



BANGLADESH TECHNICAL EDUCATION BOARD

Agargaon, Dhaka-1207

4-YEAR DIPLOMA-IN-ENGINEERING PROGRAM
SYLLABUS (PROBIDHAN-2016)

GRAPHICS TECHNOLOGY

TECHNOLOGY CODE: 696

6th SEMESTER

DIPLOMA IN ENGINEERING
PROBIDHAN-2016

GRAPHICS TECHNOLOGY
6th 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	69561	Printers Costing & Estimating	2	3	3	40	60	25	25	150
2	69661	Desktop Publishing	2	6	4	40	60	50	50	200
3	69662	Project work	0	6	2	0	0	50	50	100
4	69663	Basic Web Design	2	3	3	40	60	25	25	150
5	69664	Computer Graphic Design - 2	2	6	4	40	60	50	50	200
6	65852	Industrial Management	2	0	2	40	60	0	0	100
Total			10	24	18	200	300	200	200	900

AIMS:

- To understand the concept and working definition of cost estimation in printing industry.

SHORT DESCRIPTION:

Function of costing and estimating; cost estimating; method of quotation & tender; technical background of an Estimator; administrative function in a printing company; estimation of type works of book and magazine; estimating of digital printing; routine work of estimating; make-ready work for running the press; materials wastage allowance and print finishing work.

DETAIL DESCRIPTION:

Theory:

1. Understand the function of costing and estimating.

- 1.1 Define Costing & Estimating.
- 1.2 Classification of Costing.
- 1.3 Define Job & Marginal costing.
- 1.4 Describe the purpose of Estimating.
- 1.5 Describe the importance of Estimating.
- 1.6 Difference between Costing & Estimating.

2. Understand Cost Estimating.

- 2.1 Describe the method of Costing.
- 2.2 Describe the procedure of Estimating.
- 2.3 Define Budgeted Hourly Rates.
- 2.4 Describe Production Cost and Overhead Cost.
- 2.5 Describe the factors to be considered for Estimating.
- 2.6 Explain the relation of estimating with production cost.
- 2.7 Define Activity based costing and Job Costing.

3. Understand the method of Quotation & Tender.

- 3.1 Define quotation.
- 3.2 Define Unit Cost.
- 3.3 Describe Depreciation Cost.
- 3.4 Define Tender, Work Order Sheet/ Job Sheet.
- 3.5 Define customer price.
- 3.6 Difference between quotation and tender.
- 3.7 Describe the relation of quotation and tender with cost estimating.

4. Understand technical background of an Estimator.

- 4.1 Describe the Role of an Estimator.
- 4.2 Importance of preparing accurate estimating.
- 4.3 Time limitation for a particular printing job.
- 4.4 Procedure of selection the printing press and equipment for particular printing job.
- 4.5 Describe the different printing process and production records.
- 4.6 Describe the calculating process of paper weight and ink coverage.
- 4.7 Learning about fixed cost, variable cost and BPIFs costing systems.

5. Understand the administrative function in a printing company.

- 5.1 Explain the procedure of making work order sheet.
- 5.2 Describe the preparation of correct estimating.
- 5.3 Describe the production planning and control.
- 5.4 Describe the procedure of purchasing.
- 5.5 Explain the method of pricing/ invoicing of a product.
- 5.6 Describe the effects of wastage control in cost estimating.
- 5.7 Describe the customer services.

6. Understand the estimation of type works of book and magazine.

- 6.1 Define casting off, copy fitting, casting up and operational times.
- 6.2 Define the calculation, character per line and per page.
- 6.3 Describe page size, number of forma and sheet per book.
- 6.4 Define periodical calculation.
- 6.5 Describe the processing charge of single forma and single color.
- 6.6 Describe the printing charge of a forma per thousand and per color.
- 6.7 Describe the process for calculating operational time of plate exposer & plate processor for preparing image carrier.

7. Understand Estimating of Digital Printing.

- 7.1 Define Digital Printing.
- 7.2 Explain the role of computer to produce accurate estimate.
- 7.3 Describe the advantages of computerized estimating system.
- 7.4 Discuss Digital Front-end & variable Data Printing Costs.
- 7.5 Describe Estimating Mailing and Hybrid Work.
- 7.6 Learning Cost analysis and Estimating Software.
- 7.7 Distinguish between Traditional and Digital estimating system.

