INDIAN INSTITUTE OF HANDLOOM TECHNOLOGY

BARGARH/ GUWAHATI/ FULIA/JODHPUR/SALEM/VARANASI/ CHAMPA/ KANNUR/KHTI-GADAG/SPKM IIHT/VENKATAGIRI

DIPLOMA IN HANDLOOM AND TEXTILE TECHNOLOGY
SEMESTER EXAMINATION- APRIL/MAY 2018
(REGULATION 2011)

Semester: 5th Semester

Time: 3 Hours

Subject Code & Name: **5.1 Weaving Technology & Textile Calculation – IV**

Max. Marks:80

PART-A   (2 x 10 = 20 Marks)

Answer the entire question within two or three sentences

1. Name at least four types of Shuttle-less loom.

2. State the main difference between Dewas and Gabler system.

3. What type of shed is formed in single lift single cylinder jacquard?

4. Write the function of 'Spring box' in a jacquard mechanism.

5. How many number of cylinders are generally used in damask jacquard?

6. Name the type of hooks and needles used in leno jacquard?

7. Write the equation between the yarn diameter and count for cotton yarn as per Ashenhursts' formula.

8. Calculate the diameter of 2/40^s Ne cotton yarn in inch?

9. What do you mean by the term 'Cloth Cover'?.

10. State the Peirce formula of cover factor for cotton indirect count system.

PART-B   [(4+8) x 5 = 60 Marks]

Answer all the questions in details

11. a) State the limitations of shuttle-looms.

    b) Explain the picking mechanism of projectile loom with neat diagram?

OR

    c) Write a short note on Multi-Phase Loom.

    d) Explain the principle of weft insertion system of Airjet Loom with neat diagram.

12. a) Briefly state the working principle of a single-lift single cylinder jacquard.

    b) Write the description and functions of different parts (at least four) of a jacquard with neat diagram.

OR

    c) Write the working principle of an open-shed jacquard mechanism.

    d) Explain the working of two cylinders in a double-lift double cylinder jacquard machine with neat diagram.

13. a) Explain the cylinder changing mechanism of crossborder jacquard for weaving cross border?

    b) Explain the mechanism and working principle of self-Twilling jacquard with neat diagram.?

OR

    c) Write main working principle of Inverted-hook jacquard mechanism?

    d) Explain the mechanism and working principle of Leno jacquard with neat diagram?

14. a) Calculate the diameter of 32^s and 40^s Woollen Yarn using Ashenhurts' formula.

   b) Find the diameter of the following yarns using Pierce formula.

   (i) 2 x 40 tex yarn (iii) $2/120^s$ Cotton Yarn

OR

   c) Calculate the diameter of 100 denier metric yarn and 17^s Nf yarn.

   d) Assuming the diameter of 100 denier rayon yarn as 1/200 inch calculate the count of yarn having

   (i) 1/100 inch ;   (ii) 1/180 inch   and   (iii) 1/300 inch

15. a) Establish the following equation: Cover Factor $K= \frac{n}{\sqrt{N}}$, where 'n' is threads per inch and 'N' is count.

   b) Find out the warp and weft cover factors of a fabric containing 60 ends per inch of 40^s worsted and 52 picks/ inch of 36^s worsted.

OR

   c) Compare the relative closeness of warp yarns in the following two plain clothes:

   i) 16^s cotton : 50 ends per inch

   ii) 36^s cotton : 84 ends per inch

   d) Ascertain the total cover of the fabric with following particulars:

   i) Warp: 20 tex : 28 ends per cm

   ii) Weft: 35 tex : 25 picks per cm

   (Density of cotton is $1.52 gms/cm^3$)

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Semester : V semester   **Time:3hours**

Subject :5.1 Weaving Technology & Textile Calculation – IV   **Max marks: 80**

PART – A   2x10=20 Marks

Answer all the questions within **two or three** sentences

1. What are the advantages of shuttleless loom?
2. Name different types of shuttleless loom.
3. Classify different jacquards used in the Textile industry.
4. What are the advantages of Electronic jacquard?
5. Name two types of fabrics produced in the Inverted hook jacquard loom.
6. What are advantages of Damask Jacquard?
7. Write down the Ashen Hurst's formula for calculating diameter of English Cotton yarn.
8. Write down the Pierce's formula for calculating diameter of Denier Metric Silk Yarn.
9. What do you mean by cloth cover?
10. What do you mean by maximum setting of a fabric?

