4-YEAR DIPLOMA IN ENGINEERING PROGRAM

COMPUTER TECHNOLOGY (66)

SYLLABUS
(COURSE STRUCTURE-2010)

SEVENTH & EIGHTH
SEMESTER

COMPUTER TECHNOLOGY (66)
SEVENTH SEMESTER

Sl. No	Subject code	Name of the subject	T	P	C	MARKS				Total
						Theory		Practical		
						Cont. assess	Final exam.	Cont. assess	Final exam.	
1.	6671	Embedded Systems & PLC	2	6	4	20	80	50	50	200
2.	8572	Multimedia and Graphics	3	3	4	30	120	25	25	200
3.	6672	System Analysis Design and Development	2	3	3	20	80	25	25	150
4.	6673	Data Communication and Network -2	2	6	4	20	80	50	50	200
5.	6674	Computer Engineering Project	0	6	2	0	0	50	50	100
6.	5852	Industrial Management	2	0	2	20	80	-	-	100
7.	5853	Entrepreneurship	2	0	2	20	80	-	-	100
		Total	**13**	**24**	**21**	**130**	**520**	**200**	**200**	**1050**

COMPUTER TECHNOLOGY (66)
EIGHTH SEMESTER

Sl. No	Subject code	Name of the subject	T	P	C	MARKS				Total
						Theory		Practical		
						Cont. assess	Final exam.	Cont. assess	Final exam.	
	6681	Industrial Training	0	0	6	-	-	180	120	300
		Total								**300**

CONTENTS

SEVENTH SEMESTER

4-YEAR DIPLOMA IN ENGINEERING PROGRAM

COMPUTER TECHNOLOGY (66)

SYLLABUS
(COURSE STRUCTURE-2010)

SEVENTH SEMESTER

6671 **Embedded systems & PLC**   **T P C**
                                                    2 6 4

AIMS
• To develop knowledge and skill on programming and interfacing to embedded systems using Micro controller.
• To develop knowledge and skill on PLC programming, interfacing and communication.

SHORT DESCRIPTION
The microcontroller features, architecture, instructions, addressing modes, programming, serial communication, interrupts programming and the real world interfacing. Programmable logic controller and interfacing; PLC programming; PLC and Industrial control systems.

DETAIL DESCRIPTION

THEORY:
1 Understand the basic of microcontroller

1.1 Define embedded system and microcontroller

1.2 Distinguish between Von Neumann and Harvard Architecture of microcontroller

1.3 Distinguish microcontroller and microprocessor

1.4 State the Application field of Microcontroller

1.5 List different manufacturer of microcontroller

1.6 State criteria for choosing a microcontroller

2 Review the memory elements and I/O Devices

2.1 Define Microcontroller peripherals.
2.2 State the structure and function of register, counter, timer ,decoder , multiplexer and digital comparator
2.3 State the structure and function of multi bit two state and three state register.
2.4 State the function of pin and signals of an 8 bit Digital to analog Converter
2.5.State the function of pin and signals of an 8 bit Analog to Digital Converter

3 Understand the feature of the PIC microcontroller

3.1 List the main feature of the PIC microcontroller

3.2 Describe the architecture of mid-range PIC microcontroller

3.3 Describe the SFR (Special Function Register) of PIC16X84 microcontroller

3.4 Describe the memory organization of the PIC 16F84A

3.5 Describe the pins and signals of PIC16F84A

3.6 Describe the structure and function of STATUS register

3.7 Describe the structure and function of OPTION_REG register (specially TMR0 associate register)

4. Understand programming in PIC16F84A microcontroller

4.1 Mention the types of instruction in mid-range PIC microcontroller

4.2 Describe the syntax, operation and description of each instruction in mid-range PIC microcontroller

4.3 Draw the program structure of PIC microcontroller

4.4 Define software development tools and IDE

4.5 List some software development tools and IDE for PIC microcontroller

4.6 Mention the steps to create an executable program.

4.7 Name the files created in PLC assembly language program.

5 Understand the concept of I/O ports and timer modules.

5.1 Name the I/O ports of PIC16F84A and their corresponding data direction register.
5.2 Describe the function of I/O ports of PIC16F84A and their corresponding data direction register.
5.3 Write simple program codes for initializing I/O ports.
5.4 State the general features of Timer0 module.
5.5 Describe the functions and operation of PIC16F84A Timer0 module.
5.6 State the function of prescaler.
5.7 State the function of each bits of PIC16F84A configuration word.
5.8 State the oscillator type/mode uses with PIC16F84A.
5.9 State the Hardware configuration of crystal oscillator in PIC16F84A.

6. Understand special control features of PIC16F84A
6.1 State the types of Reset used in PIC16F84A

6.2 Define Power On Reset(POR),Power Up Timer(PWRT) and Oscillator Start Up Timer(OST)

6.3 State the function of Time Out Sequence and Power Down Status bits (TO/PD) of PIC16F84A.

6.4 State the function of each interrupts sources used in PIC16F84A.

6.5 Describe the operation of Watchdog Timer in PIC16F84A.

6.6 State the function of Power down Mode (Sleep and Wake up from sleep) in PIC16F84A.

7. Understand the functions of PLC

7.1 Define PLC

7.2 State the purpose of PLC

7.3 Describe the functional block diagram of a PLC system

7.4 State the feature of Input and Outputs of a PLC

7.5 Describe the AC input connection system of a typical PLC

7.6 Describe the operation of a electrically Isolated PLC input and output circuit

 7.7 Distinguish between fixed PLC and modular PLC

7.8 Mention the name and JIC symbol of input and output devices of PLC system.

7.9 State the uses of multi bit and single bit memory in PLC system.

8. Understand the addressing and programming technique of PLC

8.1 State the technique of input/output addressing of PLC program.

8.2 Mention the way of internal relay and data resistor addressing in PLC Program.

8.3 State the way of timer and counter addressing in PLC program.

8.4 State the meaning of scan time

8.5 Mention the influencing factors of scan time

8.6 Describe different types of PLC programming with example.

9. Understand PLC instructions and program with ladder diagram.

9.1 Define rail and rung.

9.2 Mention the name and symbol of Relay type instructions.

9.3 Mention the point to be considered for developing PLC program.

9.4 Prepare sample program using Relay type instructions.

9.5 Develop simple program using timer and counter instructions.

9.6 Develop simple program using word comparing and arithmetic instructions.

10. Understand PLC system maintenance and trouble shooting.

10.1. State the general, input and output specification of a PLC system.

10.2. State the software requirements of a PLC system.

10.3. Describe the features of SCADA.

10.4 State the rules of PLC installation.

10.5 State the meaning of commissioning and their stages.

10.6 State the general procedure of trouble shooting and repairing PLC.

Practical:
Microcontroller

1 Perform the tasks to design and develop a microcontroller based system for flashing LEDs.

1.1 Design the schematic and component layout diagram of the system.

1.2 Construct the system according to the designed diagram.

1.3 Draw the flow chart of the program.

1.4 Code the program/Project using an appropriate microcontroller based software (MPLAB IDE).

1.5 Build the program /project

1.6 Connect the interface circuit with the microcontroller system.

1.7 Simulate the program to demonstrate the result /process in PC

1.8 Prepare a report for the job.

2 Perform the tasks to load/burn /write Hex file to the microcontroller for flashing LED lights.

2.1 Run / open the appropriate programming/ burning software(PCKIT2).

2.2 Connect the programmer/ burner with the PC

2.3 Set the microcontroller to the Socket.

2.4 Import the Hex file of the previously build project.

2.5 Perform necessary setting and configuration

2.6 Load/ burn / write the program to the microcontroller.

2.7 Demonstrate the output of the system by connecting the hardware with the programmed
microcontroller/ Demonstrate board.