8. Understand the routine work of estimating.

- 8.1 Explain full job description of an estimator.
- 8.2 Describe working method of an estimator.
- 8.3 Explain half sheet work, Sheet work and Work & tumble work.
- 8.4 Difference between various working methods.
- 8.5 Materials used in cost estimating.
- 8.6 Explain the query of standard market price of different raw materials.

9. Understand the make-ready work for running the press.

- 9.1 Define Make ready work.
- 9.2 Explain the make-ready time and print test time of a press.
- 9.3 Define speed of a press to calculate the impress per hour and per color.
- 9.4 Describe the summary of operational time and speed from table work.
- 9.5 Selection of Raw materials as per cost estimating.

10. Understand materials wastage allowance and print finishing work.

- 10.1 Define allowance for paper wastage.
- 10.2 Define ink wastage.
- 10.3 Define wastage of process works.
- 10.4 Define print finishing work.
- 10.5 Describe the manual procedure of print finishing work.
- 10.6 Explain the auto procedure of print finishing work.
- 10.7 Define commercial binding.
- 10.8 Explain how binding make effect on cost estimating.

Practical:

1. Calculate the GSM from given sample.
2. Find the art and copy preparation cost. (Plate & Positive)
3. Calculate the Per Thousand impression rate for different printing machines.
4. Calculate the number sheets/Forma required for a book of 8.5"x11"size and the number of page will be 96.
5. Calculate how much ink needs for particular jobs.
6. Calculate the Number of Cutting & Costing for Different type paper
7. Estimate to complete a particular job (Letterhead pad: size A4, Color: Four Color, 100gsm Offset quantity: 1000pcs).
8. Estimate to complete a particular job (Visiting Card: Size: 3.5x2 inch, Color: Four Color, Board: Art Card: 300gsm, Lamination: Mat & Spot, Quantity: 1000pcs).
9. Calculate the total cost required for printing a calendar of four pages of four colors of demy size.
10. Estimate the paper and board of corrugation boxes & cartoons
11. Estimate the films, foils, paper & board used in gravure and Flexo printing.

AIMS

After completing this module the trainee will be able to:-

- Operate Computer and Peripheral Independently.
- Learn about Graphic art Techniques.
- Design Logos, Cover pages, Advertisements, Letter heads etc.
- Create various types of layout with Formatting
- Create Illustration images, Pictures, for various formats meant for printing purpose.

SHORT DESCRIPTION

Photoshop-history & introduction, the file menu, the tools, Drawing lines & shapes. Inserting picture and shapes, filling colors, Image correction, text effects, filters, Creating design patterns. Type facing and type design; Thumbnail sketches; Text wrap, Drawing, Working with Objects, Transforming and Distorting Shapes, Applying color, Producing consistent color, Transparency, Gradients, and Patterns, Appearance Attributes, Styles, and Effects.

DETAIL DESCRIPTION

Theory

1.0 Understand the fundamentals of DTP

- 1.1 Explain the Desktop Publishing
- 1.2 Discuss the application of Desktop Publishing
- 1.3 Discuss the job market of Desktop Publishing
- 1.4 Discuss about the software requirement for Desktop Publishing
- 1.5 Discuss about the hardware requirement for Desktop Publishing

2.0 Understand the importance of word processing in DTP

- 2.1 Explain the importance of word processing in DTP
- 2.2 Discuss various word processing environments/software
- 2.3 Discuss text formatting, margins, borders etc.
- 2.4 Discuss font size, font style, colors, paragraph, alignments etc.
- 2.5 Discuss the use of chart, tables, graphs, diagrams etc.
- 2.6 Discuss the use of images and graphics in word processing for DTP

3.0 Understand Adobe PageMaker

- 3.1 Describe the work-environment of Adobe PageMaker
- 3.2 Discuss the advantages of using Adobe PageMaker
- 3.3 Discuss when to use Adobe PageMaker
- 3.4 Discuss page layout and formatting
- 3.5 Discuss the use of tool box, with palettes, text and graphics

4.0 Understand Page format using PageMaker

- 4.1 Discuss the ruler, guides, typing text, formatting graphics, rotating, creating columns, creating styles, changing type style and alignment etc.

