

BANGLADESH UNIVERSITY OF TEXTILES

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

Level-3 Term-I, Final Examination-2019

Subject: Fabric Structure and Design (Code: FE 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)

1. (a) Define formula number, repeat size, contact field and interlacing field.
(b) What are the main features of a woven fabric design?
(c) Compare between pointed and broken drafts with an example. [4+4+4=12]
2. (a) Describe the features of plain weave.
(b) State the Warp faced, Weft faced and balanced cloth.
(c) Show the 2/2 regular warp rib plain weave with drafting plan on graph paper.
(d) Note down the ornamentation of plain cloth. [3+3+3+3= 12]
3. (a) Write down the classification of twill weave.
(b) What do you mean by angle of twill? What is the influence of yarn twist on twill direction?
(c) Make a multiple twill weave with drafting plan on graph paper.
(d) List up uses of twill fabrics. [2+(2+2)+4+2 = 12]
4. (a) Draw the weave plan of single shaded twill, based on 7 end sateen.
(b) What is move number? How can you selected the move number?
(c) Give a graph paper example (weave plan & drafting plan) of an extra warp design having base repeat size 6×6. [4+4+4=12]

Part: B

(Answer any three questions)

5. (a) Show the huckaback weave design with drafting and lifting plan on graph paper.
(b) Draw the mock leno weave design with drafting and lifting plan on graph paper.
(c) Setup the Bedford cord weave design with drafting and lifting plan on graph paper. [4+4+4 = 12]
6. (a) Illustrate the classification of double cloth.
(b) Produce the face to back stitching system double cloth weave design with drafting and lifting plan on graph paper. [5+7 = 12]
7. (a) Calculate the required amount of yarn in Kg to produce 2,000 meter woven fabric for the following specification $\frac{120 \times 80}{40 \times 40} \times 65$ ". (Assume all necessary parameters).
(b) Show the graph paper example of "Bird's eye" weave with feasible color combination.
(c) How longest float of a diamond can be found for Brighton honeycomb weave? [5+5+2=12]
8. (a) Give Graph paper examples of the following:
 - (i) Brighton honeycomb weave on 16×16.
 - (ii) Draw the dog's tooth color and weave effect on graph paper.
 - (iii) Wadded Bedford cord weave on 18×4.[4+4+4 = 12]

BANGLADESH UNIVERSITY OF TEXTILES

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

Level-3 Term-I, Final Examination-2019

Subject: Fabric Manufacturing-II (Code: FE 303)

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) If a single jersey circular knitting machine has 36" diameter, 24 Gauge and 108 feeders and the machine is running at 30 RPM, then how many courses will be produced in 10 (ten) revolutions of the machine?
(b) Identify the different parts of a knit cam with proper sketch.
(c) Briefly classify the weft knitting machineries. [4+4+4=12]
2. (a) If you want to convert a rib machine into an interlock machine, which settings will you have to change?
(b) Enlist the advantages of a flat knitting machine.
(c) What is needle timing? How needle timing is carried out by cam system in rib circular knitting machine? Explain with figure. [3+3+6=12]
3. (a) What is held loop?
(b) What are the methods of getting held loop in knitting machine equipped with latch needle? Describe any one of the methods with proper diagram.
(c) Mention the properties and uses of float or miss stitch. [1+5+6=12]
4. (a) Calculate the length in meter of plain single sided or single jersey fabric knitted at 20 courses/ cm on a 30" diameter 22-gauge circular machine having 108 feeds. The machine operates for 8 hours at 36 rpm at 87% efficiency.
(b) Compare between 1×1 Interlock and 1×1 Rib.
(c) Write short notes on the weft knitted fabric faults with causes and remedies. [3+3+6=12]

Part: B

(Answer any three questions)