PART – B   12x5=60 Marks
Answer all questions in detail.

11. A. Compare shuttleless weaving machines with shuttle weaving machines. (4)
    B. Discuss sequences of weft insertion technique used in Rapier loom or Projectile loom. (8)

    or

    C. Compare Water Jet weaving machine with Air Jet weaving machine. (4)
    D. Explain the weft insertion technique used in Air Jet loom. (8)

12. A. Explain the advantages of Double lift Double Cylinder Jacquard over Single Lift Single Cylinder jacquard. (4)
    B. Explain the mechanism and working of Single Lift Single Cylinder jacquard (8)

    or

    C. Briefly explain functions of **any two parts** of the jacquard. (4) D. Explain the mechanism and working principles of Double Lift Double Cylinder Jacquard. (8)

13. A. Write short notes on Cross Border Jacquard. (4)
    B. Explain the mechanism and working principle of the Damask Jacquard. (8)

    Or

    C. Write short notes on Leno Jacquard. (4)
    D. Explain the mechanism and working principles of the Inverted Hook Jacquard. (8)

14. A. If the diameter of the polyester yarn is —— inch find out its count of the polyester yarn in the Tex system. **(4)**

B. Calculate the diameter of the following yarn using Ashen Hurst's formula.

    i.   English cotton   ii.   Worsted   **(8)**

or

C. If the diameter of the cotton yarn is —— inch, find out count of the yarn in English cotton System. **(4)**

D. Calculate the diameter of the following yarn using Pierce's formula.

    i.   English cotton   ii.   Denier Metric Silk yarn   **(8)**

15. A. Write short notes on Fractional Cover Factor of a fabric. **(4)**

B. Calculate percentage of warp and weft cover of a fabric woven with following particulars

Count of warp	-	English cotton	Ends per inch - 72
Count of warp	-	English cotton	Picks per inch - 56

(8)

or

C. Write short notes on percentage cover factor of a fabric **(4)**

D. Calculate fractional of warp and weft cover of a fabric woven with following particulars

Count of warp	-	Ends per cm - 30
Count of warp	-	Picks per cm - 24

(8)

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DIPLOMA IN HANDLOOM AND TEXTILE TECHNOLOGY
SEMESTER EXAMINATION- NOV/DEC 2017
(REGULATION 2014)

Semester: V Semester   Time: 3 Hours

Subject Code & Name: 5.1Weaving Technology & Textile Calculation – IV   Max. Marks: 80

PART-A

Answer all questions within two or three sentences   (2 x 10 = 20 Marks)

1. Classify Shuttle-less loom.

2. What do you mean by "Multi-phase Weaving machine"?

3. What type of shed is formed in single lift single cylinder jacquard?

4. Write the use of "hooks and needles" in jacquard weaving.

5. What are the three methods adopted for figured cross border weaving?

6. What is a Damask jacquard machine?

7. Write the equation between the yarn diameter and count for cotton yarn as per Ashenhursts' formula.

8. Calculate the diameter of 32^s cotton yarn using Peirce formula.

9. What is the cover fraction of warp 32^s cotton woven with 56 ends per inch?

10. Write formula for the Warp fractional cover for Tex count system.

PART-B

Answer all the questions in details   [(4+8) x 5 = 60 Marks]

11. a) State the advantages of Multi-phase weaving technique.

    b) Explain the weft insertion technique of Airjet loom with neat diagram.

Or

    c) State the advantages of Projectile looms.

    d) Explain the weft insertion technique of Single Rapier loom with neat diagram.

12. a) Briefly state the advantages of jacquard mechanism.

    b) Explain the working principle of double-lift single cylinder jacquard machine with neat diagram.

Or

    c) Write the advantages and disadvantages of double-lift double cylinder jacquard mechanism.

    d) Write the function of different parts of a Jacquard with neat diagram.

