

KHULNA UNIVERSITY OF ENGINEERING & TECHNOLOGY

Department of Textile Engineering

B. Sc. Engineering 3rd Year Backlog Examination, 2016

TE 3201

(Yarn Manufacturing Engineering -II)

Time: 3 Hours

Total Marks: 210

N.B.: i) Answer any THREE questions from each section in separate scripts.

ii) Figures in the right margin indicate full marks.

SECTION-A

- 1(a) Write the objects of combing. 10
- 1(b) Give the appropriate reason for – 15
- (i) Short fiber present in comber sliver.
- (ii) Long fiber present in the waste.
- 1(c) Find out the production/shift in kg from the following data: 10
- Feed/nip = 4.6 mm
- Nips/minute = 400
- Lap wt = 1000 grain/yd
- Noil = 16%
- Efficiency = 85%
- No. of head/frame = 8.
- 2(a) Point out the objects of speed frame. 10
- 2(b) Describe the "SKF-PK-1500" drafting system. 20
- 2(c) Mention different auto-stop motions in simplex. 05
- 3(a) Depict the winding principle of speed frame. 20
- 3(b) What are the change wheels required to be changed with the changes of roving hank? 15
- Also mention the effects of the changes.
- 4(a) State the features of a good ring. 10
- 4(b) Write down the forms of traveler with sketch. 10
- 4(c) Establish a relation among ring diameter, bobbin diameter and angle of pull. 10
- 4(d) A ring frame has following specifications: 05
- Spindle speed = 18000 rpm
- TPI = 20
- Yarn count = 40^s
- No. of spindles/frame = 480
- Efficiency = 90%
- Waste = 2.0% ; Find out the production in lb/shift/frame.

SECTION-B

- 5(a) Write down the objects of a ring frame. 05
- 5(b) Prepare a spin plan to produce 30 tons/day of 30^s Ne carded yarn in a spinning mill from blow room to ring frame. 30
- 6(a) Differentiate among 1st, 2nd and 3rd draw frame. 08
- 6(b) Describe a crimping box with a neat sketch. 12
- 6(c) What is Reach & Nip? What is the basis of fixing reach in a jute drawing frame? 15
- 7(a) Describe a slip draft jute spinning machine with a diagram. 15
- 7(b) State the twisting mechanism of jute spinning frame with sketch. 12
- 7(c) Find out the no. of jute spinning frame required to produce 15 tons/day of jute hessian warp yarn of 8 lb/spyndle where efficiency of it is 75%. (Assume all necessary parameters) 08
- 8(a) Explain the bobbin building mechanism of a jute sliver spinning frame with neat sketch. 14
- 8(b) Describe the single thread spiral type jute draw frame with neat sketch. 14
- 8(c) Calculate production/hr of a double thread screw gill drawing frame from the follow data: 07
Back Roller surface speed=15.52 ft/min
Draft=6
Delivery sliver wt. = 4 lb/100yds.
Heads=5, delivery/head=2; efficiency=90%.

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KHULNA UNIVERSITY OF ENGINEERING & TECHNOLOGY

Department of Textile Engineering

B. Sc. Engineering 3rd Year Backlog Examination, 2016

TE 3101

(Yarn Manufacturing Engineering-I)

Time: 3 Hours

Total Marks: 210

- N.B.:** i) Answer any THREE questions from each section in separate scripts.
ii) Figures in the right margin indicate full marks.

