

BANGLADESH UNIVERSITY OF TEXTILES

B. Sc. in Textile Engineering
Level-3, Term-I Final Examination-2013

Subject: Yarn Manufacturing-II (Code : YME 323)

Full Marks : 105

Time : 3.0 Hrs.

(All the parts of a question must be answered consecutively)

Part : A

(Answer any three questions)

1. (a) State the main problems of new spinning systems.
(b) Describe working principle of Rotor spinning with diagram.
(c) Write properties and end uses of rotor yarn.

[4+8+5.5=17.5]

2. (a) Which type of fiber is suitable for vortex spinning?
(b) Describe working principle of vortex spinning with diagram.
(c) Write properties and end uses of vortex yarn.

[2+10+5.5=17.5]

3. (a) Define blending and write down the purpose of blending.
(b) What are the common blending ratio? Sketch how many ways fiber are arranged in yarn cross-section.
(c) Explain about the components used in spin finish.

[6+7.5+4=17.5]

4. (a) What are the change point required in blow room, carding, draw frame and ring frame of cotton spinning line during processing of polyester?
(b) Write down the properties of end uses of (cotton/ viscose) blended yarn.
(c) Mention the factor affecting on the properties of man-made fiber.

[8+6+3.5=17.5]

Part : B

(Answer any three questions)

5. (a) Write the flow chart of jute yarn manufacturing.
(b) How do you express jute yarn count? Classify jute yarn according to use.
(c) State the objects of using emulsion in jute processing.
(d) Write down the required properties of jute batching oil, water and emulsifier.

[3+5+3.5+6=17.5]

6. (a) Write the objects of jute Draw frame.
(b) Describe the working principle of jute second Draw frame.
(c) Write the properties of jute draw sliver.

[3+5+3.5+6=17.5]

7. (a) Define special yarn with example and state some production system of special yarn.
(b) What is the aim of compact spinning? Mention the advantages of compact spinning on spinning & weaving.
(c) Define core spun yarn with classification.
(d) Write the effects of Texturisation on yarn.

[5+8.5+4=17.5]

8. Write short notes on the following : [4.5+8+3+2=17.5]
(i) Ply yarn
(ii) Cable yarn
(iii) Siro yarn
(iv) Slub yarn
(v) Melanged yarn

BANGLADESH UNIVERSITY OF TEXTILES

B.Sc. in Textile Engineering
Level-3 Term-II, Final Examination-2013

Subject : Yarn Manufacturing-II (Code : YME 323)

Time : 3 Hrs.

Full Marks : 105

(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) Write the names of some conventional and modern spinning systems.
(b) Describe the basic principle of Air-vortex spinning system
(c) State the properties and end-uses of vortex yarn.
(d) What are the problems of new spinning systems?

[3+7+3+4.5=17.5]

2. (a) What are the raw materials used for Rotor spinning?
(b) Describe the basic principle of Rotor spinning System.
(c) Compare the properties of ring and rotor yarn.
(d) Write the advantages and disadvantages of rotor spinning system.

[2+7+4+4.5=17.5]

3. (a) What are the characteristics of raw materials used for Friction spinning?
(b) Describe the basic principle of Dref-III spinning system.
(c) State the properties and end-uses of friction spun yarn.
(d) Compare the twist insertion rate of ring, rotor, friction, air-jet and wrap spinning.

[2+8+4+3.5=17.5]

4. (a) Define blending and write the objectives of blending ?
(b) State the necessary changes required in carding, drawing and ring frame to process polyester fiber in cotton processing line.
(c) What is spin finish? Why spin finish is applied on man-made fiber?
(d) Write down the properties and end-uses of (cotton/polyester) blended Yarn.

[3+9+3+2.5 = 17.5]

Part : B (Answer any three questions)

5. (a) What is special yarn? Give some examples of special yarn.
(b) Define and classify the slub yarns.
(c) Describe the mechanism of slub yarn production in Ring spinning system.
(d) What are the factors which affect on the visual effect of slub yarn?

[3+4+8.5+2=17.5]

6. (a) Write short note on compact spinning system.
(b) Define core spun yarn and mention the types of core spun yarn.
(c) Define chenille and melanged yarn.
(d) Write down the basic principle and methods of texturisation.

[5+3+4+5.5=17.5]

7. (a) Define dollop weight and clock length.
(b) Describe the working principle of jute breaker carding machine.
(c) Compare the properties of jute breaker and finisher card sliver.