13. a) Why the cross border jacquards are used?

b) Explain the mechanism and working principle of Leno jacquard

Or

c) Write the at least two advantages & disadvantages of damask jacquard

d) Explain the mechanism and working principle of Inverted-hook jacquard mechanism.

14. a) Calculate the diameter of (i) $2/40^s$ cotton and (ii) 60^s worsted yarn using Ashenhurts' formula

b) Assuming the diameter of 100 denier rayon yarn as 1/200 inch, calculate the count of yarns having following diameters:

(a) 1/100 inch , (b) 1/180 inch , (c) 1/250 inch and (d) 1/300 inch

Or

c) Calculate the count of two fold yarn whose diameter is 1/160 inch.

d) Find the diameter of the following yarns using Pierce formula.

(i) 60 tex polyester (ii) 15 denier nylon and (iii) 8 pound per spyndle

15. a) Ascertain the (a) Warp fractional cover and (b) Weft fractional cover of the following

Warp: 20 tex: 30 ends per cm

Weft: 30 tex: 30 ends per cm

b) Find out the maximum setting for the following weaves using 100 denier yarn in warp and 12 tex yarn in weft:

(i) 2/2 Twill (ii) Plain weave and (iii) 4/4 matt weave

Or

c) Determine the warp and weft cover factors of the following fabric

60denier nylon x 48^s worsted; 96 x 72

d) Confirm the formula, $K_1 + K_2 = \sqrt{10W} (n_1 + n_2)$ with the following details of a plain cloth

20 tex x 30 tex; 25 ends per cm x 20 picks per cm; 7% x 6%

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DIPLOMA IN HANDLOOM & TEXTILE TECHNOLOGY

SEMESTER EXAMINATION APRIL/MAY-2017 (2014-REGULATION)

Time : 3 Hours   Max. Marks : 80

V SEMESTER   5.1 WEAVING TECHNOLOGY & TECHNOLOGY CALCUALTIONS-IV

PART – A

(Answer all the questions within two to three sentences)   2 x 10=20 Marks

1   State the limitation of Shuttle less loom.

2   What do you mean by "Multi-phase Weaving machine"?

3   Classify jacquard machine.

4   Write the name of the important parts of a jacquard machine.

5   What are the uses of inverted hook jacquard machine?

6   What is a leno jacquard machine?

7   Write the equation between the yarn diameter and count for woolen yarn as per Ashenhursts' formula.

8   Write the Pierce formula to calculate a yarn diameter in inch whose count is given in tex system.

9   Write the equation to calculate the maximum setting for a cloth.

10 Define the term "Cover Factor of a Fabric".

PART-B   (4+8) x 5= 60 Marks

11 A) Compare the different shuttle less weaving techniques.   (4)

    B) Explain the weft insertion technique of projectile loom with neat diagram.   (8)

(OR)

    C) State the advantages of shuttle less looms over shuttle looms.   (4)

    D) Explain the weft insertion technique of flexible double Rapier loom with neat diagram.   (8)

12 A) Briefly state the difference between the single lift single cylinder and double lift double cylinder jacquard.   (4)

    B) Explain the working principle of double lift single cylinder jacquard machine with neat diagram.   (8)

(OR)

    C) Write the advantages and disadvantages of open shed jacquard mechanism.   (4)

    D) Explain the working principle of double-lift double cylinder jacquard machine with neat diagram.   (8)

13   A)   Write the working principle of leno jacquard briefly.   (4)

     B)   Explain the mechanism and working principle of cross border jacquard.   (8)

                                         (OR)

     C)   Write the at least two advantages & disadvantages of Inverted hook jacquard   (4)
          mechanism

     D)   Explain the mechanism and working principle of Self Twilling jacquard.   (8)

14   A)   Calculate the count of the yarn in Ne cotton System having 1/177 inch   (4)
          diameter.

     B)   Calculate the diameter of the following yarns using Ashenhurts' formula.   (8)
          (i) 24ˢ Woollen Yarn   (ii) 60ˢ Worsted Yarn   (iii) 2/80ˢ Cotton Yarn

                                         (Or)

     C)   If the diameter of 16 tex yarn is 1/170 inch find the diameter of 32 tex yarn.   (4)

     D)   Find the diameter of the following yarns using Pierce formula.   (8)
          (i) 20ˢ Linen Yarn   (ii) 40ˢ Worsted Yarn   (iii) 36ˢ Cotton Yarn

15   A)   Find out the maximum setting for a warp of 40ˢ cotton yarn that can be woven   (4)
          into a plain square cloth.