2.8 Prepare a report for the Job.

3 Perform the tasks to design and develop a microcontroller based system for running LED lights.

3.1 Design the schematic and component layout diagram of the system.

3.2 Construct the system according to the designed diagram.

3.3 Draw the flow chart of the program.

3.4 Code the program/Project using an appropriate microcontroller based software (MPLAB IDE).

3.5 Build the program /project

3.6 Connect the interface circuit with the microcontroller system.

3.7 Simulate the program to demonstrate the result /process in PC

3.8 . L**oad/burn /write Hex file to the microcontroller**

3.9 Demonstrate the output of the system by connecting the hardware with the programmed
microcontroller/ Demonstrate board

3.10 Prepare a report for the Job

4 Perform the tasks to design and develop a microcontroller based system for generating timing pulses (triangular wave or square wave).

4.1 Design the schematic and component layout diagram of the system.

4.2 Construct the system according to the designed diagram.

4.3 Draw the flow chart of the program.

4.4 Code the program/Project using an appropriate microcontroller based software (MPLAB IDE).

4.5 Build the program /project

4.6 Connect the interface circuit with the microcontroller system.

4.7 Simulate the program to demonstrate the result /process in PC

4.8 . L**oad/burn /write Hex file to the microcontroller.**

4.9 Demonstrate the output of the system by connecting the hardware with the programmed
Microcontroller and oscilloscope

4.10 Prepare a report for the Job

5. Perform the tasks to design and develop a microcontroller based system for displaying hexadecimal digit using a common anode/common cathode seven segment display.

5.1 Design the schematic and component layout diagram of the system.

5.2 Construct the system according to the designed diagram.

5.3 Draw the flow chart of the program.

5.4 Code the program/Project using an appropriate microcontroller based software

(MPLAB IDE).

5.5 Build the program /project

5.6 Connect the interface circuit with the microcontroller system.

5.7 Simulate the program to demonstrate the result /process in PC

5.8 . L**oad/burn /write Hex file to the microcontroller**

5.9 Demonstrate the output of the system by connecting the hardware with the programmed
microcontroller/ Demonstrate board

5.10 Prepare a report for the Job

6 **Perform the tasks to design and develop a microcontroller based system for displaying characters in a LED Dot Matrix display.**

6.1 Design the schematic and component layout diagram of the system.

6.2 Construct the system according to the designed diagram.

6.3 Draw the flow chart of the program.

6.4 Code the program/Project using an appropriate microcontroller based software (MPLAB IDE).

6.5 Build the program /project

6.6 Connect the interface circuit with the microcontroller system.

6.7 Simulate the program to demonstrate the result /process in PC

6.8 . L**oad/burn /write Hex file to the microcontroller**

6.9 Demonstrate the output of the system by connecting the hardware with the programmed
microcontroller/ Demonstrate board

6.10 Prepare a report for the Job

7 **Perform the tasks to design and develop a microcontroller based interface system to control the speed and direction of a stepper motor.**

7.1 Design the schematic and component layout diagram of the system.

7.2 Construct the system according to the designed diagram.

7.3 Draw the flow chart of the program.

7.4 Code the program/Project using an appropriate microcontroller based software (MPLAB IDE).

7.5 Build the program /project

7.6 Connect the interface circuit with the microcontroller system.

7.7 Simulate the program to demonstrate the result /process in PC

7.8 . **Load/burn /write Hex file to the microcontroller**

7.9 Demonstrate the output of the system by connecting the hardware with the programmed
microcontroller/ Demonstrate board

7.10 Prepare a report for the Job

8 Perform the tasks to design and develop a microcontroller based system to control the rotation speed of a DC motor.

8.1 Design the schematic and component layout diagram of the system.

8.2 Construct the system according to the designed diagram.

8.3 Draw the flow chart of the program.

8.4 Code the program/Project using an appropriate microcontroller based software (MPLAB IDE).

8.5 Build the program /project

8.6 Connect the interface circuit with the microcontroller system.

8.7 Simulate the program to demonstrate the result /process in PC

8.8 . **Load/burn /write Hex file to the microcontroller**

8.9 Demonstrate the output of the system by connecting the hardware with the programmed
microcontroller/ Demonstrate board

8.10 Prepare a report for the Job

9 Perform the tasks to design and develop a microcontroller based digital to analog conversion (DAC) interface system.

8.1 Design the schematic and component layout diagram of the system.

8.2 Construct the system according to the designed diagram.

8.3 Draw the flow chart of the program.

8.4 Code the program/Project using an appropriate microcontroller based software (MPLAB IDE).

8.5 Build the program /project

8.6 Connect the interface circuit with the microcontroller system.

8.7 Simulate the program to demonstrate the result /process in PC

8.8 . L**oad/burn /write Hex file to the microcontroller**

8.9 Demonstrate the output of the system by connecting the hardware with the programmed
microcontroller/ Demonstrate board

8.10 Prepare a report for the Job

9 **Perform the tasks to design and develop a microcontroller based analog to digital conversion (ADC) interface system.**

9.1 Design the schematic and component layout diagram of the system.

9.2 Construct the system according to the designed diagram.

9.3 Draw the flow chart of the program.

9.4 Code the program/Project using an appropriate microcontroller based software (MPLAB IDE).

9.5 Build the program /project

9.6 Connect the interface circuit with the microcontroller system.

9.7 Simulate the program to demonstrate the result /process in PC

9.8 . L**oad/burn /write Hex file to the microcontroller**

9.9 Demonstrate the output of the system by connecting the hardware with the programmed
microcontroller/ Demonstrate board

9.10 Prepare a report for the Job
.

10 Perform the tasks to design and develop a microcontroller based traffic light interface system for controlling the direction and movement of vehicles at a junction of 4 roads.

10.1 Design the schematic and component layout diagram of the system.

10.2 Construct the system according to the designed diagram.

10.3 Draw the flow chart of the program.

10.4 Code the program/Project using an appropriate microcontroller based software (MPLAB IDE).

10.5 Build the program /project

10.6 Connect the interface circuit with the microcontroller system.

10.7 Simulate the program to demonstrate the result /process in PC

10.8 . L**oad/burn /write Hex file to the microcontroller**

10.9 Demonstrate the output of the system by connecting the hardware with the programmed
microcontroller/ Demonstrate board

10.10 Prepare a report for the Job
.

Programmable Logic Controller

11 Identify the parts and components of a PLC system

12 Perform the tasks to develop and Simulate/execute a PLC ladder program(diagram) to start and stop a AC light.

13 **Perform the tasks to develop and Simulate/execute PLC ladder program (diagram) using timer instructions** to operate a buzzer.