SECTION-A

- 1(a) Describe the different physical properties of a textile fiber. 15
- 1(b) Write down the process flowchart of combed yarn production mentioning input and output product of each stage. 10
- 1(c) Define the terms: (i) Mixing and (ii) Blending. 10
- 2(a) What is Bale Management? Show importance of it. 10
- 2(b) Write down the Trutzschler Blow-room line machine sequence of coarse and fine grade cotton fiber. 10
- 2(c) Estimate the production/shift in kg of Blow-room line if- 15
Bottom calender roller dia=7"
Bottom calender roller speed=10 rpm
Waste=5%
Lap weight =14 oz/yd
Efficiency =85%
No. of scutcher=2.
- 3(a) Briefly describe a chute feed system with a diagram. 10
- 3(b) Write down the objects of carding. What is grinding? 07
- 3(c) Discuss the faults of a carding machine with their remedies. 12
- 3(d) Calculate the mechanical draft when - 06
Lap wt.=15 oz/yd
Card sliver wt.= 60 grain/yd
Waste= 5%.
- 4(a) Mention the five important setting points with distance of carding machine and also state its effect. 20
- 4(b) Find the production/shift in kg of the carding machine from the following data: 15
Doffer speed =40rpm
Doffer dia.=27"
Card draft=100
Lap wt.=16 oz/yd
Waste=3%

Efficiency=90%

No. of carding machines=10.

SECTION-B

- 5(a) Write the features of modern draw-frame. 10
- 5(b) Show the draft distribution for draft =8 in a draw-frame. 10
- 5(c) Depict the effect of draft and doubling on sliver quality of draw-frame. 15
- 6(a) Write the flow-chart of jute yarn. 15
- 6(b) Define the batch and batching. Mention batch composition for CBC yarn. 10
- 6(c) Differentiate between woolen and worsted yarn. 10
- 7(a) State the faults of emulsions used in a jute spinning mill mentioning their remedies. 12
- 7(b) What is Clock length and Dollop weight? 08
- 7(c) Write down the objects of a jute carding machine. 07
- 7(d) Classify the jute carding machine. 08
- 8(a) Draw a cross-sectional diagram of a Breaker card machine of a jute spinning mill. 10
- 8(b) What is shell setting? Discuss the faults of jute. 08
- 8(c) Discuss the working principle of a finisher card with a neat sketch. 12
- 8(d) Calculate the weight of a sliver in lb/100yds delivered from the finisher card from the data: 05
- data:
- B/C delivery sliver weight =24lb/100yds
- F/C draft=15
- F/C doubling=12
- Waste=4%.

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KHULNA UNIVERSITY OF ENGINEERING & TECHNOLOGY

Department of Textile Engineering

B. Sc. Engineering 3rd Year Backlog Examination, 2016

TE 3205

(Wet Processing Engineering-II)

Time: 3 Hours

Total Marks: 210

N.B.: i) Answer any THREE questions from each section in separate scripts.

ii) Figures in the right margin indicate full marks.

SECTION-A

- 1(a) Classify the reactive dyes. 08
- 1(b) Write down the mechanism of Nucleophilic addition and Nucleophilic substitution for reactive dye fixation. 15
- 1(c) What is hydrolysis? Describe the water and alkali hydrolysis in reactive dyeing with chemical reaction. 12
- 2(a) Write down the classification of disperse dyes according to the migration properties. 10
- 2(b) State the functions of dispersing agent and carrier. 12
- 2(c) Describe the mechanism of disperse dyeing with figure. 13
- 3(a) What is the reason of sulphur dyes named? Write down the properties of sulphur dyes. 10
- 3(b) What types of problem can be created due to sulphur dyes? How it can be solved? 10
- 3(c) How color is formed in azoic dyeing? 05
- 3(d) State the application procedure of azoic color on cotton fabrics with recipe. 10
- 4(a) What is binder? How does binder work in pigment printing? Explain with figure. 10
- 4(b) What properties have to be fulfilled by pigment in order to use in textile printing? 07
- 4(c) Tabulate the difference between base and naphtholate printing method. 08
- 4(d) Write down the base printing method of azoic color on cotton fabric. 10

SECTION-B

- 5(a) What is antimicrobial finish? How can you apply antimicrobial finishes on the textile products? 08
- 5(b) During application of antimicrobial finish, which hazardous effect should be considered? 05
- 5(c) Write down the mechanism of cationic and anionic softener with figure. 10
- 5(d) What is silicone softener? State the advantages and disadvantages of silicone softeners. 12
- 6(a) What is resin finishing? How many ways resin can be applied on the textile materials? 08
- 6(b) Write down the application procedure of any resin on the textile substrate. 15
- 6(c) What is calendering? State the working principle of embossing calender machine. 12