     B)   Find out the total cover of the cloth from the following particulars   (8)
          Warp: 30 tex : 20 ends per cm
          Weft: 20 tex : 30 ends per cm
          Density of cotton is 1.52 gm/cc

                                         (Or)

     C)   What do you mean by the terms (i) Fractional Cover (ii) Relative Cover?   (4)

     D)   Compare the relative closeness of warp yarns in the following two plain   (8)
          clothes.
          i) Warp: 16ˢ Cotton: 50 ends per inch
          ii) Warp: 36ˢ Cotton: 84 ends per inch

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DIPLOMA IN HANDLOOM AND TEXTILE TECHNOLOGY
FIFTH SEMESTER (2011 - REGULATION) –NOV/DEC - 2016
5.1 WEAVING TECHNOLOGY & TEXTILE CALCULATIONS – IV

Time: 3hours   Max Marks: 80

PART-A

Answer all questions in short: 10X2=20

I   i) What is 'shuttleless' weaving?

ii) What are disadvantages of water jet weaving?

iii) What is the function of comber board in Jacquard weaving?

iv) What are the advantages of double cylinder jacquard weaving?

v) What do you understand from electronic jacquard weaving?

vi) What are the advantages of self twilling jacquard machine?

vii) Write Ashenhurst formula for calculating the diameter of Woollen yarn?

viii) Write Peirce formula for calculating the diameter for cotton system?

ix) What is the disadvantage of higher warp & weft cloth cover values?

x) Write the formula for calculating total cloth fractional cover.

PART-B

Answer all the questions in detail: 4+8 X12=60

II   a) Write the advantages of shuttleless weaving.

    b) Tabulate the different weft insertion (picking) type and their weaving speed of looms.

OR

    c) Write the features of multiphase weaving.

    d) Explain with neat diagram the working principle of Air jet weaving OR Rapier weaving (any one).

III   a) Write the advantages of Jacquard weaving.

    b) Write different parts and functions of Jacquard weaving machine.

OR

    c) Write short note on classification of Jacquard machines.

    d) Explain with neat diagram the working principle of Double lift Single cylinder Jacquard weaving.

IV   a) Write short note on Special type Jacquard weaving machines.

    b) Explain with neat diagram the working principle of open shed Jacquard weaving.

OR

    c) Write short note on Leno Jacquard weaving.

    d) Explain with neat diagram the working principle of Cross Boarder Jacquard weaving.

P.T.O.

V   a) Briefly write relation between Count and Diameter of cotton system with example.

b) Calculate the diameter of the yarn as per Ashenhurst's rule for (i) 60^s spun silk yarn & 60^s worsted yarn and ii) as per Peirce's formula for 60^s cotton yarn & 60 tex polyester yarn.

OR

c) If the diameter of 80^s cotton yarn is 1/240 inch, what will be the diameter of 40^s & 20^s cotton yarn.

d) Calculate the Count of the following yarn

(i) Count yarn having 1/177 inches in diameter – 'Ne' system

(ii) Polyester yarn having 1/151 inches in diameter – 'Tex' system

(iii) Worsted yarn having 1/144 inches in diameter – "Worsted' system

(iv) Two folded cotton yarn having 1/160 inches in diameter – 'Ne" system

VI   a) What is cover of cloth?

b) Calculate the warp and weft cover factors, total cloth cover and percentage cloth cover of the following 'plain' fabric using Peirce (indirect system) formula

Warp count: 40^s worsted yarn

Weft count: 36^s worsted yarn

Ends per inch: 60

Picks per inch: 52

OR

c) Write short note on 'fractional cover of cloth'

d) What is warp fractional cover, weft fractional cover, total cover of cloth and percentage cover from the following construction

Warp count: 20 Tex yarn

Weft count: 30 Tex yarn

Ends per cm: 30

Picks per cm: 30

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DIPLOMA IN HANDLOOM AND TEXTILE TECHNOLOGY
FIFTH SEMESTER (2014 - REGULATION) EXAMINATION –NOV/DEC-2016
5.1 WEAVING TECHNOLOGY AND TEXTILE CALCULATION – IV

