

Annexure-2

PERIYAR UNIVERSITY

SALEM –636 011



PERIYAR INSTITUTE OF DISTANCE EDUCATION (PRIDE)

**DIPLOMA IN COMPUTER AIDED MANUFACTURING
REGULATIONS AND SYLLABUS**

(Effective from the academic year 2007-2008 and thereafter)

PERIYAR UNIVERSITY, SALEM – 11
PERIYAR INSTITUTE OF DISTANCE EDUCATION (PRIDE)
DIPLOMA IN COMPUTER AIDED MANUFACTURING
REGULATIONS

0.1. ELIGIBILITY:

Candidate seeking admissions for diploma course have to passed their Higher Secondary Examination conducted by The Govt. of TamilNadu or any other States. They shall also satisfy the conditions regarding age and Physical Fitness, as may be the Syndicate of Periyar University.

0.2. DURATION:

The Course for the Diploma in Computer Aided Manufacturing shall consist of one academic year.

0.3. ELIGIBILITY FOR THE DIPLOMA:

A candidate shall be eligible for the Diploma in Computer Aided Manufacturing, if he/she has satisfactory undergone the prescribed course of study for a period of not less than one year and passed the examinations in all the papers.

0.4. COURSE OF STUDY:

The course of study shall comprise instruction, seminars, practical in the subjects according to syllabus and references as prescribed.

0.5. EXAMINATIONS:

The examinations in theory subjects and Practical, which shall be conducted by the University at the end of the year.

DIPLOMA IN COMPUTER AIDED MANUFACTURING

Scheme of Examinations:

S.NO	Title of the Paper	Exam hrs.	Max.Marks
PAPER I	Digital computer Fundamentals and GUI Applications	3	100
PAPER II	Computer Aided Manufacturing	3	100
PAPER III	Computer Graphics	3	100
PAPER IV	Photoshop and Flash	3	100
PAPER V	Practical-I (GUI Applications)	3	100
PAPER VI	Practical-II (Photoshop and Flash)	3	100
Total			600

0.6 Passing Minimum:

Candidates shall be declared to have passed the examination in a theory/practical of study only if he/she scores not less than 40 marks out of 100.

Successful candidates passing in all the papers and securing I) 60 percent and above shall be declared to have passed the examination in First Class (II) 50 percent and above but below 60% shall be declared to have passed the examination in 2nd class.

QUESTION PAPER PATTERN

THEORY

Time: 3 Hours

Max.Marks - 100

PART A

Answer all the Questions.

10 x 2 = 20

(Two Question from each unit).

PART B

Answer all the Questions.

5 x 4 = 20

(One Question from each unit with internal choice).

PART C

Answer all the Questions.

5 x 12 = 60

(One Question from each unit with internal choice).

PRACTICAL

Time: 3 Hours

Max.Marks - 100

Record: 20 Marks

Practical: 80 Marks

For Each practical Question the marks should awarded as follows :

- | | |
|---|-------|
| i) Flowchart | -20% |
| ii) Writing the program in the main answer book | - 30% |
| iii) List, test and debug the program | - 30% |
| iv) Printing the correct output | - 20% |

(Marks may be proportionately reduced for the errors committed in each of the above)

Practical - I:

One Question from GUI Applications (either or type)

Practical – II:

One Question from Photoshop and flash (either or type)

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DIPLOMA IN COMPUTER AIDED MANUFACTURING
PAPER I : Digital Computer Fundamentals and GUI Applications

UNIT – I:

Introduction to computers: Introduction-Types of Computers-Characteristics of Computers - Word Length - Speed - Storage - Accuracy - Versatility - Automation-Diligence. Five generations of Modern Computers: First Generation Computers-Second Generation Computers-Third Generation Computers-Fourth Generation Computers-Fifth Generation Computers. Classifications of digital computer system: Introduction-Microcomputers-Personal Computers-Workstations-Portable Computers-Minicomputers-Mainframes-Supercomputers-Network Computers. Number system: Introduction-Decimal Number System-Binary number System-Binary to decimal Conversion-Decimal to Binary Conversion-Binary Addition-Binary Subtraction-Complements-9's Complement-10's Complement-1's Complement-2's Complement-Signed and Unsigned Number Representation-Fixed-point Representation of Numbers-Floating-point Representation of Numbers-Binary Coded Decimal-Gray Code-Excess-3 Code-ASCII Code-ASCII-8 Code-EBCDIC Code-Bits, Bytes and Words-Octal Number System-Hexadecimal Number System.