- 4.2 Describe the technique of moving text block and graphics, placing text file, setting tab, indents, and leaders copying graphics between publication, positioning and resizing the logo
- 4.3 Discuss the method of setting up pages, changing document setup, using master pages, choosing a measurement system and setting up rulers, adjusting layout, numbering pages, creating header and footers etc.
- 4.4 Discuss the way of creating table of contents, Customizing the dictionary, hyphenation, leading frames layers, locking, objects wrapping text around graphics cropping a graphic using libraries, assembling the publication etc.
- 4.5 Discuss the issues involved with review and finalizing the publication.

5.0 Understand Adobe In Design:

- 5.1 Discuss Document and column set up for a variety of publications
- 5.2 Discuss different types of tools
- 5.3 Discuss the Use of rulers, guides and snap-to guides
- 5.4 Discuss Page formatting techniques
- 5.5 Explain ways of formatting type including styles, sizes, leading, tracking, kerning
- 5.6 Describe the edit menu – cutting, copying, pasting
- 5.7 Discuss Multiple pasting, editing stories, spell checking

6.0 Understand formatting in Adobe In Design:

- 6.1 Describe way of formatting paragraphs, moving/resizing etc.
- 6.2 Explain the techniques of placing graphics, resizing graphics, text wraps
- 6.3 Discuss setting templates and style palettes
- 6.4 Explain grouping and aligning objects, multiple pasting
- 6.5 Explain graphic formats, links, resolutions
- 6.6 Discuss color, color libraries and color separation
- 6.7 Explain Bi-fold brochures and other custom layouts.
- 6.8 Explain rotation tool, drop caps, page numbering and insertion of special symbols.
- 6.9 Describe Styles and creating a custom style palette, use of templates

7.0 Understand Transforming and Retouching (Photoshop Program)

- 7.1 Describe Changing the size of the work canvas
- 7.2 Describe Rotating and flipping entire images
- 7.3 Describe Cropping images
- 7.4 Describe Transforming objects
- 7.5 Describe Retouching and repairing images
- 7.6 Describe using Brush and Similar Tools

8.0 Understand the typographical design (Illustrator Program)

- 8.1 Define typographical design.
- 8.2 Classify the type Attributes.
- 8.3 Explain the importance of using of type Face.
- 8.4 Explain the type Format.
- 8.5 Describe the Type Paragraph Indent
- 8.6 Discuss the type Alignment.

- 8.7 Discuss the type Tab Setting.
- 8.8 Discuss the various font (serif, sans serif, display, script)

9.0 Understand basic styles and special formats(Illustrator Program)

- 9.1 Explain the Apply styles (bold, italic, underline, shadow, small cap, outline, 2D, 3D)
- 9.2 Explain the Special formats: contour, texture, color, drop cap, reverse type, text wrap,
- 9.3 Define the display type.
- 9.4 Explain the uses of display type.
- 9.5 Describe the uses of Italic & Roman types in graphic.

10.0 Understand Drawing Basic Shapes(Illustrator Program)

- 10.1 Discuss the Drawing with the pen tool.
- 10.2 Discuss the Adjusting path segments.
- 10.3 Explain the various shapes.
- 10.4 Explain the Pathfinder
- 10.5 Discuss the Drawing spirals, grids and symbols.

11.0 Understand Color & Gradient (Illustrator Program)

- 11.1 Define Color modes
- 11.2 Discuss the Fill, Stroke & Gradient Color
- 11.3 Explain the spot and process color types
- 11.4 Explain the color using the toolbox
- 11.5 Explain the Swatches palette
- 11.6 Discuss Swatch Libraries
- 11.7 Describe Color Picker.

12.0 Understand Saving and Exporting file(Illustrator Program)

- 12.1 Discuss the saving and exporting.
- 12.2 Discuss Saving file in EPS format
- 12.3 Explain the Saving file in Adobe PDF format
- 12.4 Discuss the file Extension
- 12.5 Discuss the Exporting image /Object in other program

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PRACTICAL

1. Create a Visiting Card & Letterhead Pad
2. Create a poster design (Multicolor)
3. Create a Logo Design
4. Create a convert Raster to vector Image
5. Separate Image from background (Hair mask)

6. Create a Book cover & Inner pages design
7. Create a Brochure Design (3 Folded)
8. Create a wall& Desk calendar Design
9. Create a news paper Advertisement
10. Create a Diary Pocket Di -cutting
11. Prepare a Output setting with Registration Mark, Cutting mark, Gripper mark for Printing
12. Prepare a Forma setting (Back to Back, Back to front)
13. Prepare a newspaper layout.
14. Make a back drop of a education related seminar.