14 **Perform the tasks to develop and Simulate/execute a PLC ladder program (diagram) to operate indicator/ light using counter instructions.**

15 **Perform the tasks to develop and Simulate a PLC ladder logic(diagram) to operate a DC motor using PLC ladder logic.**

16 **Perform the tasks to to operate a relay using PLC ladder logic diagram.**

17 **Perform the tasks to demonstrate the operation for controlling a Magnetic Contact**

18 **Perform the tasks to develop and Simulate a PLC ladder logic(diagram) to control a filling control circuit.**

19 **Perform the tasks to develop and Simulate a PLC ladder logic (diagram) to control a Conveyor belt motor control circuit.**

**One practical class must be conducted on Microcontroller and another on PLC per week.
Reference Web address and books
1. PIC16F84A Data sheet - http://www.microchip.com
2. User Manual for PIC16F84A Training Kit - http://www.microprocessorinstitute.edu
3. The 8051 microcontroller and embedded systems using assembly and C
− Muhammad Ali Mazidi
4. Microcontroller (theory and applications)
− Ajay V Deshmukh
5. Training manual −Programmable logic Controller and its application
in industrial automation. −Institution of Engineers, Bangladesh,
H/Q ,Ramna,Dhaka-1000
6. Programmable Logic Controllers.
− W. Bolton

8572	MULTIMEDIA AND GRAPHICS (8572)	T	P	C
		3	3	4

AIMS

To provide the students with an opportunity to acquire knowledge, skill and attitude in the field of multimedia and applications with a special emphasis on:

- Basics of multimedia
- Applications, benefits and problems of using multimedia
- Multimedia hardware/software essentials
- System components, development tools and image used in multimedia
- Audio in multimedia
- Video in multimedia
- Basics of Graphics.
- Image Processing
- Scan Converting Process.
- Two & Three dimensional transformation
- Concept of Projection.

SHORT DESCRIPTION

Basics of multimedia; Application, benefits and problems of using multimedia; Multimedia hardware and software essentials; System components in developing multimedia; Development tools for multimedia application; Text & Image used in computer application; Techniques and processes of image conversion; Basics of sound in multimedia; Sound recording; Sound processing; Basics of video in multimedia; Video recording; Video processing; Basics of Graphics; Image Processing; Scan Converting Process; Two dimensional transformation; Concept of Projection.

DETAIL DESCRIPTION

Theory:

1 Understand the basics of multimedia.

    1.1 State multimedia and multimedia systems.

    1.2 Describe the history of multimedia.

    1.3 Classify multimedia.

    1.4 Mention the field of application of multimedia.

    1.5 Describe the benefits of multimedia in key areas (Training, sales, communications, medical).

    1.6 Describe the problems of multimedia (based on investment cost, technical barriers, social & psychological barriers and legal problems).

2   Understand the multimedia hardware/software.

    2.1   List the Hardware & Software used in a Multimedia System.

    2.2   Define multimedia studio.

    2.3   Describe the industrial standards and specifications of a typical multimedia configuration.

    2.4   Describe the importance of "Plug and Play" revolution and MMX (Multimedia extension) technology.

    2.5   Describe the important features of different categories of multimedia Software.

    2.6   Describe different types of development tools for multimedia applications.

3   Understand the system components in developing multimedia.

    3.1   Mention the components of a multimedia system

    3.2   Describe the architecture of a multimedia system

    3.3   Describe the function of basic delivery system of multimedia platforms.

    3.4   Describe the input subsystem functions with block diagram.

    3.5   Describe the output processing subsystem with block diagram.

4   Understand different Media and media process system in multimedia.

    4.1   Define discrete and continuous media.

    4.2   Describe the discrete media process system in multimedia.

    4.3   Define sampling, sampling interval, quantization and quantization error.

    4.4   Describe the digitizing process of audio & video signal.

    4.5   Define Vectorisation.

    4.6   Describe the steps of vectorization.

5   Understand the Text, images & processes of images used in Multimedia

    5.1   Define Text & Image

    5.2   Describe the importance of text in multimedia

    5.3   Mention the general features of different types of images used in computer application.

    5.4   Describe the image data representation in multimedia system

    5.5   Describe RGB and CMY color model.

    5.6   State compression & image compression.

    5.7   Describe the lossless image compression technic (Run length coding)

    5.8   Describe the lossy image compression technic (Cosine Transform based coding)

5.9   Mention the important features of Bitmap, JBIG and JPEG.

6   Understand the basics of sound in multimedia.

6.1   Mention the importance of audio in multimedia application.

6.2   Describe the file formats to store digital audio and MIDI data.

6.3   Describe the audio data representation in multimedia system

6.4   Describe the configuration of sound system with block diagram.

6.5   Describe the function of Musical Instrument Digital Interface (MIDI) in multimedia system.

6.6   Describe the important aspects of audio compression.

7   Understand sound processing & sound recording in multimedia.

7.1   Mention the importance of sound processing in multimedia development.

7.2   Mention the imperfections of sound processing.

7.3   Define destructive and non-destructive sound processing

7.4   List different components of sound recording system.

7.5   State the important aspects of hardware and software for sound recording.

7.6   List different sound recording software.

7.7   Differentiate between monophonic and stereo recording.

7.8   Mention the problems in digital recording process.

7.9   Describe the disk space requirements for digital recording.

8   Understand the basics of video in multimedia.

8.1   Mention the importance of video data in multimedia application.

8.2   Describe the planning stages for video incorporation into a multimedia project.

8.3   Describe the important aspects of converting video for the computer.

8.4   Describe the configuration for video system with block diagram.

8.5   Describe different types of video compression technic.

8.6   Mention the important features of MPEG.

9   Understand the video processing & video recording.

9.1   List the multimedia equipment for video processing.

9.2   Describe video capture and playback system.

9.3   List different video recording equipment & video recording software.

9.4   State the important features of hardware and software for video recording.

9.5   Describe the file formats for saving video information.

Graphics

10   Understand Graphics.

    10.1   Define Computer graphics

    10.2   Define Pixel, Resolution, Raster & Aspect ratio

    10.3   Define Object Space, Image Space & Image Processing.

    10.4   Describe Raster Scan Graphic Display

    10.5   Describe Random Scan Graphic Display

11   Understand Scan Converting Process

    11.1   Define Scan Conversion

    11.2   Describe the point and line scan Converting process.

    11.3   Describe the circle and ellipse scan Converting process.

    11.4   Mention Line Drawing Algorithms

12   Understand Two Dimensional Transformation.

    12.1   Define transformation, translation, rotation, scaling and magnification.

    12.2   Describe Basic geometric transformation.

    12.3   Describe the co-ordinate transformations

    12.4   Define composite transformation and instance transformation.

    12.5   Mention the matrix description of the basic transformation.

    12.6   Define projection, projection plane.

13   Understand Two Dimensional Viewing & Clipping.

    13.1   Define WCS, VCS, Window, Viewport, Viewing Transformation

    13.2   Describe Two- Dimensional viewing

    13.3   Define clipping

    13.4   Mention Different types of clipping

    13.5   Mention different Line Clipping Algorithms

    13.6   Describe Polygon Clipping

Practical:

1   Identify the hardware of multimedia systems.

2   Prepare the general specifications of a typical multimedia system.

3   Identify the hardware with external features, settings and connections of sound equipment.

4   Work with digital video playbacks, recording and editing software for multimedia and write a report.

5   Manipulate and process sound files using different software packages.

6   Input and use sounds in multimedia applications.

7   Work with digital video recording and editing from VCRs/Laser disk player/Video camera using appropriate multimedia software.