UNIT – II:

Boolean Algebra and Gate Networks: Fundamental concepts of Boolean Algebra – Logical Multiplication - AND Gates and OR Gates - Complementation and Inverters - Evaluation of Logical Expressions - Evaluation of an Expression containing parentheses - Basic Laws of Boolean Algebra - Simplification of expressions - De Morgan's theorems - Basic Duality of Boolean Algebra - Derivation of a Boolean Expression - Interconnecting Gates-Sum of products and products of sums - Derivation of products of sums expressions - Derivation of three Input variable expression - NAND gates and NOR gates - The Map method for simplifying expressions - Sub cubes and covering - Product of sums. Expressions - Don't care.

UNIT - III:

Anatomy of a Digital computer: Functions and Components of a Computer- Central Processing Unit-Control Unit-Arithmetic Logic Unit-Memory - Registers- Addresses-How the CPU and Memory Work. Memory units: Introduction- RAM - ROM - PROM - EPROM - EEPROM - Flash memory. Input Devices: Introduction- Keyboard-Mouse-Types of Mice-Connections-Mouse Pad - Trackball – Joystick – Digitizing Tablet – Scanners – Digital Camera-MICR-OCR-OMR-Barcode Reader- Speech Input Devices-Continuous Speech – Discrete Word – Touch Screen – Touch Pad –Light Pen. Output Devices: Introduction-Monitor – Classification of Monitors- Based on Color -Classification of Monitors Based on signals-Characteristics of a Monitor-Video Standards-Printer-Plotter-Sound Cards and Speakers- Auxiliary storage Devices: Introduction-Magnetic Tape-Hard disk-Floppy Disk-CD-ROM-CD-R Drive-CD-RW Disks.

UNIT – IV:

Dos – WordStar - Database Management System - Dbase III plus -Electronic Spreadsheets - LOTUS 1-2-3 - Internet - Electronic Mail.

UNIT-V:

MS-WINDOWS – MS-WORD – MS-EXCEL – Introduction to Desktop Publishing – Overview of PowerPoint.

TEXTBOOKS:

1. “Fundamentals of Computer Science and Communication Engineering”

Alexis Leon, Mathews Leon,

Vikas Publishing House,
New Delhi, 1998
(Unit I &III).

2. ”Digital Computer Fundamentals”

Thomas C.Bartee,
T.M.H, New Delhi,
6th Edition 1991 (Unit - II).

- 3.“PC Software for WINDOWS Made Simple”

R.K.Taxali,
T.M.H, New Delhi, 1998 (Unit – IV & V)

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PAPER II : Computer Aided Manufacturing

Unit I:

Introduction- numerical control- numeric modes-numeric elements –NC machine tools-CNC hardware basics-structure of CNC machine tools-spindle design-drives-actuation systems – feedback devices-axes_ standards.

Unit II:

CNC tooling-cutting tool materials-turning tool-geometric-milling tools system-tool presetting. Automatic tool changes-work holding-cutting-process parameter selection-CNC machine tool – control systems CNC machining centers – CNC turning centers-high speed machine tools-Machine control unit-support system-touch trigger probes.

Unit III:

CNC programming-part programming fundamentals- manual part programming methods-preparatory functions-miscellaneous functions-program number- tool length compensation-canned cycles-cutter radius compensation-turning center programming –advanced part programming methods-computer aided part programming.

Unit IV:

Role of information system-information requirements of manufacturing – group technology and computer aided process planning- production planning and control.

Unit V:

Integration of manufacturing systems-communications-material handling systems- FMS and CIM-CAD/CAM implementation.

TEXT BOOK:

1. CAD/CAM Principles and Applications [Units I, II, III, IV, V]
P.N .RAO.
2. CAD/CAM Computer Aided Design and Manufacturing [unit V]
Mikell P.Groover. Emory W. Zimmers, Jr

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PAPER III : Computer Graphics

Unit I:

Geometric and line generation: line segment-vectors- character generation. Graphics primitives. Display devices, Display file-coordination

Unit II:

Text polygons: representation- interfacing filing application. Transformation: scaling-rotation – translation- transformations- Display procedures.

Unit III:

Segments creation- deletion- image transformation segment manipulation- raster techniques.

Unit IV:

Windows and clipping – various clipping algorithms- multiple windowing interaction: device handling algorithms –simulating devices-echoing interactive techniques.

Unit V:

Light color and shading, illumination-curves and fractals: curve generation- interpolation- interpolating algorithms-splines and corners.

TEXT BOOKS:

1. “Computer Graphics – A Programming Approach”- Steven Harrington MGH 1987.

REFERENCE BOOKS:

1. “Computer Graphics”, Foley et.al Addison Wesley.
2. “Interactive computer graphics “, Walker B.S , Crane Rustal and co., New York 1976.
3. “Principles of Interactive computer graphics “, Newman W.M and Sproull R.F, GH 1979.
4. “Computer Graphics”, Donald Hearn and Pauline Beaker Edn2. PHI

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PAPER IV: Photoshop and Flash

Unit – I:

Photoshop Fundamentals-Examining the Photoshop Environment-Getting to know the tool Palette- Getting Started and Finishing up-getting it on paper viewing and navigating Images-specifying size and Resolution – Choosing color modes and File Formats using and managing color.