Reference books:

- 1. Desktop publishing, by Md. Torikul Islam**

69662 Project Work

T P C
0 6 2

1. Create a Visiting Card
2. Prepare a poster design (Multicolor)
3. Create a Book cover
4. Create Inner pages design
5. Create a Brochure Design (3 Folded)
6. Create a wall calendar design
7. Create a desk calendar Design
8. Create a diary pocket Di –cutting
9. Create a flyer design.
10. Create a ID card design.
11. Create a letter head design.
12. Prepare a invitation card design.
13. Prepare money receipt design.
14. Create a certificate design.
15. Create a Logo design.
16. Create an envelope design.
17. Make a back drop banner of an education related seminar.

AIMS

- To be able to develop Knowledge, skill and attitude to design & create web page.
- To be able to apply the principles of website design
- To be able to browse and use web sites
- To be able to link web pages and multimedia objects to the internet environment

SHORT DESCRIPTION

Design and front-end development of web pages using XHTML/XML/CSS and Graphics software; Physical and logical character effects in XHTML/XML pages; Use of ordered and unordered list, table, forms, Radio button, Submit button and checkbox in web pages; Use of Validation check, Managing document spacing, linking image, sound and video to a page or other pages and multimedia objects and use of cascading style sheet in web page.

DETAIL DESCRIPTION

Theory:

1. Understand the principles of website design.

- 1.1 Brief history of World Wide Web.
- 1.1 Describe to define web, web site and web page.
- 1.2 Explain the importance of a web site.
- 1.3 Illustrate of importance information presentation.
- 1.4 State the principle of website design.
- 1.5 Explain the web browsers to access the web.

2. Understand the work area in Photoshop for website design

- 2.1 Introduce the Photoshop interface.
- 2.2 Discuss with designing measurement unit.
- 2.2 Explain the Photoshop tools and floating palate.
- 2.3 How to create a new document for webpage design.
- 2.4 Describe with the grid system design.
- 2.4 Explain mobile application design.

3. Understand the HTML (Hyper Text Markup Language)

- 3.1 Introduce the HTML (Hyper Text Markup Language).
- 3.2 Brief HTML Editors (Notepad, Notepad++, Dreamweaver, etc).
- 3.3 Explain how to create new html page.
- 3.4 Discuss HTML Tags (HTML Tags, Head Tag, Body Tag).
- 3.5 Describe HTML elements and attributes.
- 3.6 Discuss the save methods of the HTML document.
- 3.7 Discuss the web color.

4. Understand the HTML Tags and attributes

- 4.1 Describe HTML document tag.
- 4.2 Brief discussion heading tags and attributes.
- 4.4 Discuss the paragraph tags and attributes.
- 4.5 Illustrate the style, formatting.
- 4.6 Discuss Link, image, table, Lists Tags.
- 4.6 Explain the class and ID.
- 4.7 Discuss form tags and attributes.

5. Understand the HTML5 Tags & Media Tags

- 5.1 Describe how to create HTML5 intro.
- 5.2 Discuss HTML5 new tags.
- 5.3 Mention the uses of audio tags.
- 5.4 Mention the uses of video tags.

6. Understand the CSS

- 6.1 Introduce CSS (cascading style sheet).
- 6.2 Explain how to insert external CSS with the HTML document.
- 6.3 Discuss CSS syntax.
- 6.4 Discuss CSS property (color, background, borders, margin, padding, height, width).
- 6.5 Discuss with the CSS characteristics (Font, Paragraph, Link, Lists, Table, Position, Float, and Overflow).

7. Understand the CSS3 (Advance)

- 7.1 Brief CSS3 contents.
- 7.2 Discuss CSS3 (Background, Rounder Corner, Gradients, Shadow and Text Effect).
- 7.3 Discuss CSS (Web Fonts, Transform, Transitions, Animations, and Media Queries).
- 7.4 Explain design.
- 7.5 Discuss with the responsive property with media.