[4+8+5.5=17.5]

8. (a) Write down the speciation of jute spinning frame.
(b) Discuss the different spinning system used in jute spinning.
(c) Comparison among 1st, 2nd and 3rd Draw frame.
(d) Calculate lbs/100 yds of Draw frame sliver from the following particulars:
Finisher card delivery sliver : 16lbs/100Yds
Draw frame draft :4, Draw frame doubling : 2:1

[2.5+6+4+5=17.5]

(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)

- (a) Write the advantages of modern spinning system.
(b) Describe the working principle of Murata jet spinner with figure.
(c) State raw material, yarn character, end use of jet yarn and advantageous character of Murata jet spinner.

 $[3+8+6.5=17.5]$

- (a) Describe the working principle of rotor spinning machine.
(b) Write the properties and end use of rotor yarn.
~~(c)~~ Calculate production(kg) per shift of 10 rotor machine for production of 10 Ne yarn.
(Assume rotor r.p.m = 100000, TM =5, efficiency =90%).

 $[8+3+6.5=17.5]$

- (a) What is blending and mixing? Write the objectives of blending.
~~(b)~~ Write the change points are required at carding and draw frame to process polyester fiber at cotton processing line.
(c) Write the properties and end use of cotton polyester blend yarn.

 $[5+8+4.5=17.5]$

- Write short notes on the followings:
(a) Wrap spinning ~~(b)~~ Friction spinning (c) Spin finish

 $[7+7+3.5=17.5]$

Part: B

(Answer any three questions)

- (a) Define compact, slub and core spun yarn.
(b) Describe the principle of ring slub yarn manufacturing with figure.
(c) Write properties and end use of compact, slub and core spun yarn.

 $[3+8.5+6=17.5]$

- (a) Define chenille, mélange and neps yarn.
(b) What is texturizing? Write its basic principle.
~~(c)~~ Explain a suitable texturizing technique for polyester yarn.
(d) State the properties and end uses of texturized yarn.

 $[3+4+7+3.5=17]$

- (a) Show the flow chart for traditional jute yarn manufacturing.
(b) Explain the selection technique of jute fiber to produce different jute yarn.
(c) Explain jute yarn count and quality ratio with equation and example.
(d) State the objectives of jute carding and drawing machine.

 $[4.5+4+4+5=17]$

- (a) What are the drafting systems used in jute spinning?
(b) Describe the working principle of jute flyer spinning machine.
(c) Find out the production(lb) per shift of 10 flyer spinning machine from the following particulars : No of flyer/machine = 100, Flyer r.p.m. = 3500, TPI: 3.3
yarn count = 8lb/spindle and efficiency : 80%.
(d) Write the name of different diversified jute products with end uses.

 $[2+8+5+2.5]$

BANGLADESH UNIVERSITY OF TEXTILES

B. Sc. in Textile Engineering
Level-3 Term-I, Final Examination-2015

Subject: Yarn Manufacturing-II (Code: YME 323)

Time: 3.00 Hrs.

Full Marks: 105

(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) Write the name of some conventional and modern spinning system.
(b) Describe the working principle of rotor spinning machine with figure.
(c) State the properties and end uses of rotor yarn. [3+10+4.5=17.5]
2. (a) What are the raw materials used for rotor spinning?
(b) Point out the limitations of ring and rotor spinning system.
(c) Find out the production / day in lb of a Rotor frame from the following particulars:
No. of Rotor frame: 10, No. of head / frame: 300
Rotor speed: 1,00,000 rpm, Yarn fineness 10 Ne: 10, TM: 4.2
& Efficiency: 93%.
(d) Describe the working principle of Dref-3 spinning with figure. [2+4+4+7.5=17.5]
3. (a) Define blending and write the objectives of blending.
(b) Points out the important setting are required to process polyester fiber at carding and drawing machine of cotton processing system.
(c) Write the names of three blend yarns with fiber composition. [4.5+10+3=17.5]
4. Write short notes on the following:
(i) Air-jet spinning.
(ii) Compact spinning. [9.5+8=17.5]

Part: B

(Answer any three questions)