5. (a) State the lapping diagram and chain notation of basic stitches in warp knitting.
(b) State the lapping diagram and chain notation of the following two fully threaded guide bar structures:
(i) Reverse locknit (ii) Satin (iii) Locknit (iv) Queen's cord
(c) Define underlapping and overlapping in warp knitting. [5+4+3=12]
6. (a) What is fusible non-woven fabric? Give a tentative flow-chart of non-woven fabric production.
(b) Classify non-woven fabrics. Explain web formation by melt-blowing technique with proper sketch.
(c) Describe non-woven web bonding by hydro-entangling process with suitable sketch. [3+5+4=12]
7. (a) What is latch guard and why it is used?
(b) State the main features of Tricot machine.
(c) Describe the stitch formation of Tricot machine equipped with bearded needle. [3+3+6=12]
8. (a) What is fully threaded guide bar and partly threaded guide-bar.

BANGLADESH UNIVERSITY OF TEXTILES

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

Level-3 Term-I, Final Examination-2019

Subject: Yarn Manufacturing II (Code: YE 307)

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) Mention the limitation of air jet spinning.
(b) Describe the working principle of air jet spinning.
(c) Define false twist spinning
[3+6+3=12]
2. (a) Write down the objects of blending.
(b) Write down the change points required at carding.
(c) Write down the name of three blend yarns with fibre compositions.
[3+6+3 = 12]
3. (a) Write down the flow process for hessian warp yarn manufacturing with output and input materials.
(b) Define batch and batching.
(c) Mention the reasons for applying emulsion on jute fiber.
(d) Explain the working principle of jute spreader machine with figure.
[3+2+3+4 = 12]
4. (a) Define reach, nip and faller bar lead %
(b) Explain the effects of drawing and doubling on sliver quality.
(c) Write down about the tasks of jute spinning machine.
(d) Calculate the production (kg/shift) of a jute spinning frame from the following data: spindle number =120, Flyer speed = 3300rpm, TPI= 3.35, draft=9, count of finisher card= 0.7 lbs/100yds and efficiency = 85%.
[3+3+3+3=12]

Part: B

(Answer any three questions)

5. (a) Mention Jute yarn manufacturing process with sequence.
(b) Mention composition of Jute yarn.
(c) What is Emulsion? Mention the functions of oil, water and emulsifier.
[4+2+6 = 12]
6. (a) Define special yarn with example and state some production system of special yarn.
(b) What is the aim of compact spinning? Describe working principle of compact spinning.
(c) What is texturization? State some process of yarn texturization.
[4+5+3 = 12]
7. (a) 'Rotor spinning is called the open-end spinning'-explain why?
(b) Explain raw materials properties required for rotor spinning.
(c) Write down the working principle of rotor with figure.
(d) Find out the production in kg per shift of a rotor spinning frame which is running with 312 heads, 1,20,000 rotor rpm, 4.5 TM, 98% efficiency and yarn count is 20 Ne.
[3+4+2+3= 12]
8. (a) Define blending and classify it.
(b) Write the names of three blended yarn and mention its end uses.

BANGLADESH UNIVERSITY OF TEXTILES

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

Level-3 Term-I, Final Examination-2019

Subject: Theory of color Physics (Code: WPE 307)

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) Why do some substance appear colored ?
(b) Explain the concept of color mixing considering additive and subtractive principle.
(c) Why color harmony is important ?
[4+6+2=12]
2. (a) Discuss CIE chromaticity diagram is the suitable example.
(b) What is CIE standard illuminant? Give example.
(c) Differentiate the terms "Metamerism" and "Color constancy".
[4+4+4 = 12]
3. (a) "Light is an electric field tied up with a magnetic field"- justify this statement.
(b) Describe the interactions among the light source, observer and colored objects in the impression of color.
(c) What are the laws of light absorption of colored solution? Describe them mathematically.
[3+4+5 = 12]
4. (a) What is chromatic adaptation? How does chromatic adaptation affect color appearance?
(b) Draw and describe CIE L*a*b color space.
(c) Write Short Note on "Standard Observer".
[4+5+3 = 12]

Part: B

(Answer any three questions)

