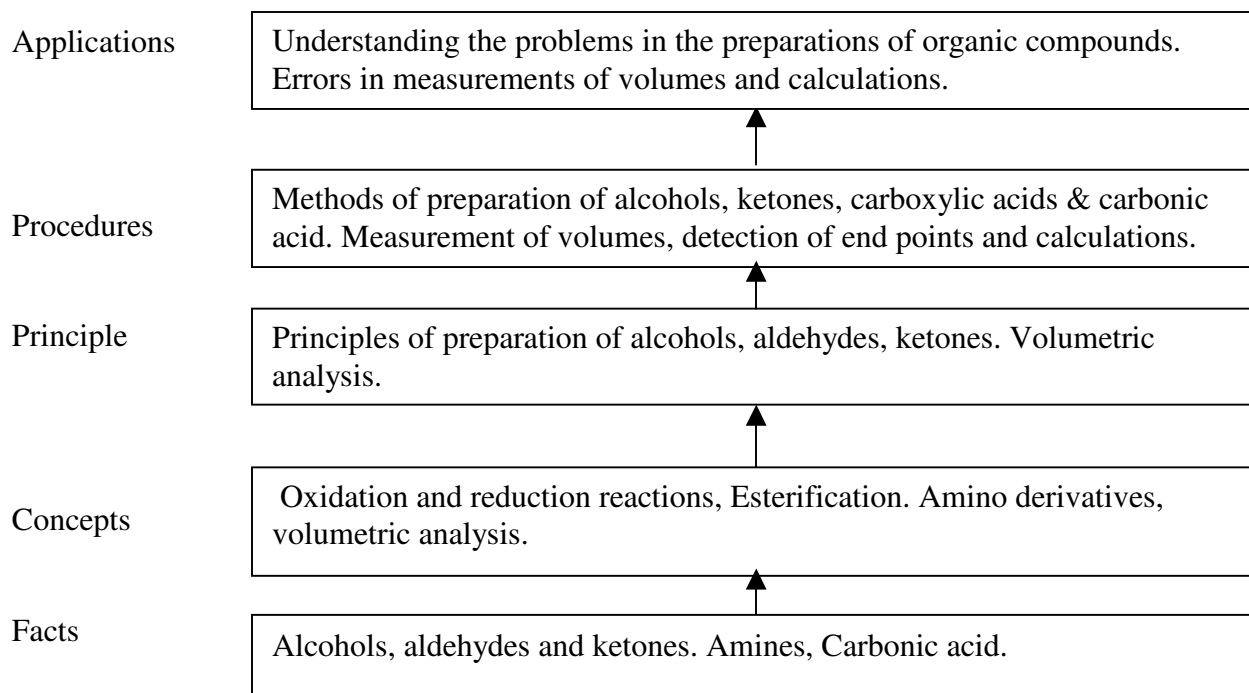
Rationale:

This subject will help the students to comprehend the fundamentals of Chemistry and the students will familiarize with various raw materials, testing through volumetric analysis and their applications in Surface Coating Technology.

Objectives: The students will be able to :

1. describe methods of preparation of alcohols, aldehydes, ketones, carboxylic acids.
2. apply knowledge of volumetric analysis to the analytical work of core technology and technology subjects.
3. select proper chemicals for core technology.

Learning Structure :



Contents : Theory

Chapter	Name of the title	Hrs.	Marks
1	Alcohol – 1.1 Methods of preparation, Properties and uses of : Methyl alcohol, ethyl alcohol, ethylene glycol glycerol and penta-erythritol, TMP, Neo Pentyl Glycol, Sorbitol Marks : 10 1.2 Characteristics of these compounds as solvents. Marks : 06	10	16
2	ALDEHYDES & KETONES – 2.1 Methods of Preparation, Properties and uses of : Formaldehyde, acetaldehyde, acetone and MEK, MIBK. Marks : 12 2.2 Characteristics of these compounds as solvents. Marks : 04	10	16
3	Carboxylic Acids & Esters – Methods of Preparation, Properties and uses of : Acetic acid, Succinic acid, Maleic acid, Fumaric acid, Benzoic acid, Phthalic acid. TMA, THPA, HHPA.	10	16
4	Amines & Carbonic Acid Derivative – 4.1 Methods of Preparation, Properties and uses of : Aniline, Sulphanilic acid, Melamine. Marks : 08 4.2 Methods of preparation, properties and uses of : Urea and Urethanes. Marks : 08	10	16
5	Volumetric Analysis – 5.1 Requirements, standard solutions, primary standards, indicators, choice of indicators, calculations of volumetric analysis. Marks : 10 5.2 Types of reactions in titrimetric analysis. Marks : 06	8	16
Total		48	80