8. Understand the jquery library

- 8.1 Introduce jquery.
- 8.2 Discuss jquery library.
- 8.3 Discuss plugins (Gallery, Slideshow).
- 8.4 Explain how to add jquery with the HTML documents and how it work.

Practical

1. Create a webpage design.
2. Create an Institution webpage design.
3. Create a mobile application UI (Social App).
4. Prepare a HTML document.
5. Prepare a Navigation.
6. Create conversion PSD to HTML and CSS.
7. Insert jquery library with webpage using free source code (Navigation, Gallery, Slideshow, etc).
8. Insert Audio into HTML document.
9. Insert Video into HTML document.
10. Create a complete webpage design with the front-end development

REFERENCE BOOK and online site

1. Beginning HTML, XHTML, CSS, and JavaScript (Book by Jon Duckett)
2. <http://www.w3schools.com/html/default.asp>
3. www.w3.org/TR/xhtml11
4. www.xhtml.org
5. validator.w3.org

AIMS

- To be able to develop the knowledge and skill in graphic design suitable for printing.
- To enable to use illustrator and Photoshop program.

SHORT DESCRIPTION

Important of the image fundamental; color management, painting, retouching and repairing; masking and contraction, corrective filter, working with layer; shapes and styles, text editing and image manipulation; Working with jpg and GIF formats,

DETAIL DESCRIPTION

Theory:

1. Understand the image fundamental

- 1.1 Explain the resolution of screen images.
- 1.2 Discuss file format.
- 1.3 Discuss resampling and cropping.
- 1.4 Describe open, duplicate and save images.

2. Understand the color management

- 2.1 Describe color selection and editing.
- 2.2 Discuss different color modes.
- 2.3 Describe color correction methods.
- 2.4 Describe color channels.
- 2.5 Discuss color channel effects.

3. Understand painting

- 3.1 Explain paint and edit tools basics.
- 3.2 Describe brush shape and opacity.
- 3.3 Explain brush modes.
- 3.4 Describe brush dynamics.
- 3.5 Describe use of different brush.
- 3.6 Describe how to make a new brush.

4. Understand the retouching & repairing

- 4.1 Describe cloning image element.
- 4.2 Discuss repeating patterns.
- 4.3 Describe stepping back through time.
- 4.4 Describe the necessity of color correction.

5. Understand the mask & contraction

- 5.1 Describe selecting via mask.
- 5.2 Discuss painting and editing inside selection.
- 5.3 Describe working in quick mask mode.
- 5.4 Explain generating mask automatically.
- 5.5 Discuss creating independent mask channel.
- 5.6 Describe building a mask from an image.

6. Understand the corrective filtering

- 6.1 Discuss filter basics.
- 6.2 Discuss heightening focus and contrast.
- 6.3 Describe blurring and image
- 6.4 Discuss noise factors
- 6.5 Describe 3D text and object

7. Understand the working with layer

- 7.1 Discuss working with layers.
- 7.2 Describe selecting the contrast of layer.
- 7.3 Discuss moving, linking, aligning layers.
- 7.4 Discuss applying transformations.
- 7.5 Discuss masking and layers.

8. Understand the shapes & styles

- 8.1 Discuss drawing shapes and shape properties
- 8.2 Discuss the bold new layers styles.
- 8.3 Describe adding, modifying and saving effects.

9. Understand the text editing and manipulation

- 9.1 Explain the necessity of text editing and manipulation.
- 9.2 Discuss text as a art.
- 9.3 Describe vertical and horizontal type arrangement.
- 9.4 Describe text form aligns.
- 9.5 Discuss the process to edit type as shape.

10. Understand the graphics for the web

- 10.1 Describe the rules of web imagery.
- 10.2 Explain saving JPG, PNG, GIF, SVG images.
- 10.3 Discuss preparing and saving GIF and SVG images

PRACTICAL

1. Create a folding design by using illustrator.
2. Create a logo.
3. Apply filter effect by using Photoshop.
4. Design a folded brochure.
5. Perform color correction using Photoshop.
6. Create a 3D effect designs using illustrator.
7. Design a wall calendar using graphic software.
8. Create a mobile phone design using graphic software.
9. Create a magazine cover design for a corporate body.
10. Create a inner page design for annual report.

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 Planning
- To be able to perform the marketing.
- To be able to maintain inventory.

