

# BANGLADESH UNIVERSITY OF TEXTILES

B. Sc. in Textile Engineering (For Affiliated College)

Level-3 Term-I, Final Examination-2019

Subject: Chemistry of Dyes and Pigments (WPE 305)

Time: 3.0 Hrs.

Full Marks: 72

(Use separate answer script for Part: A and Part: B)  
(All parts of a question must be answered consecutively)

## Part: A

(Answer any three questions)

- Explain witts theory of color and chemical constitution of dyes.
  - Show the basic synthesis reaction for production of azo dyes. Draw structures of various diazo and coupling components that can be used in synthesis of azo dyes.
  - What are some forms of tautomerism in azo dyes?
  - Interpret the following commercial name of dyes- "Remazol Brilliant Blue R".

[3+6+2+1=12]
- Classify colorant based on chemical structure with example.
  - Write about complementary color relationship showing their wavelengths.
  - State the requirements for a colorant to be a true dye.

[5+3+4=12]
- State the necessity of dye intermediates.
  - Synthesis five important dye intermediates and show their application.
  - Explain the relation between color and chemical constitution of dyes according to molecular orbital theory.

[2+6+4=12]
- What do you mean by nitro and nitroso dyes?
  - Classify triphenylmethane dyes and synthesis each class
  - State properties and synthesis procedure of anthraquinone acid dyes.

[2+5+5=12]

## Part: B

(Answer any three questions)

- Classify disperse dyes.
  - Explain mechanism of dyeing of disperse dyes.
  - Show reaction of monochlorotriazinyl and dichlorotriazinyl reactive dyes with cellulose and water.

[3+5+4=12]
- Explain health and environmental problems caused by dyes and pigments with examples.
  - Discuss the pollution of dyeing in textile industry.
  - State the use of dyes in solar energy conversion.

[5+5+2=12]
- Why Sulphur dye is so called?
  - Explain chemistry of Sulphur dyes.
  - Show a typical structure of reactive dyes.
  - Prepare thioindigo and indigo dyes.

[2+3+3+4=12]
- Write short notes on following (Any four)
    - Chromic dyes
    - Fluorescent dyes
    - Thermal transfer printing
    - Laser dyes
    - Bronzing of Sulphur dyes

# **BANGLADESH UNIVERSITY OF TEXTILES**

**B. Sc. in Textile Engineering (For Affiliated College)**

**Level-3 Term-1, Final Examination-2019**

**Subject: Apparel Manufacturing-II (Code: AE 309)**

**Time: 3.0 Hrs.**

**Full Marks: 72**

**(Use separate answer script for Part: A and Part: B)  
(All parts of a question must be answered consecutively)**

## **Part: A**

**(Answer any three questions)**

1. (a) Explain various production systems in apparel industry.  
(b) Describe the feasibility of modular production system in apparel industry of Bangladesh.  
(c) Differentiate between progressive bundle system and unit production system. [4+4+4=12]
2. (a) Narrate the wastages occurred in cutting room of a apparel industry.  
(b) Why cutting room management is important for apparel industry? Explain.  
(c) Briefly discuss about reasons for keeping inventory. [4+4+4 = 12]
3. (a) Define material handling. What are the objects of material handling.  
(b) Discuss about the different types of material handling.  
(c) Give a list of most important material handling equipment. [3+4+5 = 12]
4. (a) Show the working flow chart of cutting room in garments industry.  
(b) What are the functions of an IE executive at cutting section.  
(c) What is line balancing? Write down the importance of Line Balancing.  
(d) Write down the advantages and the disadvantages of modular production system. [3+3+4+2 = 12]

## **Part: B**

**(Answer any three questions)**

5. (a) Write down the mechanism of enzyme on denim apparel.  
(b) Discuss the typical Procedure of acid wash for a batch of 60 kg long denim pant.  
(c) Distinguish between bleach and super white wash. [4+4+4 = 12]
6. (a) Define apparel dyeing. Discuss about the precaution to be taken before apparel dyeing.  
(b) Which property of interlining is essential for apparel dyeing? Explain.  
(c) State the flow process of tie dyeing on apparel with its advantages. [4+4+4 = 12]
7. (a) What is special clothing? Discuss briefly about the flames resistance clothing with its application.  
(b) Write short notes about Novel fibres.  
(c) What are the advantages and disadvantages of sand blasting. [5+2+5=12]
8. (a) Why we feel discomfort?  
(b) What is breathability? Classify breathable garments.  
(c) Write short notes on the following topic : (i) Whiskering (ii) P.P Spray (iii) Smart textile. [2+4+(3\*2)= 12]

# BANGLADESH UNIVERSITY OF TEXTILES

B. Sc. in Textile Engineering (For Affiliated College)

Level-3 Term-I, Final Examination-2019

Subject: Economics (HSS 301)

Time: 3.0 Hrs.