Practical:**Skills to be developed:****Intellectual skills:**

1. To understand Molecular weight, Equivalent weight, 1 N solution and strength of solutions.

2. To identify types of reactions.
3. To describe mentally experimental set-up, conduct observations and inferences.

Motor skills:

1. Cleaning of glass-ware, weights and measurements, setting of glass-ware for experiments.
2. Controlling of optimum conditions of reactions.
3. Determining the mean burette readings.

List of Practicals: [Minimum 12 Experiments to be completed]

1. To prepare 0.1 N HCl and 0.1 N NaOH and their standardization.
2. To prepare 0.1 N KMnO_4 and its standardization.
3. To determine the amount of Ferrous sulphate in the given solution.
4. To determine the amount of Copper sulphate in the given solution.
5. To determine the amount of Glycerol in the given solution.
6. To determine the amount of Formaldehyde in the given solution.
7. To determine the amount of Acetone in the given solution.
8. To prepare a sample of Acetanilide from Aniline.
9. To prepare a sample of Methyl orange.
10. To carry out colour test for Urea and Thiourea : M.P. and colour reaction.
11. To prepare a sample of Benzoic acid from Benzaldehyde/ Toluene.
12. To prepare a sample of Phthalic acid from o-xylene.
13. To determine amount of Sodium carbonate/bicarbonate in their mixture of soln.
14. To determine the amount of Sodium carbonate/hydroxide in their mixture of solution
15. To estimate the amount of acetamide in the given solution.
16. To determine the amount of ester in the given solution.

Learning Resources:

Books:

Sr. No.	Author	Title	Publisher
1	Peter Sykes	Guide book to mechanism in Organic Chemistry.	Orient Longman Ltd.
2	Bahl & Tuli	Essentials of Physical Chemistry.	S Chand & Co.
3	L H Gadgi & D B Kulkarni	A Text Book of Chemistry.	Narendra Prakashan, Pune
4	B S Bahl & Arun Bahl	Text Book of organic Chemistry.	S. Chand & Co.
5	V K Ahluwalia, Sudha Raghav.	Comprehensive Experimental Chemistry.	New Age International Publisher.

COURSE NAME : DIPLOMA IN SURFACE COATING TECHNOLOGY.

COURSE CODE : SC

SEMESTER : FIRST.

SUBJECT TITLE : TECHNOLOGY OF RESINS I

SUBJECT CODE : 9618

Teaching and Examination Scheme :

Teaching Scheme			Examination Scheme						
TH	TU	PR	Paper Hrs.	TH	TEST	PR	OR	TW	TOTAL
03	--	03	03	80	20	--	--	25 @	125

Rationale:

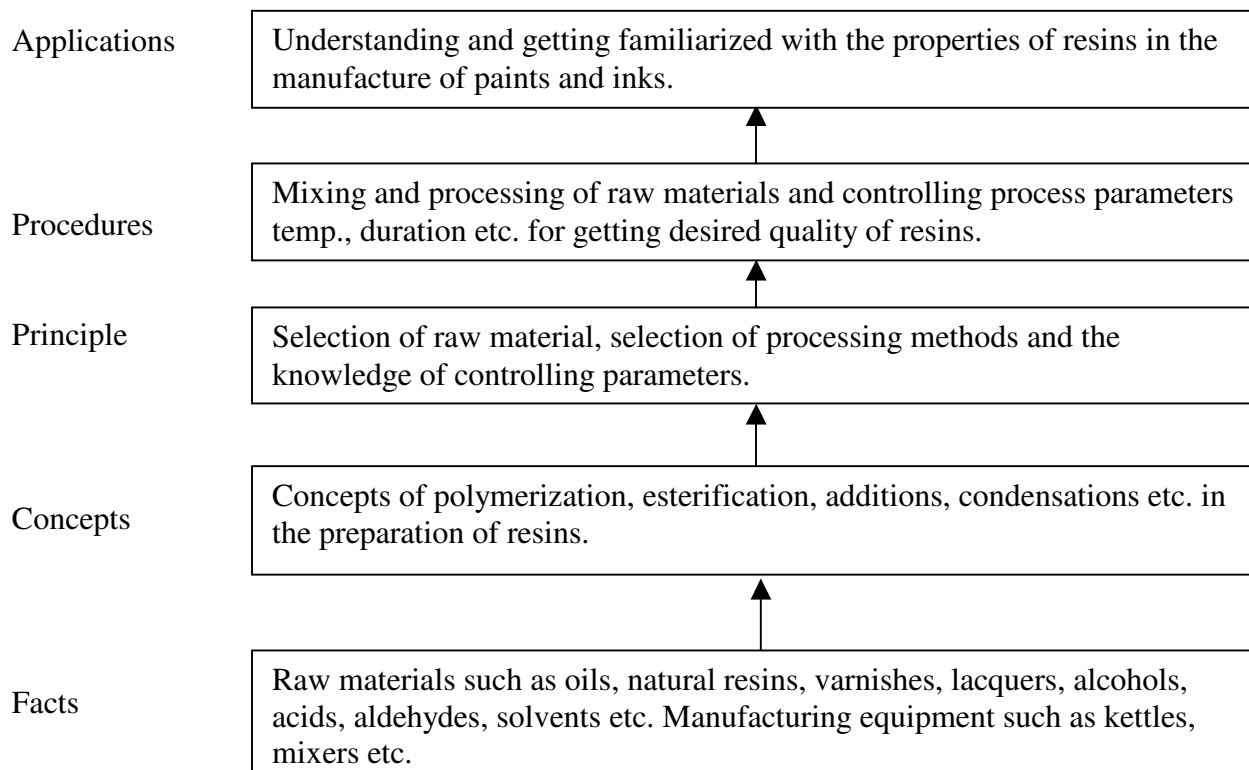
This subject will explain the importance of resin as a vehicle, medium, binder, film forming material and polymer. It will explain the basic chemistry, manufacturing processes and properties of resins. The subject will explain the behavior induced by resin in the particular paint and thereby affecting the properties or performance of paint during application and after application, during life cycle of paint.

Objectives:

Students will be able to :

1. describe natural and synthetic resins.
2. describe manufacturing processes and properties of resins.
3. identify application areas of various types of resins in coatings.

Learning Structure :



Contents: Theory

Chapter	Name of the topic	Hrs.	Marks
1	<p>1.1 Oils, Natural Resins & Varnishes – Classification of oils : Drying oils, semi drying oils, Non drying oils : Linseed, Tung oil, DCO, Safflower oil, Soyabin, Ricebran oil, Coconut oil. Uses of oils in paints and varnishes. Drying mechanism. Uses of following natural resins : Rosin, Shellac, Bone glue. Marks : 08</p> <p>1.2 Preparation of varnishes from oils and Natural Resins – Their properties and uses – Ester Gum, Calcium hardened Rosin, Maleic hardened Rosins, Oleo-resinous varnishes, Penta ester based on linseed oil and above natural and modified resins. Marks : 08</p>	10	16
2	<p>2.1 Hydrocarbon Resins – Hydrocarbon resins – their properties and uses – terpene. Bituminous resins – classification and uses – Gilsonite, Rafetite, Coal tar pitch Nitrocellulose – Classification, Properties and uses. Marks : 12</p> <p>2.2 Resins based on CNSL – Properties and uses. Marks : 04</p>	8	16
3	<p>3.1 Alkyd Resins – Raw materials, Classification, Manufacturing methods, Properties and uses = Resin manufacture. Marks : 08</p> <p>3.2 Modified alkyd resins : Rosinated alkyd, Styrenated alkyd. Marks : 08</p>	10	16
4	<p>4.1 Polyester Resins – Classification, Saturated Polyesters, Unsaturated Polyesters. Marks : 04</p> <p>4.2 Raw materials, Manufacturing, Properties, uses curing agents. Marks : 12</p>	10	16
5	<p>5.1 Amino & Phenolic Resins – Classification, Chemistry, Properties and Uses of Amino resins, Comparison of Urea Formaldehyde and Melamine Formaldehyde resins. Marks : 10</p> <p>5.2 Types of Phenolic resins – Properties and uses : Oil soluble, spirit soluble and Novolac type. Marks : 06</p>	10	16
Total		48	80