8   Develop simple multimedia software for educational purpose.

9   Write a program to draw a line using pixel function only.

10   Write a program to draw a circle using pixel function only.

11   Write a program to increase/ decrease the contrast of an image using an appropriate language.

12   Write a program to transform an image using an appropriate language.

REFERENCE BOOKS

1.   Multimedia in practice

                  -   Judith Jeffcoate

2.   Multimedia, Sound & Video

                  -   Jose Lozano

3.   Computer graphics

               - Schaum's Out lines Series

6672	SYSTEM ANALYSIS DESIGN AND DEVELOPMENT	T	P	C
		2	3	3

AIMS

To provide the students with an opportunity to acquire knowledge, skill and attitude in the fields

of system analysis, design and computer based development with special emphasis on:

• system concept
• system analysis
• system design & implementation
• OOA/D concept

SHORT DESCRIPTION

System concepts, System analysis, System design and implementation, OOA/D.

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DETAIL DESCRIPTION

Theory:

SYSTEMS CONCEPTS

1 Understand the elements of information systems and management.

1.1 Define system and information systems.
1.2 Mention the characteristics of systems.
1.3 Describe the key elements of a system.
1.4 Define open and closed system.
1.5 Describe the characteristics of open system.
1.6 Describe the categories of information.
1.7 State the qualities of information.
1.8 State the need of computer based information system.
1.9 Describe the Management and Information System levels in an organization.

2 Understand the Organizational functions and system development life cycle.

2.1 State the common functions of an organization.
2.2 State the various functions an educational institution.
2.3 State the functions of various departments of a manufacturing organization.
2.4 State the meaning of system development life cycle.
2.5 Describe the function of each stages of system development life cycle (SDLC).

3 Understand the roles of system analyst and functions of MIS facility center.

3.1 State the meaning of systems analysis
3.2 Describe the skills required for a system analyst.
3.3 Describe the relationship between interpersonal and technical skills required in
        different stages of system development.
3.4 Mention the background experiences and attributes of system analyst.
3.5 Mention the primary functions of an MIS facility center.
3.6 State the activities of administrator in an MIS facility center.
3.7 Describe different structures of systems analysis.

3.8 Describe different functions of programmers and operators.

3.9 State the responsibilities and duties of an system analyst in an MIS facility center.

3.10 Compare the responsibilities of system analyst and programmer in an MIS facility center.

4 Understand the process of initial investigation and information gathering.

4.1 Mention the steps of systems analysis.

4.2 State the meaning of system planning.

4.3 Name the fields of a user request form.

4.4 Describe the steps of initial investigation process.

4.5 Mention the sources of information.

4.6 Mention the categories of information.

4.7 List the information gathering tools.

4.8 Mention the phases of information gathering.

4.9 Describe the information gathering methods.

4.10 State the guideline of a successful interview.

4.11 State the types of questionnaires.

5 Understand the tools of structured analysis.

5.1 State the meaning of structured analysis.

5.2 Name the tools of structured analysis.

5.3 Define physical document flow diagram and logical data flow diagram (DFD).

5.4 State the meaning and functions of DFD symbols.

5.5 Mention the thumb rules of drawing DFDs.

5.6 Draw sample document flow diagram and data flow diagram (DFD).

5.7 State the meaning of decision trees, decision table, structured English and data dictionary.

5.8 Prepare DFD, decision trees, decision table, structured English and data dictionary for sample small process like store/purchase/accounts /order/receive etc.

6 Understand the feasibility analysis.

6.1 Mention the meaning of feasibility study.

6.2 Describe the economic, technical and behavioral feasibility.

6.3 Describe the steps in feasibility analysis.

6.4 State the categories of cost and benefit.

6.5 State the procedure for cost/benefit determination.

6.6 State the alternating solutions to be examined during feasibility analysis.

6.7 State the content of feasibility report.

7 Understand the system design.

7.1 Mention the meaning of systems design.

7.2 Distinguish between logical design and physical design.

7.3 Mention activities covered in systems design.

7.4 Mention the steps in physical systems design and design methodologies.

7.5 Mention the meaning of input/output design.

7.6 Mention the characteristics of different forms.

7.7 Describe the factors to be considered to design a form .

7.8 Describe the objectives of database.

7.9 Describe the steps of database design.

7.10 State the structure and general principles to be used in designing output reports.

7.11 State system design according to the principle of ITIL (information technology infra structure library).

8 Understand the process of systems testing and security.
8.1 Describe the objectives of control and testing the information systems.
8.2 Describe different types of systems test.
8.3 Describe the quality factor specification.
8.4 State the requirements to be met to ensure security of information systems.

9 Understand the implementation and software maintenance activities.
9.1 Mention the activities considered in systems conversion.
9.2 Describe the need of user training.
9.3 Describe the post implementation activities.
9.4 State the points to be mentioned for requesting proposal from vendors.
9.5 Prepare a feature form to make a comparative evaluation of vendors' proposal for computer system.

10 Understand the concept of object oriented analysis and design.
10.1 Define object oriented analysis and design.
10.2 Define Unified Modeling Language (UML).
10.3 State the ways to apply UML.
10.4 Describe the perspectives to apply UML.
10.5 Define Unified Process.
10.6 Describe the Iterative and Evolutionary development.
10.7 State the benefits of iterative development.
10.8 State the Unified Process (UP) phases.

PRACTICAL:

1 Perform the collection of documents to recognize the need of a new computerized system.
1.1 Name the existing system & give general statements of the problem.
1.2 Collect the organization chart of the existing system.
1.3 Collect the materials such as forms, files, reports and other documents of the existing system.
1.4 Note down the data and information found in the material collected.
1.5 Classify the materials collected as (i) input materials, (ii) output (reports) materials and (iii) procedure materials.

2 Perform the collection of information of the personnel currently solving the problem into the manual system.
2.1 List all personnel currently solving the problem (i.e. working with the manual system).
2.2 Make a rough group of the personnel of
   i) Clerical & service staff.
   ii) Supervisory staff.
   iii) Middle management & professional staff, and
   iv) Executive management staff.
2.3 Modify the organization chart to reflect all personnel involved in the current system.

3 Perform the observation of existing system process & gather information by interview and questionnaires.

    3.1 Observe the working procedures of the existing (manual) system.

    3.2 Prepare questionnaires and take interview of the related personnel to know the necessary information.

    3.3 Draw the physical document flow diagram and logical data flow diagram of the existing system and verify them with the user's function.

    3.4 Prepare decision trees, decision table, structured English and data dictionary for the most important part of above DFD.

    3.5 Identify the entities and properties of the system considering existing documents, observation, questionnaires and interviews.

    3.6 Draw the relationship of the entities (data model-entity relationship diagram) & verify these with the end-users.

4 Perform the preparation of end-user's requirements & select the feasible solution for the alternative candidate systems.