Full Marks: 72

(Use separate answer script for Part: A and Part: B)  
(All parts of a question must be answered consecutively)

## Part: A

(Answer any three questions)

1. (a) Define demand. What is the law of demand?  
(b) Explain demand schedule and demand curve with some hypothetical data.  
(c) Discuss about the price elasticity of demand.
2. (a) Explain Market Equilibrium with graph. [4+5+3=12]  
(b) Discuss the Law of Diminishing Marginal Utility.  
(c) What is economic system?
3. (a) Define economics. Discuss the engineering economic techniques. [5+5+2=12]  
(b) Briefly explain societies economizing problem.  
(c) Differentiate between micro economics and macro economics.
4. (a) Define inferior goods with graph. [4+4+4=12]  
(b)  $U(m,n) = \text{Min}(m, n)$ ,  $P_m = 2$ ,  $P_n = 1$ ,  $W = 150$ . Find the  $m$  and  $n$  where utility is maximum.  
(c) State opportunity cost with example.

## Part: B

[5+5+2=12]

(Answer any three questions)

5. (a) Show the circular flows of incomes in the economy.  
(b) What are the differences between GDP and GNP?  
(c) What are the measurement methods of national income? Discuss Value-Added Method.
6. (a) Mention the functions of a central bank. [4+3+5=12]  
(b) Define the following term: Money, Marginal Utility, Aggregate Demand, Inferior Goods, NNP, Monopoly.
7. (a) What is ISML model? [6+6=12]  
(b) Explain the derivation of IS curve from Keynesian Model.  
(c) How LM curves shifts by the monetary policy.
8. (a) What is Keynesian cross? [2+4+6=12]  
(b) Describe the components of expenditure.

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[2+10=12]

# **BANGLADESH UNIVERSITY OF TEXTILES**

**B. Sc. in Textile Engineering (For Affiliated College)**

**Level-3 Term-I, Final Examination-2019**

**Subject: Industrial Management (Code: TEM 313)**

**Time: 3.0 Hrs.**

**Full Marks: 72**

**(Use separate answer script for Part: A and Part: B)  
(All parts of a question must be answered consecutively)**

## **Part: A**

**(Answer any three questions)**

1. (a) Define Management. State the Nature of Management.  
(b) What are the skills needed for effective performance at different levels of management?  
(c) Elaborate the core functions of the management process. [4+4+4=12]
2. (a) What is departmentation? Identify the basic units of organizations.  
(b) Draw the structure of line and staff organization of a typical manufacturing company.  
(c) Distinguish formal and informal organization. [4+4+4=12]
3. (a) What is meant by Leadership?  
(b) Discuss the five sources of leadership power in an organization.  
(c) Explain Recruitment and source of Recruitment. [2+4+6=12]
4. (a) Define Demand and Elasticity of Demand.  
(b) Explain different types of Elasticity of Supply.  
(c) Describe the Marketing Concepts of Management. [2+4+6=12]

## **Part: B**

**(Answer any three questions)**

5. (a) Describe the stages of a product life cycle.  
(b) Briefly explain the types of consumer promotion tools.  
(c) Write short notes on the distribution channel. [4+4+4=12]
6. (a) Discuss components of the internal environment in marketing.  
(b) Explain different ways of market segmentation.  
(c) Describe the 4Ps of marketing. [4+4+4=12]
7. (a) Define control and budgetary control.  
(b) Differentiate between Line Organization and Staff Organization.  
(c) Describe different types of budget of an organization. [2+4+6=12]
8. (a) What is meant by Training.  
(b) Differentiate between training and Education.  
(c) Describe the Objectives of Training. [2+4+6=12]

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(Use separate answer script for Part: A and Part: B)

(All parts of a question must be answered consecutively)

**Part: A**

(Answer any three questions)

1. (a) State Joints and Links. Discuss different types of joints with necessary figures.  
(b) Mention the key components of a robotic system. Mention the combinations of different electro-mechanical devices which are utilized by common robotic actuators. [6+6=12]
2. (a) What is hydraulic actuator? Explain cylinder and motor type hydraulic actuator with neat sketches.  
(b) Explain the robot co-ordinates with neat diagrams.  
(c) What are the differences between microprocessor and micro controller? Which one is suitable for small operating system? [6+3+3=12]
3. (a) What is Robot joint and Robot link?  
(b) Briefly explain Piezoelectric Actuator.  
(c) Differentiate between Hydraulic and Pneumatic actuator. [2+4+6=12]
4. (a) Define Sensor and Transducer.  
(b) Write down the application of SCARA Robot.  
(c) Explain different types of Sensor. [2+4+6=12]