- 7(a) Describe the working principle of multi-roller emersing machine with suitable diagram and technical features. 15
- 7(b) Discuss the problems and their remedies during raising. 10
- 7(c) How calender parameters can be controlled? 10
- 8(a) Describe the chemistry of flame retardancy. 15
- 8(b) Write down the factors that influence the textile products for soiling. 10
- 8(c) Discuss the mechanism of Hydroxy based soil release finish. 10

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KHULNA UNIVERSITY OF ENGINEERING & TECHNOLOGY

Department of Textile Engineering

B. Sc. Engineering 3rd Year Backlog Examination, 2016

TE 3105

(Wet Processing Engineering -I)

Time: 3 Hours

Total Marks: 210

N.B.: i) Answer any THREE questions from each section in separate scripts.

ii) Figures in the right margin indicate full marks.

SECTION-A

- 1(a) What is hardness of water? 03
- 1(b) Write down the standard quality of dye house water. 05
- 1(c) Discuss the problems caused by hard water in textile industry. 12
- 1(d) Describe the cold soda lime process of water softening. 15
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- 2(a) Describe the rolling up and emulsification mechanism of dirt removal from substrate. 12
- 2(b) Which one between soap and detergent is more effective for removing dirt from substrate?-Explain. 10
- 2(c) Establish the relationship between temperature and concentration on ionic and nonionic surfactants. 08
- 2(d) Mention the advantages and disadvantages of enzymatic desizing. 05
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- 3(a) What is gas singeing machine? Write down the common problems in gas singeing machine and their causes. 10
- 3(b) State the important parameters of gas singeing machine that should be considered before running the machine. 10
- 3(c) What is mercerization? Why high concentrated NaOH is used in mercerization? 07
- 3(d) Write down the changes of cellulosic material during mercerization process. 08
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- 4(b) Introduce the mechanism of H₂O₂ bleaching. 10
- 4(b) Distinguish between hydrogen peroxide and sodium hypochlorite bleaching. 08
- 4(b) Describe the mechanism of peroxide bleaching. 10
- 4(c) Write short note on 'Jute bleaching'. 07

SECTION-B

- 5(a) Write down the successive stages of dyeing with figure. 12
- 5(b) Write down the flow chart of denim dyeing procedure. 05
- 5(c) Describe the working principle of winch dyeing machine. 10
- 5(d) Write short notes on : 08
- (i) Pad-dry-pad-steam process
- (ii) Cold-pad –batch process

- 6(a) What is super milling acid dyes? Why super milling dyes have excellent wash fastness property? 07
- 6(b) Write down the theory of direct dyeing on cotton fabric. 10
- 6(c) "Direct dyes have strong affinity toward fibers"—which factors are responsible for this dye diffusion into the fiber. 10
- 6(d) Write down the two treatment process for improving the wash-fastness of direct dyed fabric. 08
- 7(a) Write down the classification of vat dye. 05
- 7(b) Describe the mechanism of dyeing with vat dye. 10
- 7(c) Describe the application procedure of vat dye on cotton fabric with recipe and curve. 10
- 7(d) Describe the dyeing method of jute with basic dye with process recipe and curve. 10
- 8(a) Why thickeners are used in textile printing? List out the common thickeners used in textile printing. 08
- 8(b) Describe the discharge styles of printing. 12
- 8(c) Discuss the mechanism of burn out printing. 10
- 8(d) Write very briefly on the squeeze system of rotary screen printing. 05

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KHULNA UNIVERSITY OF ENGINEERING & TECHNOLOGY

Department of Textile Engineering

B. Sc. Engineering 3rd Year Backlog Examination, 2016

TE 3103

(Knitting Engineering)

Time: 3 Hours

Total Marks: 210

- N.B.:** i) Answer any THREE questions from each section in separate scripts.
ii) Figures in the right margin indicate full marks.