Practical :

Skills to be developed:

Intellectual skills :

1. Identify required glass-ware
2. Detect end point.
3. Interpret the result analysis

Motor skills :

1. Handle analytical balance.
2. Measure the quantity accurately.
3. Setting of glass-ware for experiment.

List of Practicals: [Minimum 12 experiments to be completed]

1. To determine the acid value of samples of oils.
2. To determine the iodine value of samples of oils.
3. To prepare a sample of D.C.O. from castor oil.
4. To prepare and test sample of varnish from Calcium rosinate.
5. To prepare and test sample of varnish from Ester gum.
6. To prepare and test sample of Oleo-resinous varnish.
7. To prepare and test Bituminous lacquer.
8. To prepare and test N.C. lacquer.
9. To test various properties of Alkyd resins.
10. To determine the free formaldehyde content of Amino resins.
11. To test the hydroxyl value of Phenolic resin.
12. To carry out the testing of Phenolic and Maleic resins for M. P., compatibility with solvents, oils and alkyd resins.
13. To compare the properties of varnish and alkyd resins.
14. To test the various properties of Amino resins.
15. To check acid and alkali resistance of alkyd resin.

Learning Resources:

Books:

Sr. No.	Author	Title	Publisher
1	R. Sinha	Outlines of Polymer Technology.	Prentice-Hall of India
2	O C C A	Solvents, Oils, Resins & Driers.	Chapman & Hall.
3	O C C A	Convertible Coatings, Part III	Chapman & Hall.
4	H F Paynee	Organic Coatings, Vol. I	John Wiley & Sons.
5	W M Morgan	Outline of Paint Technology, Raw Materials.	S K Jain for CBS Publisher & Distributor
6	V C Malshe & Minal Sikchi	Basic Paint Technology, Part I	--

COURSE NAME : DIPLOMA IN SURFACE COATING TECHNOLOGY.

COURSE CODE : SC

SEMESTER : FIRST.

SUBJECT TITLE : TECHNOLOGY OF PIGMENT-I

SUBJECT CODE : 9619

Teaching and Examination Scheme :

Teaching Scheme			Examination Scheme						
TH	TU	PR	Paper Hrs.	TH	TEST	PR	OR	TW	TOTAL
3	--	3	3	80	20	50 #	--	25 @	175

Rationale:

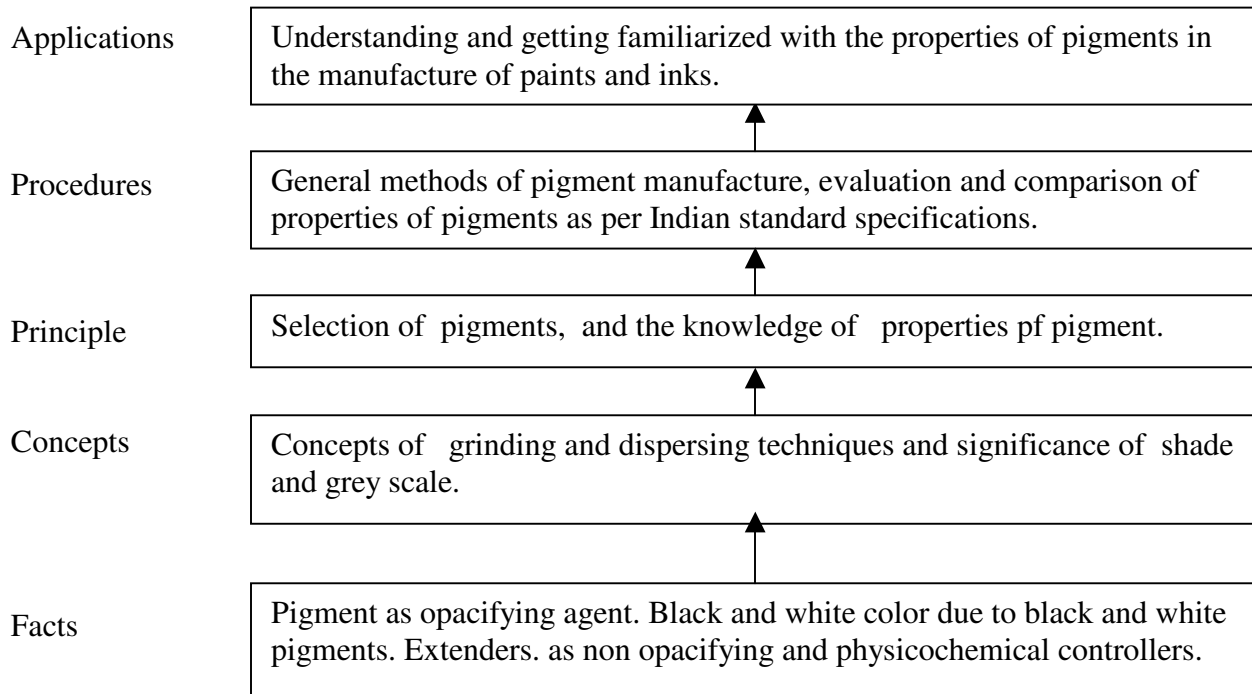
This subject will give basic knowledge about pigments and their role in paints. This subject will deal only with black and white pigments and extenders. This will make the students' grasping easier as this is a new technology for students. The subject will include the names of pigments, processing, their properties and uses.

Objectives:

Students will be able to :

1. describe black and white pigments.
2. describe general properties of pigments and extenders.
3. identify applications of pigments in paints.

Learning Structure :



Contents: Theory

Chapter	Name of the topic	Hrs.	Marks
1	Introduction - Definition, Classification of Pigments – Role of Inorganic and Organic pigments. Difference between pigments and extenders. Marks : 08	6	12
1.2	Survey of Pigment industry. Marks : 04		
2	Processing Of Pigments & General Properties – 2.1 Significance and testing of properties such as Colour, Staining Power, Reducing Power, Oil absorption, Bulk density, Particle size by Sieve analysis and other methods. Fastness to light, Resistance to chemicals and heat. Opacity, Bleeding and Toxicity of pigments. IS : 33 & 34. Marks : 08	10	16
2.2	General methods of manufacturing of Pigments. Grinding techniques. Marks : 08		
3	White Pigments – Manufacturing methods, Properties and uses of : Titanium Dioxide- Anatase and Rutile. Zinc oxide, Zinc Phosphate, Lithophone, Antimony oxide.	10	16
4	Extenders - Manufacturing methods, Properties and uses of : Barytes, China Clay, Calcium Carbonate, Talc, Silica, Blanc Fixe, Alumina hydrate, Dolomite, Fly ash and whiting.	12	20
5	Black Pigments - Manufacturing methods, Properties and uses of : Carbon Black, Vegetable Black, Graphite, Iron Oxide.	10	16
Total		48	80

Practical :

Skills to be developed:

Intellectual skills:

1. To understand structure and Molecular weights of Pigments.
2. To understand particle size, shape and texture of Pigments.
3. To understand reducing power and opacity of Pigments/ Extenders.
4. Detection of color for bleeding test.

Motor skills:

1. Handling of Palette knife for mixing.
2. Working on Automatic Muller for Mixing.
3. Taking draw downs for comparative study of Pigments.