**Part: B**

(Answer any three questions)

5. (a) Write the difference between hydraulic system and pneumatic system? Write the characteristics of pneumatic system with respective components and figure.  
(b) What is Transfer function? A system has a transfer function  $G(s) = \frac{10}{s+10}$ .
  - i. Find the output response
  - ii. Draw the Output vs time graph.
  - iii. Find time constant, settling time, and rise time from the graph.[6+6=12]

6. (a) What is step input? Find the transfer function,  $G(s) = \frac{V_L(s)}{V(s)}$  for the circuit given in Figure 6(a).

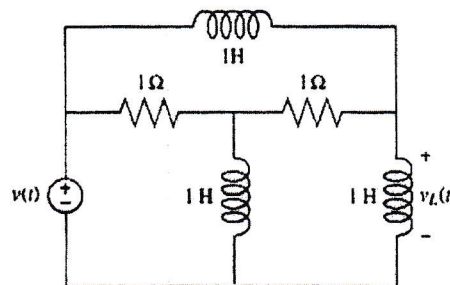


Figure: 6(a)

- (b) What is open loop and closed loop system? Which one is better for a control system? Explain briefly. [6+6=12]
7. (a) Define Poles and Zeros of a Transfer function.  
(b) Derivation of the Second order system in terms of Natural Frequency and Damping Ratio.  
(c) Discuss feedback control system with block diagram and practical examples. [2+4+6=12]
8. (a) Define Control System

# BANGLADESH UNIVERSITY OF TEXTILES

B. Sc. in Textile Engineering (For Affiliated College)

Level-3 Term-I, Final Examination-2019

Subject: Wet Processing-II (Code: WPE-311)

Time: 3.0 Hrs.

Full Marks: 72

(Use separate answer script for Part: A and Part: B)  
(All parts of a question must be answered consecutively)

## Part: A

(Answer any three questions)

1. (a) Explain printing process with reactive dye on cotton fabric.  
(b) Discuss roller printing process with diagram. [6+6 = 12]
2. (a) Briefly describe transfer printing process.  
(b) Differentiate between flock and burn out printing processes.  
(c) Name some printing faults and discuss about their remedies. [4+4+4 = 12]
3. (a) Write the desired characteristics of print paste.  
(b) Write the differences between Discharge and Resist style of printing.  
(c) Discuss about Emulsion Thickener. [3+4+5 = 12]
4. (a) State the conditions required for Transfer Printing.  
(b) Write the advantages and Disadvantages of Transfer printing.  
(c) Describe the Thermofixing method of Printing with Reactive dyes on Cotton fabric with suitable recipe. [3+4+5 = 12]

## Part: B

(Answer any three questions)

5. (a) Briefly classify finishing processes with examples.  
(b) Write down some objectives of finishing.  
(c) Describe swizzing calendaring process.  
(d) Differentiate between friction and embossing calendaring processes. [3+3+3+3 = 12]
6. (a) Describe antibacterial finish.  
(b) Shortly express water repellent finish.  
(c) Explain flame retardancy finish. [4+4+4 = 12]
7. (a) What is Residual Shrinkage?  
(b) What is Heat setting? Describe the Heat setting mechanism.  
(c) Briefly describe Spray damping machine. [2+5+5 = 12]
8. (a) Write the factors of Mercerizing.  
(b) Discuss the Mechanism of Softening effect.  
(c) Write the use of softener in Textile Sector. [4+4+4=12]

**Time: 3.0 Hrs.**

**Full Marks: 72**

**(Use separate answer script for Part: A and Part: B)  
(All parts of a question must be answered consecutively)**

**Part: A**

**(Answer any three questions)**

1. (a) What do you mean by financial accounting? Explain its limitations.  
(b) Explain the branches of accounting.  
(c) Which parties are interested in accounting information and why? [4+4+4=12]
2. (a) What do you mean by Ledger Posting? Explain the procedure for preparing Ledger Accounts.  
(b) On May, 2017 SM Fabrics ltd. has completed the following transaction during the month—  
1. Invested \$20000 cash in the business  
2. Paid office rent for month \$1100 cash.  
3. Purchased office supply from XYZ supply company ltd. for \$4000 on credit  
4. Received \$5100 cash by selling T-shirt.  
5. Received \$1000 cash advanced from buyer.  
6. Paid \$2800 cash for employee salary.  
7. Paid \$4000 cash on XYZ supply company ltd.  
**Instructions:** (i) Journalize the transaction in a General Journal.  
(ii) Posting the transaction in T-account and  
(iii) Prepare a Trial balance on May, 2017 for SM Fabrics ltd. [3+9=12]
3. (a) Define accounting and explain the elements of accounting equation.  
(b) Describe the importance of accounting in Textile Industry. [7+5=12]
4. Barone's Textile Co. was started on May 1. Prepare a tabular analysis of the following transactions for the month of may  
i. Invested taka 10,000 cash to start the repair shop.  
ii. Purchased equipment for taka 5,000 cash.  
iii. Paid taka 400 cash for May office rent.  
iv. Received taka 5,100 from customers for repair service.  
v. Withdrew taka 1,000 cash for personal use.  
vi. Paid part-time employee salaries of taka 2,000.  
vii. Incurred taka 250 of advertising costs, on account.  
viii. Provided taka 750 of repair services on account.  
ix. 9. Collected taka 120 cash for services previously billed. [12]