    4.1 Identify output requirements of the modified systems.

    4.2 Identify input requirements.

    4.3 Identify processing requirements.

    4.4 Identify the constraints and limitations of the systems.

    4.5 Draw the process models and data models of the new system.

    4.6 Verify the models with the end-users.

    4.7 Prepare different possible solutions for the system.

    4.8 Prepare technical, operational & economic feasibilities of each solution.

    4.9 Select the best solution within the budget of the organization.

    4.10 Prepare the statements of scope and objectives of the new systems.

5 Perform the design of external forms, input & dialogue screens.

    5.1 Prepare input/output specifications for the selected system.

    5.2 Prepare security & control specifications.

    5.3 Specify the implementation plan.

    5.4 Design input source documents.

    5.5 Design online data entry screens.

    5.6 Design dialogue screens.

    5.7 Design different types of message of the systems.

    5.8 Verify each design item with the end-users.

6 Perform the design of reports, display screens & databases.

    6.1 Design the structures of outputs reports.

    6.2 Design the structures of output display.

    6.3 Design the structure of the memory variables.

    6.4 Design the structures of conventional files.

    6.5 Design the structures of database files.

    6.6 Verify each design item with the end users.

7 Perform the design of test plan & procedure.

    7.1 Design process & modules.

    7.2 Design test plan for each module and integrated module.

    7.3 Verify each design item with end users.

8 Perform the selection of tools, databases and development of menus.
       8.1 Select suitable system development languages & tools (preferably a 4GL).
       8.2 Develop files & database and their access orders.
       8.3 Develop background screen for the system and the organization.
       8.4 Develop main menus and submenus.

9 Perform the development of input screens and dialogues.
       9.1 Develop input screens (for entry, edit & delete).
       9.2 Develop message and control procedures.
       9.3 Test each module with data according to the test plan.

10 Perform the development of modules for data entry & processing.
       10.1 Develop each module for data entry, edit & delete.
       10.2 Develop each module for processing data.
       10.3 Test each module with data according to the test plan.

11 Perform the development of modules for output display and printing.
       11.1 Develop output display screens.
       11.2 Develop procedures for each display screen.
       11.3 Develop output reports printing procedures.
       11.4 Test each modules with data according to the test plan.

12 Perform the integration & testing of the developed systems.
       12.1 Integrate the new system.
       12.2 Test the new system.
       12.3 Modify the system if necessary.

13 Perform the preparation of manuals & documentations.
       13.1 Write final documentations into the source code.
       13.2 Write user and technical manuals.
       13.3 Install the system for the user.
       13.4 Present the new system to the authorities and users.

REFERENCE BOOKS

1. System Analysis and Design

               - Elias M. Awad

2. Analysis and Design of Information Systems

               - V. Rajaraman

3. System Analysis and Design Methods

               - Whitten, Bently, Barlow

4. Applying UML and Patterns

6673   DATA COMMUNICATION AND COMPUTER NETWORK -II

T P C
2 3 3

AIMS

• To be able to develop knowledge, skill and attitude in computer communication networks and media access control methods.
• To be able to acquire knowledge, skill and attitude of network architectures, protocols, standards, connectivity, services, security and management.

SHORT DESCRIPTION

Computer communication network and media access control methods, Network architectures

and standards ,Network connectivity and services, Network security and management.

DETAIL DESCRIPTION

Theory:
COMPUTER COMMUNICATION AND COMPUTER NETWORK
1 Understand computer communication Networking.
    1.1 Mention the problems of communicating devices for directly point-to-point connection with their solutions.
    1.2 Describe the way of connecting network stations via communication network.
    1.3 Mention the categories of Communication Network based on data transfer technique.
    1.4 Mention the difference between switching and broadcast communication networks.
    1.5 Describe the role of circuit switching, packet switching, frame relay, ATM and ISDN.
    1.6 Mention the difference between circuit switching and packet switching techniques.

2 Understand the Server based and peer computer networks.
    2.1 Define client, Server and peer computer in a network.
    2.2 Describe the Server-based Network and Domains.
    2.3 Describe the roles of common types of servers.
    2.4 Mention the deference between DNS and DHCP Server
    2.5 State the function of Forward and reverse lookup zones.

3. Understand the Media access control design issues for LAN System.
    3.1 Mention different techniques of media access control.
    3.2 Describe the round robin/ polling, reservation and contention based access control techniques.
    3.3 Describe collision on a contention based network.
    3.4 Describe the operation of CSMA/CD access control.
    3.5 Describe the operation of token ring and token bus access control.
    3.6 Describe the comparison of media access control techniques (i, e, CSMA/CA Vs CSMA/CD, CSMA/CD Vs Token passing, CSMA/CD Vs Demand priority access control).

NETWORK PROTOCOL ARCHITECTURES AND STANDARDS

4.Understand the OSI model.

4.1 Describe the concept of Defacto and Dejure standards.

4.2 List the name of standard organizations responsible for network standards.

4.3 State the ISO issues.

4.4 Draw the layers of the OSI reference model.

4.5 Describe the function of each layers of OSI model.

4.6 Mention the protocols of each layer.

5 Understand the TCP/IP protocol architecture.

5.1 Define process, host and network.

5.2 Mention the layers of TCP/IP protocol architecture.

5.3 Explain the functions of each layer of TCP/IP protocol architecture.

5.4 Describe the communication using TCP/IP protocol architecture with Block diagram.

5.5 State the Hierarchy of key protocols commonly implemented as part of the TCP/IP protocol suite.

5.6 Explain the role of TCP/IP protocol interface.

5.7 Compare the layering structure of TCP/IP suite and OSI model.

6 Understand the IEEE 802.x standards and Ethernet.

6.1 State the objective of the 802 project model.

6.2 Describe the important features of the IEEE 802 categories.

6.3 State the relation between standard IEEE 802 and OSI model.

6.4 Mention Ethernet Specification of 100 base 2 and 100 base 5 cabling system.

6.5 Describe 5-4-3 rule of thumb for thicknet and thinnet Ethernet LAN.

6.6 Describe the features of demand priority access LAN/100 base VG Any LAN.

7 Understand Fiber Distributed Data Interface (FDDI).

7.1 Describe the working procedure of FDDI.

7.2 Mention the advantages and disadvantages of using FDDI in networking.

7.3 Describe the role of dual counter rotating ring in the event of device or cable failure in FDDI.

7.4 Describe the important features of FDDI components.

7.5 Draw the layout diagram of FDDI network using concentrators.

8 Understand Wireless Networking.

8.1 Define wireless Networking.

8.2 Mention the need of wireless Network.

8.3 Define wireless access Point(WAP).

8.4 Describe transmission techniques of wireless Networking.

8.5 Mention the types of wireless Network.

8.6 Mention the uses of wireless Network.

8.7 Describe the role of Wi-Fi/ Wi-Max technology in modern communication system.

8.8 Describe about Bluetooth Technology

9 Understand the internetwork connectivity devices.

9.1 List the common internetwork connectivity devices.

9.2 Describe the function and operation of Routers, CSU/DSUs and Gateways.

9.3 State the meaning of alternative routes of Routers.
9.4 Mention the features of different types of Routers.
9.5 Mention the difference between Bridges and Routers.
9.6 Mention the features of Routers and Gateways.
9.7 Describe the uses of Gateways.

10 Understand connection services.

10.1 Mention the common network services.
10.2 Define Dial-Up lines and leased lines.
10.3 Define Remote Access Service (RAS).
10.4 State the meaning and use of VPN, DUN, PSTN.
10.5 Describe RAS protocols.
10.6 Describe the limitations of RAS.