List of Practicals: [Minimum 12 experiments to be completed]

1. Identify properties of white pigments such as : Particle size, texture, shape etc.
2. Determine properties such as Sp. Gr., Bulk density of white pigments/extenders.
3. Determine properties such as Specific Gravity, Bulk density of black pigments.
4. To determine residue on sieve of pigments / extenders.
5. To determine moisture content in pigments.
6. To determine oil absorption value of white pigments.
7. To determine oil absorption value of Extenders.
8. To determine resistance to acid/alkali of white pigments, and pH of water extract.
9. To determine resistance to heat of white pigments.
10. To take draw down of white pigments using Automatic Muller.
11. To determine Reducing Power of white pigments.
12. To determine livering properties of Alumina hydrate.
13. To determine oil absorption of black pigments.
14. To compare opacity of extenders and white pigments.
15. To test bleeding tendency in pigments.

Learning Resources:**Books:**

Sr. No.	Author	Title	Publisher
1	T C Patton	Pigment Hand Book, Vol. I & II	John Wiley & Sons.
2	W M Morgan	Outlines of Paint Technology	Charls Griffin & Co.Ltd.
3	Gunter Buxbaun	Industrial Inorganic Pigments	VCH Publishers
4	W Herbst & K Hunger	Industrial Organic Pigments	VCH Publishers.
5	Swaraj Paul	Surface Coatings	John Wiley & Sons.
6	V C Malshe & Minal Sikchi	Basic Paint Technology, Part I	--

COURSE NAME : DIPLOMA IN SURFACE COATING TECHNOLOGY.

COURSE CODE : SC

SEMESTER : FIRST.

SUBJECT TITLE : COMPUTERS FUNDAMENTALS.

SUBJECT CODE :-

Teaching and Examination Scheme :

Teaching Scheme			Examination Scheme						
TH	TU	PR	Paper Hrs.	TH	TEST	PR	OR	TW	TOTAL
--	--	4	--	--	--	50 # *	--	25 @	75

*** #on line examination**

Rationale:

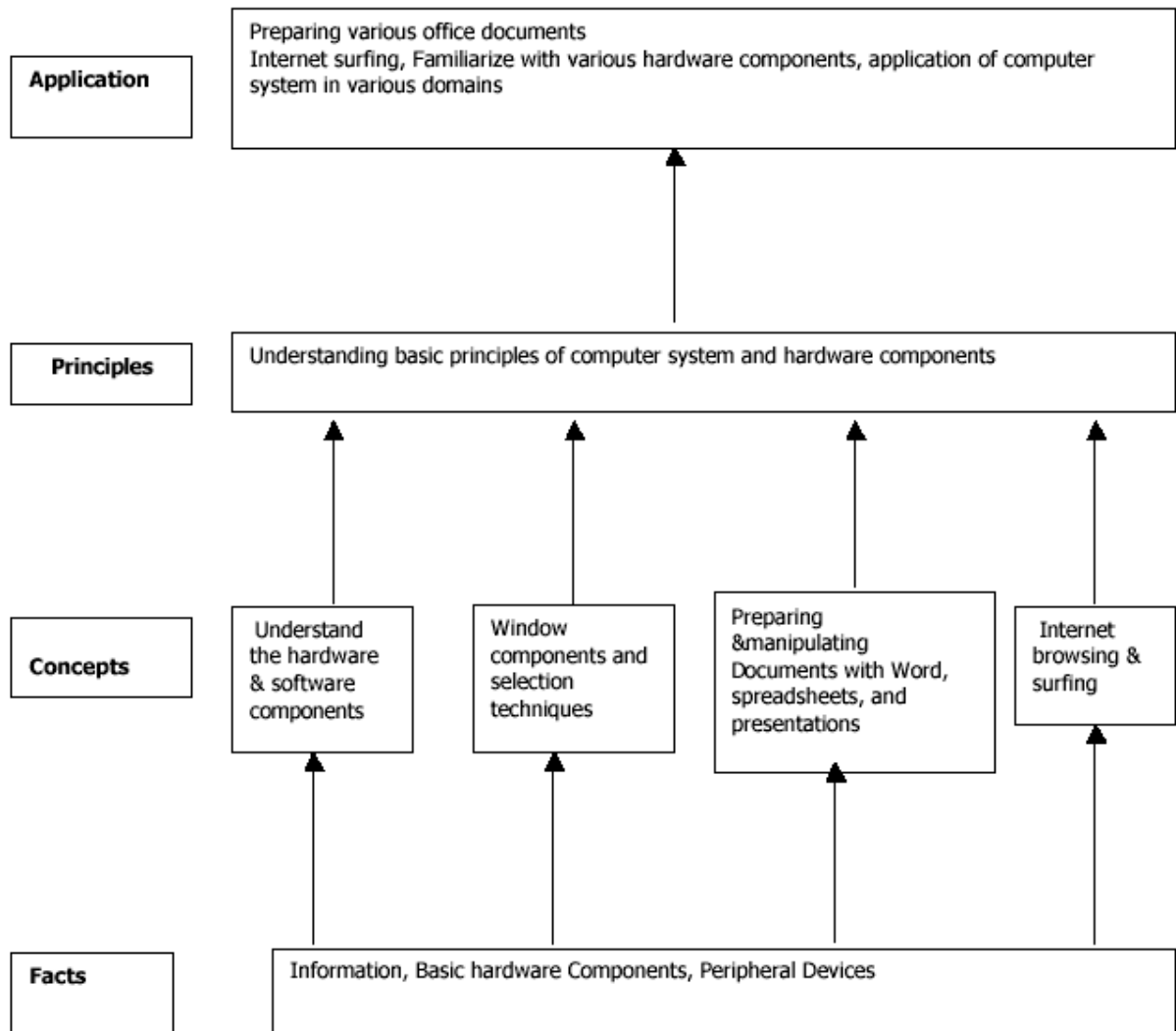
Computer plays an important role in human lives. The primary purpose of using a computer is to make life easier. It is a gateway to a wonderful world of information and various applications. Computers have established an indispensable part in a business, academics, defense, budgeting, research, engineering, medicine, space. This subject introduces the fundamentals of computer system focusing various hardware and software components. It also provides biblical worldview regarding computer ethics by means of Internet.

Objectives:

Students will be able to:

1. Understand a computer system that has hardware and software components, which controls and makes them useful.
2. Understand the operating system as the interface to the computer system.
3. Use the basic functions of an operating system.
4. Set the parameter required for effective use of hardware combined with and application software's
5. Compare major OS like Linux and MS-Windows
6. Use file managers, word processors, spreadsheets, presentation software's and Internet.
7. Have hands on experience on operating system and different application software
8. Use the Internet to send mail and surf the World Wide Web.

Learning Structure:



CONTENTS: Theory

Sr. No	Name of the Topic
1	Fundamentals Of Computer Introduction Components of PC The system Unit Front part of system Unit Back part of system Unit CPU Memory of computer Monitor Mouse, Keyboard Disk, Printer, Scanner, Modem, Video, Sound cards, Speakers
2	Introduction To Windows 2000/Xp Working with window Desktop Components of window Menu bar option Starting window Getting familiar with desktop Moving from one window to another Reverting windows to its previous size Opening task bar buttons into a windows Creating shortcut of program Quitting windows
3	GUI Based Editing, Spreadsheets, Tables & Presentation Application Using MS Office 2000 & Open Office.Org Menus Opening, menus, Toolbars, standard toolbars, formatting toolbars & closing Quitting Document ,Editing & designing your document Spreadsheets Working & Manipulating data with Excel Changing the layout Working with simple graphs Presentation Working With PowerPoint and Presentation
4	Introduction To Internet What is Internet Equipment Required for Internet connection