5. (a) Discuss the types and geometry of observer used in spectrophotometer.
(b) Illustrate the working principle of a spectrophotometer with necessary configuration and sketch.
[5 +7 = 12]
6. (a) Evaluate the assessment of color using instrument Vs. Visual assessment.
(b) List out some tools and technology of color management.
(c) Write down some functions of computer color management system.
[5+2+5 = 12]
7. (a) What is CCMS? Write down some benefits of CCMS.
(b) Mention the Kubelka-Munk theory assumption.
(c) How recipe is calculated on CCMS?-Explain.
[4+3+5 = 12]
8. (a) What is color vision? Mention the factors that affect the human color vision.
(b) Write short note on Scotopic & Photopic vision.
(c) Explain the mechanism of sighting.
(d) Who are Trichromates and dischromats ?
[3+3+4+2 = 12]

BANGLADESH UNIVERSITY OF TEXTILES

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

Level-3 Term-I, Final Examination-2019

Subject: Apparel Production-II (Code: AE 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) Mention the factors related to determine seam performance.
(b) Explain seam type-2, seam type-3, seam type-4 and seam type-5 with figure.
(c) Define seam efficiency. What is meant by "seam efficiency 80%"?
[2+8+2=12]
2. (a) What are the sewing defects in garments?
(b) Write down the causes and remedies of any four problems of stitch formation.
(c) Define seam and stitch.
[2+8+2 = 12]
3. (a) What do you mean by sewing and sewing technology?
(b) Mention different parts of sewing machine.
(c) How feed system consists? Write the features of component of feed mechanism with figure.
[2+3+7 = 12]
4. (a) Distinguish between lock stitch and chain stitch.
(b) Briefly discuss about stitch class 400 with sketch.
(c) Discuss the principle of lock stitch formation.
[3+4+5 = 12]

Part: B

(Answer any three questions)

5. (a) What are the objectives of embroidery on garments?
(b) What are the quality issues for embroidery?
(c) List down different types of chemical and physical tests for apparel products.
[2+6+4 = 12]
6. (a) Describe 4 points system for garments inspection.
(b) Briefly discuss raw materials for garments.
(c) Write short notes on:
i) Pressure foot ii) Types of folding.
[4+4+4(2+2) = 12]
7. (a) Define AQL? Write down the objectives of quality control.
(b) What do you know about In process inspection? On In process inspection what should be inspected in case of pattern or marker making.
(c) If you are a quality control manager what responsibilities would you bear?
[4+5+3 = 12]
8. (a) What are alternative methods of joining? Write down its limitations.
(b) Draw the flow chart of welding. Describe the principle of ultrasonic welding.
(c) Compare between welding and adhesives.
[3+6+3= 12]

BANGLADESH UNIVERSITY OF TEXTILES

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

Level-3 Term-I, Final Examination-2019

Subject: Long Staple Spinning (YE 303)

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) Why jute fibre is called bast fibre?
(b) Explain the factors which effect on jute fibre grading.
(c) Why bale management is necessary for jute processing?
(d) Discuss about the jute grading of white, Tossa and Mesta. [2+3+3+4=12]
2. (a) Explain the mechanism of the spreader machine.
(b) Write down the objects of batching.
(c) What are the difference between spreader machine and softener machine. [5+3+4=12]
3. (a) Differentiate between the jute spreader and the jute softener machine.
(b) Explain the working principle of jute softener with neat sketch.
(c) A jute spreader machine running with following data-delivery speed (yds/min)=60, draft=12, efficiency=80%, emulsion applied=20%, wt. of feed material= 6 lbs/yd. Find out the production in lbs/hr of spreader machine. [4+4+4=12]
4. (a) Write short notes on:
(i) Clock length
(ii) Dollop weight
(b) Explain the factors witch influences on jute carding.
(c) Calculate production per hr from the data: Feed Roller Speed=18ft/min, Dollop wt = 30 lbs, Clock length = 19.5 Yds, Waste = 4%. Efficiency = 85% [4+4+4=12]