11 Understand the network security.

11.1 Define network security.
11.2 Mention the essentials of LAN security.
11.3 Describe the levels of security.
11.4 Describe the role of network management.
11.5 State the meaning of the terms: Control, Management, Maintenance and Administration in networking.
11.6 Describe the network management functions.

12. Understand the concept of cloud networking

12.1 Define cloud computing and storage.
12.2 State the concept of big data.
12.3 Define Virtual Private Server and storage management.
12.4 State the concept of NoSQL Database for cloud system.
12.5 Define Apps and social media data mining.

Practical:
1. Install a Linux based server.
2. Assign IP address and Host name.
3. Manage Remote Login through TELNET/SSH.
4. Configure File Transfer protocol (FTP)/ Network File System (NFS).
5.Configure File Transfer system using TCP and UDP.
6. Configure Samba server configuration.
7. Install and manage Domain name system (DNS).
8. Manage Dynamic Host Configuration protocol (DHCP).
9. Manage DNS client and secondary DNS.
10. Configure Mail server, Web server and proxy server.
11. Manage security policy.
12. Configure Linux PC as a router.
13. Implement a linux network with minimum five computers.
14. Implement a wireless network with minimum five computers.

REFERENCE BOOKS
1 Data & Computer Communications, –by Willian Stallings
2 Computer Networks, - by Andrew S. Tanenbaum.
3 Networking Essentials, - MCSE Study Guide.
4 Learning Red hat Linux-By Bill Mc Carty.
5 Linux- By Kamaran Hossain

6674   COMPUTER ENGINEERING PROJECT-II

                                                    T P C
                                                    0 6 2

AIMS
• To be able to understand the project concept paper (PCP)
• To be able to develop knowledge, skill and attitude of preparing different stages of computer
    hardware and software related project
• To be able to gather experience of writing report on project work.

SHORT DESCRIPTION
Hardware projects:

Digital clock, Digital voltmeter/multimeter, 4 functions ALU with conditional control system, Taxi

cab meter system, Digital logic trainer, Simple as possible computer, Bit slice computer or any

other Hardware/firmware project assigned by the teacher.

Software projects:
Information management system, Control system, Operating system, Packages,
Educational/Entertainment software.

DETAIL DESCRIPTION

1 Perform the tasks to construct a digital clock with at least the features of the clock which (a) is
        able to show the seconds, minutes and hours (b) counts from 0 to 12 AM/PM (c) resets
        the time as required.
                1.1 Design/collect the circuit diagram for constructing the project.
                1.2 Prepare a study report including detail specifications, theories/working
                procedure of each stages/operation of major devices of the circuits.
                1.3 Collect the components/devices/instruments/tools/project board according to
                the need.
                1.4 Design components layout diagram.
                1.5 Construct the circuits in a project board or prepare the circuit using electronic
                engineering software in a computer screen.
                1.6 Connect the appropriate power of accurate voltage & current and observe the
                output or simulate the output in the monitor screen.
                1.7 Test/reconstruct/modify the circuits if there any error or malfunction occurs
                during the output observation.
                1.8 Design a printed circuit board (PCB) for the proposed project.
                1.9 Prepare the PCB (manually/screen print method).
                1.10 Install the components into the PCB and soldered carefully.
                1.11 Connect the appropriate power with accurate voltage and current rating.
                1.12 Observe the output operation.
                1.13 Prepare a users manual.
                1.14 Write the project report in detail.

2 Perform the tasks to construct a digital voltmeter with at least the features of the voltmeter which (a) is able to measures A/C and DC voltage from 0 to 999 volts and (b) shows the voltage in the seven segment display.

2.1 Design/collect the circuit diagram for constructing the proposed project.

2.2 Prepare a study report including detail specifications, theories/working procedure of each stages/operation of major devices of the circuits.

2.3 Collect the components/devices/instruments/tools/project board according to the need.

2.4 Design components layout diagram.

2.5 Construct the circuits in a project board or prepare the circuit using electronic engineering software in a computer screen.

2.6 Connect the appropriate power of accurate voltage & current and observe the output or simulate the output in the monitor screen.

2.7 Test/reconstruct/modify the circuits if there any error or malfunction occurs during the output observation.

2.8 Design a printed circuit board (PCB) for the proposed project.

2.9 Prepare the PCB (manually/screen print method).

2.10 Install the components into the PCB and soldered carefully.

2.11 Connect the appropriate power with accurate voltage and current rating.

2.12 Observe the output operation.

2.13 Prepare a users manual.

2.14 Write the project report in detail.

3 Perform the tasks to construct a four function ALU with at least the features which

(a) is able to perform simple arithmetic & logical operation

(b) controls the operation on the basis of some well defined condition

(c) shows the output result using both binary and seven segment display.

3.1 Design/collect the circuits diagram for constructing the proposed project.

3.2 Prepare a study report including detail specifications, theories/working procedure of each stages/operation of major devices of the circuits.

3.3 Collect the components/devices/instruments/tools/project board according to the need.

3.4 Design components layout diagram.

3.5 Construct the circuits in a project board or prepare the circuit using electronic engineering software in a computer screen.

3.6 Connect the appropriate power of accurate voltage and current and observe the output or simulate the output in the monitor screen.

3.7 Test/reconstruct/modify the circuits if there any error or malfunction occurs during the output observation.

3.8 Design a printed circuit board (PCB) for the proposed project.

3.9 Prepare the PCB (manually/screen print method).

3.10 Install the components into the PCB and soldered carefully.

3.11 Connect the appropriate power with accurate voltage and current rating.

3.12 Observe the output operation.

3.13 Prepare a users manual.

3.14 Write the project report in detail.

4 Perform the tasks to construct a meter system of taxi cab with the features of which is able to show the time, distance and amount of money on the basis of distance and time (where the clock of the system counts the wait time but stops during the running period).
4.1 Design/collect the circuit diagram for constructing the proposed project.
4.2 Prepare a study report including detail specifications, theories/working procedure of each stages/operation of major devices of the circuits.
4.3 Collect the components/devices/instruments/tools/project board according to the need.
4.4 Design components layout diagram.
4.5 Construct the circuit in a project board or prepare the circuit using electronic engineering software in a computer screen.
4.6 Connect the appropriate power of accurate voltage & current and observe the output or simulate the output in the monitor screen.
4.7 Test/reconstruct/modify the circuit if there any error or malfunction occurs during the output observation.
4.8 Design a printed circuit board (PCB) for the proposed project.
4.9 Prepare the PCB (manually/screen print method).
4.10 Install the components into the PCB and soldered carefully.
4.11 Connect the appropriate power with accurate voltage and current rating.
4.12 Observe the output operation.
4.13 Prepare a users manual.
4.14 Write the report of the project.

5 Perform the tasks to construct a digital logic trainer with at least the following features : the trainer must contain 2 state (0,+5v) 8 data input, 2 extra 3 state (+5v,0 and −5v) control input switches, 2 push button clock input, a function generator with multiple frequency range, fixed voltage input (5v, ground and −5v), variable voltage source (0 to 15 volt) and (0 to −15v), project board, 8 bit binary and 2 digit Hexadecimal/BCD 7 segment display.