5. (a) Write jute yarn manufacturing process with sequence.
(b) What is emulsion and why emulsion is applied on jute fiber during jute processing.
(c) Draw and describe the jute spreader machine with mention its different points. [5.5+4+8=17.5]
6. (a) Define Dollop weight and clock length.
(b) Describe the working principle of jute Breaker Carding machine with figure.
(c) What are draft and doubling? Write the effects of draft and doubling on sliver quality. [2+8+7.5=17.5]
7. (a) What are the drafting system used in jute spinning and explain one of them.
(b) Why faller bar is required in jute drawing frame?
(c) Mention the necessity of crimp on jute sliver at drawing stage.
(d) Calculate lbs /100 yds sliver from draw frame with the following particulars:
Finisher Card delivered sliver: 16 lbs /100 yds, drafts: 4 and doubling: 2:1. [6+5+4+2.5=17.5]
8. (a) What is special yarn and give 10 examples of special yarn.
(b) Differentiate ply and cable yarn.
(c) Write short notes on the followings:
(i) Melange yarn
(ii) Slub yarn
(iii) Core spun yarn [4.5+4+9=17.5]

BANGLADESH UNIVERSITY OF TEXTILES

B. Sc. in Textile Engineering

Level-3 Term-II, Final Examination-2015

Subject: Yarn Manufacturing-II (Code: YME-323)

Time: 3.00Hrs.

Full Marks: 105

(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) Classify yarn according to spinning system.
(b) Write down the difference between Ring and Rotor spinning system with limitation, advantages and disadvantages.
(c) Discuss the characteristics of rotor and ring yarn . [2.5+9+6=17.5]
2. (a) Describe working principle of Rotor spinning machine with diagram.
(b) Find out the production per shift in kg of a Rotor frame from the following particulars: No. of head/frame=280, Rotor speed =120000rpm Yarn fineness =10Ne, TM=4.8 and Efficiency=95%
(c) Discuss the comparison of various spinning methods. [7+4+6.5=17.5]
3. (a) What is man made fiber? State length and fineness of man made fiber to blend with 30mm length cotton fiber.
(b) State the change points are required at carding and ring spinning to process viscose fiber at cotton processing line.
(c) Write types of blending. State advantages and disadvantages of blow room and draw frame blending. [3+8+6.5=17.5]
4. (a) State the raw materials are suitable for wrap and Dref-3 Spinning system.
(b) Describe with figure the working principle of Dref-3 spinning system.
(c) Write the names of three blend yarns with properties and end uses. [3.5+8+6=17.5]

Part: B

(Answer any three questions)

5. (a) What is special yarn? State general properties and end uses of special yarn.
(b) Discuss a manufacturing process of compact yarn.
(c) Explain the advantageous properties and end uses of compact yarn. [3.5+8+6=17.5]
6. (a) State the process flow chart of hessian jute yarn manufacturing.
(b) Define batching. Briefly explain emulsion with its ingredients.
(c) Write the objectives of jute softening, carding and drawing machine [4+7.5+6=17.5]
7. (a) Mention different drafting system used in jute spinning.
(b) Write down the specification of jute spinning frame.
(c) What will be the production per shift of a spinning frame of 100 spindles with particulars as below: RPM of flyer: 3300, TPI=3.35, Draw frame sliver :0.5lbs/100yds, spinning frame draft: 9 and efficiency: 80%.
(d) Explain the twisting and winding mechanism of jute spinning frame. [4+4+4+7=17.5]
8. Write short notes on the following:
(a) Core yarn
(b) Slub yarn
(c) Melange yarn
(d) Ply & Cable yarn
(e) Texturisation [2.5+4+4+7=17.5]

[4+4+3+2+4.5=17.5]

BANGLADESH UNIVERSITY OF TEXTILES

B. Sc. in Textile Engineering

Level-3 Term-II, Final Examination-2016

Subject: Yarn Manufacturing-II (Code: YME 323)

Full Marks: 105

Time: 3.0 Hrs.

(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) Write the names of raw material for ring and rotor spinning.
(b) Describe with figure the working principle of rotor spinning system.
(c) Compare the properties of rotor and ring yarn. [4+10+3.5=17.5]
2. (a) Why compact spinning is required? Narrate the principle of compact spinning.
(b) What are the advantages of compact yarn in spinning and weaving stages.
(c) Write the properties and end uses of compact yarn. [7.5+6+4=17.5]
3. (a) Describe the working principle of air jet spinning with figure.
(b) Why air jet spinning is not suitable for coarser count?
(c) Mention the advantages and disadvantages of air jet spinning system.
(d) Write short note on friction spinning system. [5.5+3+4+5=17.5]
4. (a) What is spin finish? Why spin finish is applied on man-made fiber?
(b) Mention the change points are required at blowroom and carding to process polyester fiber at cotton processing line. [4+8+5.5=17.5]
(c) Write about the common problems are created for processing synthetic fibers at cotton processing line. *Creat. fiber & spin finish*