**Part: B**

**(Answer any three questions)**

5. (a) What is inventory? What is the difference between merchandise inventory and manufacturing inventory?  
(b) Write short note on- (i) Share premium (ii) Dividend (iii) Revenue (iv) Financial expense.  
(c) Robin Tex Ltd. had beginning work in process inventory \$125,000. Manufacturing costs incurred for the month were \$835,000. There were \$200,000 of partially finished goods remaining in work in process inventory at the end of the month.  
What was the cost of goods manufactured during the month? [5+4+3=12]
6. (a) What is Cost Management? Why the normal operating cycle for a merchandising company likely to be longer than a service company? Explain.  
(b) Show the difference between product cost and period cost.

7. (a) Define Cost-volume-profit (CVP) analysis. Mention the assumptions of CVP.  
(b) The following information is for Polymer Co. Ltd.

Sales (500 bicycles)	Tk. 2,50,000
Less: Variable expenses	1,50,000
Contribution Margin	1,00,000
Less: Fixed expenses	80,000
Net operating income	20,000

You are required to determine:

- i. Find out break-even sales in terms of amount and in units.
- ii. What would be the break-even sales if the target price is Tk. 20,000?
- iii. If the sales volume is increased by 40 units, what will be the net operating income?

[2+10=12]

8. Write short notes on: (any six)

- i. Opportunity cost
- ii. Sunk cost
- iii. Imputed cost
- iv. Overheads
- v. Danger Level
- vi. Relevant cost
- vii. AIS
- viii. DSS

[6×2=12]

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# BANGLADESH UNIVERSITY OF TEXTILES

B. Sc. in Textile Engineering (For Affiliated College)

Level-3 Term-I, Final Examination-2019

Subject: Textile Coloration-I (Code: WPE 301)

Time: 3.0 Hrs.

Full Marks: 72

(Use separate answer script for Part: A and Part: B)  
(All parts of a question must be answered consecutively)

## Part: A

(Answer any three questions)

1. (a) Discuss elementary concept of color and colorants.  
(b) Differentiate between dyes and pigments.  
(c) Write some examples of auxochrome with mentioning functions and chemical structures.  
[4+3+5=12]
2. (a) Why reactive dyes are so popular?  
(b) Discuss the hydrolysis of reactive dyes.  
(c) Describe the dyeing procedure of cotton goods by hot brand reactive dye with a suitable recipe and process curve.  
[3+3+6 = 12]
3. (a) Write the properties of acid dyes.  
(b) Classify acid dye with chemical structures.  
(c) Describe the procedure of dyeing silk fabric with acid dyes.  
[2+4+6 = 12]
4. (a) What is Vatting?  
(b) Describe with a suitable recipe of dyeing of cotton goods with Vat dye by pad steam method.  
(c) Discuss the faults of dyeing and their remedies.  
[2+5+5 = 12]

## Part: B

(Answer any three questions)

5. (a) Give the flow-chart of printing process.  
(b) Describe a printing process with recipe on cotton fabric with direct dye.  
(c) Describe a printing process with recipe on silk fabric with acid dye.  
[ 2+5+5= 12]
6. (a) What is the method of printing? Write down the methods of printing.  
(b) Describe the working principle with appropriate sketch of rotary screen printing machine.  
(c) What are the factors to be considered for good screen printing?  
[ (2+2)+6+2 = 12]
7. (a) What are the Processes of printing with reactive dyes?  
(b) Describe the steaming process of printing cotton fabric with reactive dyes.  
(c) What are advantages of printing with natural colors.  
[3+6+3 = 12]
8. (a) Mention suitable fibres that can be printed with basic dyes.  
(b) Describe the process of printing Jute fabric with basic dyes.  
(c) What are the disadvantages of application direct dyes in dyeing and printing?  
[2+7+3=12]