Part: B

(Answer any three questions)

5. (a) What is shell setting and pin density of carding?
(b) Write down the factors that effects on carding.
(c) Draw a breaker card machine and mention the function of cylinder, worker and stripper.
(d) Calculate the wt. in lbs/100 yds of breaker card sliver from the following data-dollop wt. = 32 lbs, clock length = 12 yds, draft= 10, short fibre and evaporation loss = 4%. [2+3+4+3=12]
6. (a) Write down the difference between push bar and spiral draw frame.
(b) Write down the objects of Draw frame in jute spinning.
(c) Calculate prod/hr of Double thread screw gill drawing frame from particulars: Back Roller Surface. Speed = 15.52 ft/min.
Draft = 6
Delivered sliver = 4 lbs/100 yds.
5 heads, 2 del/head, eff = 90%. [4+4+4=12]
7. (a) What are the functions of jute spinning frame?
(b) Name the different drafting systems used in jute spinning frame and explain one of them with figure.
(c) Explain the bobbin building mechanism of jute spinning frame.
(d) Find out the production in kg of 20 frames of 100 spindles each running with the following particulars-flyer speed = 3800 rpm, T.P.I = 3.2, feed sliver count = 0.5 lb/100yds, draft = 15, efficiency = 84 %. [2+4+3+3=12]

8. (a) How yarn tension is controlled during spinning? [2+4+3+3=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 is stitch density? Define machine gauge and what do you mean by 4.5E?
(b) Write down the differences between latch needle and compound needle.
(c) Draw and describe the functions of primary weft knitting elements.
[3+3+6=12]
2. (a) What is sinker timing? Write down some features of Purl knitting machine.
(b) Explain the main features of flat knitting machine and mention the main functions of carriage and cam of flat knitting machine.
(c) How much needles will be required for a double jersey knitting machine having diameter 30 inches and machine gauge 10E?
[4+6+2=12]
3. (a) State the features of V-bed flat knitting machine.
(b) Describe loop formation technique in delayed timing method on circular rib knitting machine.
(c) Find out the number of knitting machines required to convert 1000 kg of 24Ne cotton yarn in fabric in one shift from the following particulars: Diameter = 20 inch, No. of feeds = 30 RPM = 26, Gauge = 22, Course length = 4.24 yds, Yarn loss in conversion = 2%, efficiency = 90%.
[3+5+4=12]
4. (a) Define Tuck loop.
(b) Explain knitting action of bearded needle with sketch.
(c) Represent four basic weft knitted structure by symbolic and diagrammatic notation.
(d) Find out the tightness factor in both English and tex systems of a knitted fabric made of 36" cotton yarn if the loop length is 0.12 inch.
[2+4+3+3=12]

Part: B**(Answer any three questions)**

5. (a) What are the basic elements of Tricot warp knitting machine? Write down the functions of tricot sinker with figure?
(b) Write down the basic stitch types in warp knitting and show the lapping diagram for cord stitch & longer reciprocating movement with chain notation.
(c) Why guide bar nesting is important? State the main features of Raschel warp knitting machine.
[3+5+4=12]
6. (a) Write down the differences between Tricot and Raschel warp knitting machine.
(b) What are the main differences between Tricot sinker and Raschel sinker?
(c) Draw and describe the knitting action of Tricot warp knitting machine equipped with bearded needle.
[3+2+7=12]
7. (a) Define chain links. State different types of chain links with proper sketch.
(b) Show the lapping diagram and chain notation of basic overlap and underlap variations in warp knitting.
(c) Find out the number of needles in a 48 gauge Raschel machine of 60 inch width and calculate the widthwise shrinkage percentage to produce a fabric with 30 wales per inch.
[4+4+4=12]
8. (a) Define overlap and underlap with figure.
(b) Show the lapping diagram and chain notation of the basic structures of warp knitted fabrics.