SECTION-A

- 1(a) Define knitting. Describe the knitting types with appropriate figure. 15
1(b) Define the following terms: 20
(i) Open loop (ii) Closed loop (iii) Face loop (iv) Back loop (v) Needle loop
(vi) Tuck loop (vii) Wales (viii) Courses (ix) Stitch Density and (x) Miss loop.
2(a) Classify knitting machines. 10
2(b) Sketch a latch needle and describe different parts of it. 15
2(c) Write the advantages and disadvantages of synchronized and delay timing. 10
3(a) Write the features of modern circular knitting machine. 10
3(b) Describe the features of single jersey fabric. 15
3(c) Define needle gauge and needle pitch. 10
4(a) What is sinker? Write the functions of a sinker. 10
4(b) What are the features of purl fabric? 10
4(c) What are the differences between rib and interlock machine? 15

SECTION-B

- 5(a) What is "V" bed flat knitting machine? Describe the features of flat knitting machine. 15
5(b) What are the differences between flat and circular knitting machine? 05
5(c) Define the following terms:- 15
(i) Raising cam (ii) Cardigane cam (iii) Guard cam and (iv) Adjustable stitch cam
6(a) Define spirality and shrinkage. Mention the causes and remedies of spirality and shrinkage. 15
6(b) State the properties of hosiery yarn. 10
6(c) Depict the mechanism of welts production. 10
7(a) What is meant by loop transfer stitches? Also describe the objective of loop transfer stitches. 10
7(b) What is narrowing and widening? 10
7(c) What is tightness factor? 05
7(d) Describe different types of hosiery articles. 10
8(a) How would you control GSM during production? 10
8(b) Why Nylon is superior in stockings? 10
8(c) State the common knitting faults. 15

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KHULNA UNIVERSITY OF ENGINEERING & TECHNOLOGY

Department of Textile Engineering

B. Sc. Engineering 3rd Year Backlog Examination, 2016

TE 3107

(Apparel Manufacturing Engineering -I)

Time: 3 Hours

Total Marks: 210

- N.B.:** i) Answer any THREE questions from each section in separate scripts.
ii) Figures in the right margin indicate full marks.

SECTION-A

- 1(a) Write down the garments making flow-chart. 15
1(b) "Garment sector has great economical prospect but there is a risk of environment of Bangladesh"—Justify this statement and put your suggestion to overcome this risk. 20
2(a) Define the following terms:- 12
(i) Allowance (ii) Lay (iii) FOB (iv) Pattern grading (v) Swatch and (vi) CMT.
2(b) Show the cycle of a confirmed letter of credit. 13
2(c) Distinguish between working pattern and production pattern. 10
3(a) Show the flowchart of sample garments manufacturing. 10
3(b) How working patterns are developed? Discuss the role of CAD for developing working pattern. 15
3(c) Write the functions of the following devices:- 10
(i) Plotter and (ii) Pantograph.
4(a) What is marker efficiency? Why industry pays more attention on the marker? 10
4(b) Discuss interactive method of marker planning. 15
4(c) Why underlay papers and interleaving papers are used in fabric lay? 10

SECTION-B

- 5(a) Describe 'Face to face in a single direction' and 'Zig-zag' spreading modes with heat diagram. 14
5(b) Discuss the role of Encoder system in fully automated spreading system. 10
5(c) Compare manual and automated spreading processes. 11
6(a) Write down the methods of fabric spreading. 05
6(b) Describe the features of an automatic spreading machine. 15
6(c) What is remnant loss in the process of fabric spreading? How remnant losses can be controlled? 15
7(a) What steps are involved in manual cutting process? Explain the steps briefly. 15
7(b) Describe the operating principle of a straight knife cutting machine. 15
7(c) Why fabric drilling machines are used? 05
8(a) What is "Strike through and Strike back"? 10
8(b) Write down the conditions for fusing fabrics. 10
8(c) Sketch and label a continuous fusing press. 10
8(d) What points should be considered before fusing delicate fabrics? 05

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