Unit – II:

Creating Selections- Creating and Working with paths-Modifying and Transforming Selections and Paths- Exploring with the painting tools-Creating Vector shapes-Filling and Stroking-Creating and Editing type- creating Layers- Managing Layers.

Unit- III:

Prepping Web Graphics- Optimizing Images with save for web -Slicing your Image –Creating a Web photo Gallery.

Unit – IV:

Flash: Introducing Flash- Customizing Flash to suit your workflow- Finding your way with the movie Explorer – Flash and Generator –Importing, Using and Optimizing graphics.

Unit – V:

Creating cool Effects With Text – Making the Transition –Masking Effects – Animation Techniques- Creating 3D Effects in Flash- Using Sound in Flash- Using Flash 5's stock smart clips: Radio Button, Checkboxes and Drop-Down Menus.

Text Book:

1. PHOTOSHOP 7 - The Ultimate Reference by Barbara Obermeier with David D.Busch.
2. INSIDE FLASH BY Jody Keating Fig Leaf Software.

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PAPER V: Practical – I (GUI Applications)

I. MS-WORD:

1. a. Starting MS-WORD, Creating, Saving, Printing (with options) Closing and Exiting.
b. Study of Word-Menu / Toolbars.
2. a. Create a document , Save it and edit the document as follows :
 - i) Find and Replace options.
 - ii) Cut, Copy and Paste options.
 - iii) Undo and Redo options.
 - b. Format the document:
 - i) Using Bold, Underline and Italic.
Change Character size using the font dialog box.
 - ii) Formatting paragraph: Center, Left aligns & Right aligns.
 - iii) Changing paragraph and line spacing, Using Bullets and Numbering in paragraphs.
 - v) Creating Hanging paragraphs.
3. Using tab settings enhancing the documents (Header, Footer, Page Setup, Border, Opening and Closing Toolbars, print Preview).
4. Creating Tables in a document, Selecting Rows & Columns sort the record by using tables, format painter and Auto format.
5. Drawing flow chart using drawing toolbar, inserting picture and setting frames.
6. Mail Merge in word (Creating main document, data source, inserting merge fields and viewing merge data, viewing and printing merged letter, using mail merge to print envelope creating mailing labels).

II. MS-EXCEL:

1. a. Create a work sheet, moving/copying/inserting/deleting rows and Columns. (Usage of cut, paste commands, copying a single cell, Copying a range of data, filling up a cell. Undo command, Inserting a row, column, Deleting rows and columns.)
 - b. Formatting work sheets
 1. Bold style
 2. Italic style
 3. Font size changing
 4. Formatting numbers (Auto fill, Selection command, currency format, Currency syllabus)
 5. Specifying percentage (%) scientific notations.
 6. Drawing border around cells.
 7. Printing a work sheet (Print preview, Margin setting, Header, Footer)
2. a. Data base concept: Database, Record field and field name
Creating and sorting a database and maintaining a database
(Data form)
 - b. Using auto filter, advanced filter.
 - c. Creating subtotals and grand totals – Using data base functions.
3. Creating charts
 - i). Using chart wizard (five steps)
 - ii). Changing the chart type (Pie, Bar, Line)
 - iii). Inserting titles for the Axes x, y
 - iv). Changing colors
 - v). Printing charts.
4. a. Using date, time and math functions:
 - i). Entering current date
 - ii). Using date arithmetic (adding and subtracting Dates)

- iii). Date functions (day, month, year)
- iv). Using time functions (hour, minute, second)

b. Math functions

- i). SUM, COUNT, AVERAGE
- ii). MAX, MIN
- iii). STDEV, VAR
- iv). ABS, EXP, INT
- v). LOG 10 and LOG
- vi). MOD, ROUND, SORT
- vii). Using auto sum

c. Logical and financial functions

- i). Logical (IF/AND/OR/NOT)
 - ii). Financial (PMT, FV, NPER, RATE)
5.
 - i). Creating and running a Macro
 - ii). Assigning button to a defined Macro
 - iii). Editing a Macro

III. MS – POWER POINT:

1. Creating a presentation using auto content wizard.
2. Different views in power point presentation.
3. Setting animation effects/grouping/ungrouping/cropping power/point objects.
4. Printing a presentation/Importing – Exporting files.
5. Creating an organization chart in Power Point.

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PAPER VI : Practical II (Photoshop and Flash)

Software: Photoshop

- 1. Product Advertisement (For automobile Products with the animate picture and necessary features).**
- 2. Editing the Images.**
- 3. Design a Greeting card.**
- 4. Design Invitation.**

Software: Flash

- 1. Simple Animation.**
- 2. Tweened animation.**
- 3. Creating movies.**
- 4. Using action Scripts.**