Subject: Application of Computer in Wet Processing (Code: WPE 303)**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) Summarize the operation principle of calibration for data color machine.
(b) Formulate the measurement repeatability and evaluation of data color machine.
(c) Categorize different aperture use in reflectance spectrophotometer with functions.
(d) Sketch double beam spectrophotometer and explain with mechanism. [3+3+3+3=12]
2. (a) Explain the color measurement techniques for textile fabrics.
(b) "ERP is the latest high-end solution for business application" explain briefly.
(c) State the importance of computer aided process machineries in wet processing. [4+4+4=12]
3. (a) Design the structure of future dye house and explain it briefly.
(b) Mention the structure of an adaptive controller system for dyeing process.
(c) Draw a schematic diagram of automated package dyeing machine and explain it.
(d) What are the factors influence the outcome of the dyeing process? [4+3+3+2=12]
4. (a) Before production process could be started, there are some necessary steps, to get customer approval. Suppose time requirements for some of these tasks are as follows (you may include more tasks as required):
Weave design on graph -1 day, Weave design with computer-1 day, creating painted copy of design-3 days, Printing design of computer -15 minutes, Creating sample in mill-5 days, and some other steps.
Now considering above condition, draw flowchart to compare time requirements between conventional and computer based production.
(b) Describe the colour measurement techniques for considering the sample thickness and sample positioning of dyed fabrics.
(c) Describe data base preparation for textile colour matching with spectrophotometer. [5+3+4=12]

Part: B**(Answer any three questions)**

5. (a) Evaluate the advantages and disadvantages of DBMS.
(b) Compare between SQL and DDL.
(c) Interpret basic CAD and CAM procedure. [4+4+4=12]
6. (a) Distinguish between PLC and SCADA system.
(b) Design and integrate the automation in dye house.
(c) Mention the development of data security system. [4+4+4=12]
7. (a) Define artificial intelligence. Why does the artificial neural network used in textiles?
(b) What is Fuzzy logic? Why Fuzzy logic controller is required for dyeing process?
(c) State the applications of an expert system. How expert systems are used in textile coloration? [3+4+5=12]
8. (a) What is CIM? Explain CIM activities and role of associated components in CIM with figure.
(b) What are the stages of new product development?
(c) Define process optimization? What are the areas of it? [4+3+5=12]

BANGLADESH UNIVERSITY OF TEXTILES

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

Level-3 Term-I, Final Examination-2019

Subject: Quality Management (Code: TEM 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) What is benchmarking? Discuss about the process of benchmarking.
(b) Define "Lean". What are the benefits of lean manufacturing? [6+6=12]
2. (a) Write short notes on "5's" & "Six Sigma"
(b) What are the benefits of "Six Sigma"? Write down the application area where the concept "Six Sigma" can be applied. [6+6 = 12]
3. (a) What is SPC? Write down the objects of SPC.
(b) What is Control chart? Write down benefits of control chart.
(c) Discuss about Deming's Cycle for Quality management. [4+4+4 = 12]
4. (a) Define the term "Inspection Loop".
(b) Discuss about 4 points fabric inspection system.
(c) Discuss about Deming's Cycle for quality management.
(d) Differentiate between Quality Assurance and Quality control. [2+4+2+4 = 12]

Part: B

(Answer any three questions)

5. (a) Define quality management. Discuss about the quality management components.
(b) Describe the responsibilities of a quality control officer. [6+6 = 12]
6. (a) Discuss about "Pareto Chart" with example.
(b) Discuss about "Fishbone Diagram" with example. [6+6 = 12]
7. (a) What is TQM ?
(b) What are the key elements of TQM ?
(c) Write down the basic principles of TQM.
(d) Write down the benefits of TQM. [2+2+4+4= 12]
8. (a) Define- Standard.
(b) What is BSTI? Write down the function of BSTI.
(c) What is ISO? Write down the ISO Certification procedure for Textile industry in BD. [2+3+7 = 12]

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