Course Outline

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

1 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.
- 1.5 State the activity level of industrial management from top personnel to workmen.
- 1.6 Describe the relation among administration, organization & management.

2. Concept of Planning

- 2.1 Define Planning
- 2.2 Discuss the importance of Planning
- 2.3 Discuss the Types of Planning.
- 2.4 Discuss the steps in Planning

3 . Concepts of organization and organization structure.

- 3.1 Define management organization.
- 3.2 State the elements of management organization.
- 3.3 Describe different forms of organization structure.
- 3.4 Distinguish between line organization and line & staff organization.
- 3.5 Distinguish between line organization and functional organization.
- 3.6 Describe the features, advantages and disadvantages of different organization structure.

4. Concept of scientific management.

- 4.1 Define scientific management.
- 4.2 Discuss the basic principles of scientific management.
- 4.3 Explain the different aspects of scientific management.
- 4.4 Discuss the advantages and disadvantages of scientific management.
- 4.5 Describe the difference between scientific management and traditional management..

5. Concept of span of supervision.

- 5.1 Define span of supervision and optimum span of supervision.
- 5.2 Discuss the considering factors of optimum span of supervision.
- 5.3 Discuss advantages and disadvantages of optimum span of supervision.
- 5.4 Define delegation of authority.
- 5.5 Explain the principles of delegation of authority.
- 5.6 Explain the terms: authority, responsibility and duties.

6 . Concept of motivation.

- 6.1 Define motivation.
- 6.2 Discuss the importance of motivation.

6.3 Describe financial and non-financial factors of motivation.

6.4 Special Motivational Techniques.

6.5 Discuss the motivation theory of Maslow and Herzberg.

6.6 Differentiate between theory-X and theory-Y.

7. Concept of leadership.

7.1 Define leadership.

7.2 Discuss the importance and necessity of leadership.

7.3 Discuss the functions of leadership.

7.4 Describe the qualities of a leader.

8. Basic concepts and techniques of decision making.

8.1 Define decision making.

8.2 Discuss the importance and necessity of decision making.

8.3 Discuss different types of decision making .

8.4 Describe the steps in decision making.

9. Concept of personnel management and human relation.

9.1 Define personnel management.

9.2 Discuss the functions of personnel management.

9.3 Define staffing.

9.4 Define recruitment and selection of employees.

9.5 Describe various sources of recruitment of employees.

9.6 Describe the methods of selection of employees.

9.7 Define training and orientation of employee.

9.8 Discuss the importance and necessity of training.

9.9 Discuss the various methods of training of workmen, technicians and executive personnel.

10. Concept of inventory control & Economic lot size

10.1 Define inventory & inventory control.

10.2 Describe the function of inventory control.

10.3 Define Economic lot size and the Method of determination of economic lot size.

10.4 Discuss the effects of over supply and under supply.

10.5 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).
- Safety stock
- Lead time

11. Concept of Break Even Point (BEP)

11.1 Define Break Even Point and Break Even Chart.

11.2 Describe the method of determination of BEP

11.3 Explain the terms :

- Break even analysis.
- Fixed cost.
- Variable cost

12. Concept of Marketing

12.1 Define marketing.

12.2 Discuss the function of marketing.

12.3 State the objectives of marketing.

12.4 Explain the terms :

- Purchase
- Brand
- Producer
- Consumer
- Customer
- Copyright
- Trade mark

12.5 Discuss product life -cycle and marketing strategies in different stages of a product life-cycle

13. Concept of trade union and industrial dispute

13.1 Define trade union.

- 13.2 Mention the objectives of trade union.
- 13.3 Discuss the function of trade union.
- 13.4 Describe different types of trade union.
- 13.5 Define industrial dispute
- 13.6 Discuss different type of industrial dispute

REFERENCE BOOKS

- 1. Dr. Md. Mainul Islam and Dr. Abdul Awal Khan-Principles of Management, Bangladesh Open University.
 - 2. Mohammad Mohiuddin-Personnel Management and Industrial Relation, NIDS Publication Co. Dhaka.
 - 3. সুফিয়া বেগম, মো: জাহেদুল হক ও সুপ্রিয়া ভট্টাচার্য-ব্যবস্থাপনা এর মৌলিক ধারণা, ব্যতিক্রম প্রকাশনী ঢাকা।
- Matz Usry-Cost Accounting: Planning & Control.