Sr. No	Name of the Topic
	Sending &receiving Emails Browsing the WWW Creating own Email Account Internet chatting
5	Usage of Computer System in various Domains Computer application in Offices, books publication data analysis ,accounting , investment, inventory control, graphics, database management, Instrumentation, Airline and railway ticket reservation, robotics, artificial intelligence, military, banks, design and research work, real-time, point of sale terminals, financial transaction terminals.
6	Information technology for benefits of community Impact of computer on society Social responsibilities Applications of IT Impact of IT Ethics and information technology Future with information technology

Sr.No	List of Practicals
1.	Working with Windows 2000 desktop ,start icon, taskbar, Recycle Bin, My Computer icon ,The Recycle Bin and deleted files Creating shortcuts on the desktop
2.	The Windows 2000 accessories WordPad - editing an existing document Use of Paint - drawing tools The Calculator, Clock
3.	The Windows Explorer window, concept of drives, folders and files? Folder selection techniques, Switching drives, Folder creation Moving or copying files, Renaming, Deleting files ,and folders
4.	Printing Installing a printer driver Setting up a printer Default and installed printers Controlling print queues Viewing installed fonts
	The clipboard and 'drag and drop' Basic clipboard concepts Linking vs. embedding
5.	Moving through a Word document menu bar and drop down menus toolbars
6.	Entering text into a Word 2000 document, selection techniques Deleting text
7.	Font formatting keyboard shortcuts

8.	* Paragraph formatting Bullets and numbering
9.	* Page formatting What is page formatting? Page margins Page size and orientation Page breaks, Headers and footers
10.	Introducing tables and columns
11.	Printing within Word 2000 Print setup Printing options Print preview
12.	* Development of application using mail merge Mail merging addresses for envelopes Printing an addressed envelope and letter
13.	Creating and using macros in a document
14.	* Creating and opening workbooks Entering data
15.	Navigating in the worksheet Selecting items within Excel 2000 Inserting and deleting cells, rows and column Moving between worksheets, saving worksheet, workbook
16.	Formatting and customizing data
17.	Formulas, functions and named ranges
18.	Creating, manipulating & changing the chart type
19.	Printing, Page setup, Margins Sheet printing options, Printing a worksheet
20.	* Preparing presentations with Microsoft Power Point. Slides and presentations, Opening an existing presentation , Saving a presentation
21.	Using the AutoContent wizard ,Starting the AutoContent wizard Selecting a presentation type within the AutoContent wizard Presentation type Presentation titles, footers and slide number
22.	* Creating a simple text slide Selecting a slide layout Manipulating slide information within normal and outline view Formatting and proofing text Pictures and backgrounds drawing toolbar AutoShapes Using clipart Selecting objects Grouping and un-grouping objects The format painter
23.	* Creating and running a slide show Navigating through a slide show Slide show transitions Slide show timings Animation effects

24.	* Microsoft Internet Explorer 5 & the Internet Connecting to the Internet The Internet Explorer program window The on-line web tutorial Using hyper links Responding to an email link on a web page
25.	Searching the Internet Searching the web via Microsoft Internet Explorer Searching the Internet using Web Crawler Searching the Internet using Yahoo Commonly used search engines
26.	Favorites, security & customizing Explorer Organizing Favorite web sites Customizing options – general, security, contents, connection, programs, advanced
27.	* Using the Address Book Adding a new contact Creating a mailing group Addressing a message Finding an e-mail address
28.	Using electronic mail Starting Outlook Express Using the Outlook Express window Changing the window layout Reading file attachment Taking action on message-deleting, forwarding, replying
29.	* Email & newsgroups Creating and sending emails Attached files Receiving emails Locating and subscribing to newsgroups Posting a message to a newsgroup
30.	Chatting on internet Understating Microsoft chat environment Chat toolbar

Note : Term work will include printout of Exercises of practicals marked with asterisks (*)

Learning Resources:**Books:**

Author	Title	Edition	Year of Publication	Publisher & Address
Vikas Gupta	Comdex Computer Course Kit	First	2001	Dreamtech
Henry Lucas	Information Technology management for	7Th		Tata Mc-Graw Hills
B.Ram	Computer Fundamentals Achitecture and Organisation	Revised 3rd		New Age International Publisher