5.1 Design/collect the circuit diagram for constructing the proposed project.
5.2 Prepare a study report including detail specifications, theories/working procedure of each stages/major devices of the circuits.
5.3 Collect the components/devices/instruments/tools/project board according to the need.
5.4 Design components layout diagram.
5.5 Construct the circuits in a project board or prepare the circuit using electronic engineering software in a computer screen.
5.6 Connect the appropriate power of accurate voltage & current and observe the output or simulate the output in the monitor screen.
5.7 Test/reconstruct/modify the circuit if there any error or malfunction occurs during the output observation.
5.8 Design a printed circuit board (PCB) for the proposed project.

5.9 Prepare the PCB (manually/screen print method).

5.10 Install the components into the PCB and soldered carefully.

5.11 Connect the appropriate power with accurate voltage and current rating.

5.12 Observe the output operation.

5.13 Prepare a users manual.

5.14 Write the project report in detail.

6 Perform the tasks to construct a 8 bit SAP (simple as possible)/Bit slice computer.

6.1 Design/collect the circuit diagram for constructing the proposed project.

6.2 Prepare a study report including detail specifications, theories/working procedure of each stages/major devices of the circuits.

6.3 Collect the components/devices/instruments/tools/project board according to the need.

6.4 Design components layout diagram.

6.5 Construct the circuits in a project board or prepare the circuit using electronic engineering software in a computer screen.

6.6 Connect the appropriate power of accurate voltage and current and observe the output or simulate the output in the monitor screen.

6.7 Test/reconstruct/modify the circuit if there any error or malfunction occurs during the output observation.

6.8 Design a printed circuit board (PCB) for the proposed project.

6.9 Prepare the PCB (manually/screen print method).

6.10 Install the components into the PCB and soldered carefully.

6.11 Connect the appropriate power with accurate voltage and current rating.

6.12 Observe the output operation.

6.13 Prepare a users manual.

6.14 Write the project report in detail.

7 Perform the tasks to construct any other computer related engineering project work of same standard assigned by the teacher within the facilities available in the respective institute.

SOFTWARE PROJECT

8 Perform the tasks to develop any one of the following software using standard programming language (C/C++/Visual programming/Oracle/ HTML/XML/Java etc.).

      i) Educational institute management system

      ii) Hotel management system

      iii) Digital clock

      iv) Accounting software

      v) Transport ticketing management system

      vi) Departmental store management system

      vii) Admission management system

      viii) Billing management system.

      ix) Any other computerized system/control system/operating system/ network system/ packages/ educational/ entertainment software.

8.1 State the abstract PCP of the proposed software.

8.2 Write the objectives of the proposed software.

8.3 Design the user interface of the proposed software in paper.

8.4 Choose an appropriate programming language.

8.5 Create different forms, buttons, label, text box, check box, combo box and menus according to the need of the software.

8.6 Create table if necessary.

8.7 Write codes for the above objects.

8.8 Run and test the program.

8.9 Debug and modify the program if needed.

8.10 Prepare users manual.

8.11 Write a detail report about the developed software.

NB :

    a) Students must perform at least one (Hardware/firmware) engineering project and a software project in a semester.

    b) Students may allow to perform the project works in group basis.

    c) Number of students in a group should not be more than fiv

5852   **INDUSTRIAL MANAGEMENT**   **T P C**
                                                                         2 0 2

AIMS

• To be able to develop the working condition in the field of industrial or other organization.

• To be able to understand develop the labor management relation in the industrial sector.

• To be able to develop the management techniques in the process of decision making.

• To be able to manage the problems created by trade union.

• To be able to understand the network , PERT, CPM & MBO

• To be able to perform the marketing.

• To be able to maintain inventory.

SHORT DESCRIPTION

Basic concepts of management; Principles of management; Scientific management; Organization; Span of supervision; Motivation; Personnel management and human relation; Staffing and manpower planning ; Training of staff; Industrial dispute; Concept of leadership; Concepts and techniques of decision making; Concept of trade union; Inventory control; Economic lot size ; Break even analysis; Labour and industrial law; PERT , CMP ; Network ; Marketing; Production management;

1 Understand the basic concepts & principles of management.
1.1 Define management and industrial management.
1.2 State the objectives of modern management.
1.3 Describe the scope and functions of management.
1.4 State the principles of management.
1.6 State the activity level of industrial management from top personnel to
    workmen.
1.7 Describe the relation among administration, organization &
    management.
1.8 Define Production Management and functions of Production Management.
1.9 Explain the social responsibilities of management.

2 Understand the concept of scientific management.
2.1 Define scientific management.
2.2 Discuss the basic principles of scientific management.
2.3 Explain the different aspects of scientific management.
2.4 Discuss the advantages and disadvantages of scientific management.
2.5 Describe the difference between scientific management and traditional management.
2.6 Describe the following four periods of management thought:
(i) pre-scientific management.
(ii) scientific management.
(iii) human relations
(iv) refinement extension and synthesis of management theories and practices.

3 Understand the concepts of organization and organization structure.
3.1 Define management organization.
3.2 State the elements of management organization.

3.3 Discuss the types of organization structure
3.4 Describe different forms of organization structure.
3.5 Distinguish between line organization and line & staff organization.
3.6 Distinguish between line organization and functional organization.
3.7 Describe the feature advantages and disadvantages of different
    organization structure.
3.8 Define organizational chart.
3.9 Describe the different types of organizational chart.

4 Understand the basic concept of span of supervision.
4.1 Define span of supervision and optimum span of supervision.
4.2 Discuss the considering factors of optimum span of supervision.
4.3 Discuss advantages and disadvantages of optimum span of supervision.
4.4 Define delegation of authority.
4.5 Explain the principles of delegation of authority.
4.6 Explain the terms: authority, responsibility and duties.

5 Understand the concept of motivation.
5.1 Define motivation.
5.2 Discuss the importance of motivation.
5.3 Describe financial and non-financial factors of motivation.
5.4 State the motivation process or cycle.
5.5 Discuss the motivation theory of Maslows and Harzbergs.
5.6 Differentiate between theory-X and theory-Y.
5.7 Discuss the relation between motivation and morale.

6 Understand the concept of leadership.
6.1 Define leadership.
6.2 Discuss the importance and necessity of leadership.
6.3 Discuss the functions of leadership.
6.4 Identify the types of leadership.
6.5 Describe the qualities of a leader.
6.6 Distinguish between autocratic leader and democratic leader.

7 Understand the basic concepts and techniques of decision making.
7.1 Define decision making.
7.2 Discuss the importance and necessity of decision making.
7.3 Discuss different types of decision making .
7.4 Describe the steps in decision making.

8 Understand the concept of personnel management and human relation.
8.1 Define personnel management.
8.2 Discuss the importance of personnel management.
8.3 Discuss the functions of personnel management.
8.4 Define staffing.
8.6 Define recruitment and selection of employees.
8.7 Describe various sources of recruitment of employees.
8.8 Describe the various methods of selection of employees.
8.9 Discuss the advantages and disadvantages of internal sources of
    recruitment.
8.10 Discuss the disadvantages of external sources of recruitment.
8.11 Define training and orientation of employee.
8.12 Discuss the importance and necessity of training.
8.13 Discuss the various methods of training of workmen, technicians and
     executive personnel.