Part : B

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(Answer any three questions)

5. (a) Mention some features of jute fiber.
(b) Show the process flow chart of jute yarn manufacturing.
(c) Why softening is required in jute processing stage?
(d) Explain the characteristics of jute fiber for quality yarn production.
(e) Mention major diversified jute products. [3+5+3.5=17.5]
6. (a) Write the objectives of jute carding and drawing.
(b) Describe the working procedure of jute finisher card with figure.
(c) Why jute sliver is crimped? [6+9+2.5=17.5]
7. (a) Define jute yarn count and quality ratio.
(b) Describe with figure the working procedure of jute yarn manufacture by flyer spinning machine.
(c) Calculate production/shift in kg of four apron draft flyer spinning machine to produce 8 lbs/spindle hessian yarn. (Assume necessary data). [4+8+5.5=17.5]
8. Write short notes on following:-
(a) Melange yarn (b) Slub yarn (c) Texturized yarn [6+6+5.5=17.5]

Time: 3.0 Hrs.

(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)

4. (a) What is compact spinning? Why this spinning system is named compact spinning?
(b) Describe a compact spinning system with figure.
(c) Write the properties and end uses of compact yarn. [6+7.5+4=17.5]
2. (a) Write the names and properties of raw material for ring and rotor yarn.
(b) Describe with figure the working principle of rotor spinning system.
(c) Compare the properties of rotor and ring yarn. [4+10+3.5=17.5]
3. (a) What is false twist? Can a spun yarn be manufactured by false twist system?
(b) Describe working procedure of Air-jet spinning with figure.
(c) Write advantageous and disadvantageous character of Air-jet spinning. [4+9+4.5=17.5]
4. (a) Mention some thought on the role of cotton in new spinning technologies.
(b) Describe the working principle of Dref-II friction spinning system.
(c) What are the advantages and disadvantages of friction spinning system? [5+8+4.5=17.5]

Part : B

(Answer any three questions)

5. (a) Draw the flow chart of jute yarn manufacturing process.
(b) Suppose the quality ratio for these three different grades are as follows:
BTB = 85% QR
BTC = 74% QR
BTD = 70% QR
Find out a suitable batch to make a light yarn with quality ratio of 78% and using 20% of BTD grade jute fiber in the batch.
(c) Write the name of a common emulsifier with working mechanism. [4.5+8+5=17.5]
6. (a) Distinguish between jute spreader machine and jute softener machine. ^{50%}
(b) Explain the jute softener machine with suitable sketch.
(c) Find out the production /hr of a jute spreader machine if the feed weight is 550lb/100yards, draft is 10, emulsion is applied 20%, delivery speed is 72yards/min, efficiency 80% and wastage is 4%. ^{= draft} [4.5+7+6=17.5]
7. (a) Show the effect of change pinions and pin density on jute carding machine.
(b) Narrate the mechanism of building mechanism of jute flyer spinning frame. <sup>deN. = speed X delivery X
pin density X
eff. X waste</sup>
(c) Say the surface speed of delivery roller of a drawing frame is 126.49ft./min and sliver weight is 8lb/100 yards. Find out (i) Required time to fill a can of 14 lb capacity (ii) Length of sliver. [5+7.5+5=17.5]
8. Write short notes on following:
(a) Core spun yarn
(b) Slub yarn
(c) Texturized yarn [6+6+5.5=17.5]

(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) Write physical properties of jute fibre.
(b) Illustrate the working principle of jute spreader machine.
(c) What is emulsion? Write function of emulsion and emulsifier.
(d) What is batch? Write the importance of batching. $[3+5+5+4.5=17.5]$
2. (a) Write the function of jute carding machine.
(b) Explain working principle of breaker card machine with necessary diagram.
(c) What are the differences between breaker card and finisher card machine?
(d) Find out production of a finisher card machine if the feed speed is 3 feet/min, feed count is 12 lb/ 100 yards, draft is 17, doubling is 11 and waste loss is 4%. $[3.5+7+3+4=17.5]$
3. (a) Define reach, nip and pitch of faller with sketch.
(b) Describe the working principle of jute flyer spinning frame with sketch.
(c) Calculate the production (Kgs/shift) of a jute spinning frame.
[Hint: Spindle nos = 120; Flyer speed = 3300 rpm; TPI = 3.35, draft = 9.4, Count of finisher = 0.7 lbs/100 yds and frame efficiency = 85%] $[3.5+7+3+4=17.5]$
4. (a) Define-Chenille yarn, Siro yarn and Textured yarn.
(b) What is slub yarn? Write its specification, manufacturing process and end use.
(c) State the ring core spun yarn manufacturing process with figure. $[6+6.5+5=17.5]$