9. Understand the concept of inventory control
9.1 Define inventory.& inventory control.
9.2 Describe the function of inventory control.
9.3 Discuss the necessity and importance of inventory control.
9.4 Mention the advantages and disadvantages of inventory control.
9.5 Explain the following terms :
- Bin card or Bin tag.
- Purchase requisition.
- Store requisition.
- Material transfer note.
- First in first out (FIFO).
- Last in first out(LIFO).
- PERT
- CPM
- NETWORK
- MBO

10 Understand the concept of economic lot size & break even analysis
10.1 Define economic lot size.
10.2 Discuss the effects of over supply and under supply.
10.3 Describe the method of determination of economic lot size.
10.4 Explain the terms :
- Safety stock
- Determination of safety stock
- Lead time
10.5 Define break even point and break even chart.
10.6 Explain the terms :
- Break even analysis.
- Fixed cost.
- Variable cost.
10.7 Discuss the importance of break even analysis.
10.8 Describe the method of preparing break even chart.
10.9 Describe different methods of break even analysis.
10.10 Draw break even chart in different method.
10.11 Mention the advantages and disadvantages of break even analysis.

11 Understand the concept of Marketing and inventory control
11.1 Define marketing.
11.2 Discuss the function of marketing.
11.3 State the objectives of marketing.
11.4 Explain the terms :
- Brand
- Producer
- Consumer
- Customer
- Copyright
- Trade mark
11.5 Discuss product life-cycle and marketing strategies in different stages of a product life-cycle
11.6 Define purchasing
11.7 Describe the five "R" of purchasing principles

12 Understand the concept of trade union and industrial law
12.1 Define trade union.

12.2 Mention the objectives of trade union.
12.3 Discuss the function of trade union.
12.4 Describe different types of trade union.
12.5 Mention the names of major trade union in Bangladesh.
12.6 Define labour and industrial law.
12.7 Discuss the importance of labour and industrial law.
12.8 Explain the terms :
- Factory Act. (1965)
- Minimum Wage Act (1957).
- Industrial Disputes Act.
- Work Men Compensation Act.
- Trade Union Act.

5853   **ENTREPRENEURSHIP**   **T P C**
                                                                                2 0 2

AIMS
• To be able to understand the concept of entrepreneurship & entrepreneur.
• To be able to understand the concept of environment for entrepreneurship.
• To be able to understand the sources of venture ideas in Bangladesh.
• To be able to understand the project selection.
• To be able to understand business planning.
• To be able to understand the case study

SHORT DESCRIPTION
Concepts of entrepreneurship & entrepreneur; Entrepreneurship & economic development; Environment for entrepreneurship; Entrepreneurship in the theories of economic growth; Sources of ventures ideas in Bangladesh; Evaluation of venture ideas; Financial planning; Project selection; Self employment; Entrepreneurial motivation; Business plan; Sources of assistance & industrial sanctioning procedure.
Insurance ; case study.
DETAIL DESCRIPTION

Theory :
1 Understand the basic concept of entrepreneurship & entrepreneur.
      1.1 Define entrepreneurship & entrepreneur.
      1.2 Discuss the characteristics and qualities of etrepreneur.
      1.3 Mention the classifacation of entrepreneur.
      1.4 Discuss the case entrepreneurship and mass entrepreneurship.
      1.5 Discuss the necessity of entrepreneurship as a career.
      1.6 Discuss the function of entrepreneur in developing countries.
      1.7 Discuss the prospect of entrepreneurship development in Bangladesh.

2 Understand the concept of entrepreneurship and economic development.
      2.1 Define economic development.
      2.2 Discuss that the economic development is a process.
      2.3 Describe the entrepreneurship as a factor of economic development.
      2.4 Discuss the capital accumulation or rate of savings.
      2.5 Discuss the role of entrepreneur in the technological development and their introduction into production Process.
      2.6 Discuss the entrepreneur in the discovery of new sources of resources.
      2.7 Discuss the entrepreneur in the discovery of new product.
      2.8 Discuss the discovery of new markets.

3 Understand the concept of entrepreneurship in the theories of economic growth.
      3.1 Define entrepreneurship in the theories of economic growth.
      3.2 Discuss the theory of need for achievement of Devid MacClelland.
      3.3 Discuss the Malthusian theory of population and economic growth.
      3.4 Discuss the labour theory of production and limit to growth.
      3.5 Discuss the Keynesian theory of employment and output.
      3.6 Discuss the stage theory of growth.
      3.7 Discuss the Schumpterian theory of economic development.
      3.8 Discuss the entrepreneurship motive in economic development.

4 Understand the sources of vanture ideas in Bangladesh.
      4.1 Define sources of venture ideas in Bangladesh.
      4.2 Discuss different types of sources of venture ideas in Bangladesh.
      4.3 Discuss informal sources of venture ideas in Bangladesh.

5 Understand the evaluation of venture ideas.
> 5.1 Define evaluation of venture ideas.
> 5.2 Discuss the factors that influence the selection of venture ideas.
> 5.3 Discuss the evaluating financial aspects of business.
> 5.4 Discuss the determinats of the firm size.

6 Understand the concept of project selection and financial planning.
> 6.1 Define project.
> 6.2 Discuss the idea of project.
> 6.3 Describe the guide lines for project ideas.
> 6.4 Discuss the sources of project ideas.
> 6.5 Discuss the evaluation of project ideas.
> 6.6 Describe the technical aspect of project.
> 6.7 Define financial planning.
> 6.8 Discuss the long term financial plan.
> 6.9 Discuss the short term financial plan.

7 Understand the concept of self employment.
> 7.1 Define self employment.
> 7.2 Describe different types of employment.
> 7.3 Describe the importance of business as a profession.
> 7.4 Discuss the reasons for success and failure in business.
> 7.5 Discuss the self assessment of entrepreneurial qualities.

8 Understand the concept of entrepreneurial motivation.
> 8.1 Define entrepreneurial motivation.
> 8.2 Discuss the achievement motivation theory.
> 8.3 Describe the means of improving achievement motivation.
> 8.4 Discuss the background of high need achievement.
> 8.5 Describe the problems associated with high need achievement.

9 Understand the business plan and the concept of the environment for entrepreneurship.
> 9.1 Define business plan.
> 9.2 Describe the importance of business plan.
> 9.3 Discuss the contents of business plan.
> 9.4 Describe the business plan proforma.
> 9.5 Define environment of business.
> 9.6 Describe the factors which effect environment on entrepreneurship
> 9.7 Discuss the aspects of business environment

10 Understand the concept of sources of assistance & industrial sanctioning procedure.
> 10.1 Define sources of assistance.
> 10.2 Describe different types of sources of assistance.
> 10.3 Describe entrepreneurship development cycle.
> 10.4 Discuss the aid of sources.
> 10.5 Discuss the industrial policy.
> 10.6 Describe the technique of industrial policy.
> 10.7 Define foreign aid.

11 Understand the insurance and premium.
11.1 Define insurance and premium
11.2 Describe the essential conditions of insurance contract.
11.3 Discuss various types of insurance.
11.4 Distinguish between life insurance and general insurance.

12 Understand the concept of case studies.

12.1 Define case study.

12.2 Discuss the objectives of case study.

12.3 Describe the method of case analysis.

12.4 Discuss the importance of case study.

12.5 Mention the advantages and disadvantages of case study