Part : B
(Answer any three questions)

5. (a) Write the tasks of rotor spinning.
(b) Explain the working principle of rotor spinning machine with necessary diagram.
(c) Explain raw material properties required for rotor spinning.
(d) Why rotor yarn is coarser than ring yarn? $[4+7+5+1.5=17.5]$
6. (a) Describe the working principle of single nozzle air-jet spinning with figure.
(b) What are the advantages of air-jet spinning?
(c) Discuss in short the basic principle of false twist spinning with figure.
(d) Sketch the spinning triangle of conventional and compact spinning. $[7.5+3+4+3=17.5]$
7. (a) Why use of compact spinning is increasing day by day? Write its advantages.
(b) How many types of compact spinning? Explain a compact spinning system.
(c) Write short note on friction spinning. $[5+8+4.5=17.5]$
8. (a) Define blending and mixing. Write the difference between blending and mixing.
(b) What are the changes required at card frame and draw frame to process polyester fibre in cotton spinning line?
(c) "The biggest problem in the processing of synthetic fibres is the risk of thermal fibre damage on the balloon-control ring and in the region of the ring and traveler", Discuss. $[5+7+5.5=17.5]$

Time: 3.0 Hrs.

(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) Write the function of jute carding and why two carding machine is used for jute fibre processing.
 (b) Explain working principle of breaker card machine with necessary diagram.
 (c) Find out production of a finisher card machine if the feed speed is 3.5 feet/min, feed count is 14 lb/100 yards, draft is 17, doubling is 11 and waste loss is 4%. [3+5+4=12]
2. (a) Define-Reach, Nip, Pitch of faller bar and Lead%.
 (b) Compare 1st, 2nd and 3rd Draw Frame.
 (c) Find the production in kg / shift of a jute mill having 28 frames of 100 spindles each running with the following particulars-flyer speed = 3800 r.p.m, T.P.I = 3.2, feed sliver count = 0.5 lb/100 yards, draf = 15, Efficiency = 84%. [4+4+4=12]
3. (a) Write the flow chart of jute yarn manufacturing process.
 (b) Differentiate between batch and batching.
 (c) What is meant by stainless emulsion? Define dollop weight and clock length.
 (d) Describe the working principle of jute spreader machine with neat sketch. [3+2+3+4=12]
4. (a) Schematically specify a slub yarn.
 (b) Describe the principle of core spun yarn manufacturing process.
 (c) What do you know about textured yarn? Write the advantages of texturing of yarn.
 (d) Write short notes on chenille yarn and fasciated yarn. [2+4+3+3=12]

Part: B

(Answer any three questions)

5. (a) Write the limitations of ring spinning system.
 (b) Why is compact spinning called so? What is meant by fibre migration in yarn?
 (c) Schematically illustrate the short-and long spinning triangle and point out their merits and demerits.
 (d) Write the advantages of compact yarn over conventional ring spun yarn. [2+3+4+3=12]
6. (a) 'Rotor spinning is called the open end spinning' – explain why.
 (b) State the principle of rotor spinning system with material passage.
 (c) Distinguish between ring and rotor spun yarns with respect to yarn twist, strength and imperfections.
 (d) Calculate the production in kg per shift of a rotor spinning frame which is running with 312 heads, 120, 000 rotor rpm, 4.5 TM, 98% efficiency and yarn count is 20 Ne. [2+4+3+3=12]
7. (a) 'Air-jet spinning is not suitable for coarser count of yarn, - explain why.
 (b) Write the basic principle of friction spinning.
 (c) Describe the principle of siro spun yarn formation in twist spinning method.
 (d) Calculate the twist insertion rate in friction spinning when the machine is running with following particulars:
 Diameter of friction drum : 50 mm
 Diameter of yarn : 0.15 mm and
 RPM of friction drum : 10, 000 rpm. [3+3+4+2=12]
8. (a) Define blending and mixing.
 (b) Mention various possibilities for blending.
 (c) Explain blow room and carding settings for processing polyester fibre with cotton fibre.
 (d) Write the problems arise during manmade fibre processing.