Time: 3 Hours   Max.Marks: 80

PART – A

I. Answer the following questions in two or three sentences :   (2X10=20)
   i) How are shuttleless looms classified?
   ii) What are differences between Projectile loom and Rapier loom.
   iii) Furnish classification of jacquard looms.
   iv) List down the advantages of Double lift jacquard over Single lift jacquard.
   v) Which types of fabric are produced in Inverted hook jacquard?
   vi) Which types of fabric are produced on Cross Border jacquard loom?
   vii) Write the Ashen Hurst's formula for estimation of diameter of cotton yarn whose count is expressed in English cotton system.
   viii) Write the Pierce's formula for estimation of diameter of silk yarn whose count is expressed in Denier Metric system.
   ix) What is the maximum setting for a plain cloth?
   x) Explain the term "Cloth Cover".

PART B

II. Answer all the questions in detail
   A) What are the advantages of Shuttleless loom?   (4)
   B) Discuss sequences of weft insertion technique used in Rapier loom.   (8)
   ### (OR)
   C) What are differences between Air jet and Water jet weaving machines? (4)
   D) Discuss sequences of weft insertion technique used in Air jet loom. (8)

III. A) Explain advantages and disadvantages of Single lift Single Cylinder Jacquard. (4)
    B) With suitable sketch, explain the working of Single lift Single cylinder jacquard machine. (8)
   ### (OR)
    C) Explain the function of any four parts of the jacquard machine.   (4)
    D) Explain the working of Double lift Double Cylinder jacquard machine (8)

IV. A) Compare the Inverted hook jacquard with the Cross Border Jacquard. (4)
    B) With a neat diagram explain the working principle of the Inverted Hook Jacquard. (8)
   ### (OR)
    C) Explain the features of Cross Border Jacquard.   (4)
    D) Explain the mechanism and working principles of Damask jacquard.   (8)

V. **A)** Write Short note on Ashen Hurst's rule for estimation of diameter of the yarn. **(4)**

B) Calculate the diameter of the following yarn using Ashen Hurst's formula

i) 6^s Cotton yarn.   ii) 60^s Worsted yarn **(8)**

(OR)

C) Write short notes on Pierce's formula for estimation of diameter of yarn. **(4)**

D) Calçulate the diameter of the following yarn using Pierce's formula.

i) 36^s Ne cotton yarn   ii) 20 Denier Metric silk yarn. **(8)**

VI. **A)** What is the maximum number of ends that can be woven into $\frac{2}{2}$ Twill cloth if the count of the yarn used is 40^s cotton? **(4)**

B) Calculate the warp cover and weft cover in percentage for a fabric woven with following particulars.

Count of warp - 60^s Ne cotton	Ends per inch – 72
Count of weft - 40^s Ne cotton	Picks per inch – 60
Weave – Plain weave	

(8)

(OR)

C) What do you understand by the term Fractional warp cover and Fractional weft cover of a fabric? **(4)**

D) Calculate the fractional warp and weft cover of a fabric having the following particulars.

Count of warp - 40^s Worsted	Ends per inch - 52
Count of weft - .40^s Worsted	Picks per inch - 48
Weave - $\frac{2}{2}$ twill	

(8)

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DIPLOMA IN HANDLOOM AND TEXTILE TECHNOLOGY
FIFTH SEMESTER (OLD – BACK PAPER) – APRIL/MAY-2016
5.1 WEAVING TECHNOLOGY AND TEXTILE CALCULATIONS-IV

Time: 3 Hrs   Max Marks: 80

PART-A

1   **Answer all the questions in short:**   2X10=20

   a) Why profile reed is used in air jet weaving?

   b) Write different types of selvedge formation in shuttleless weaving.

   c) Write the advantages of jacquard weaving.

   d) Write the names of electronic jacquard weaving.

   e) Write few fabrics produced by cross boarder jacquard weaving machine.

   f) Write the advantages of leno jacquard weaving.

   g) Calculate the diameter of 36^S cotton yarn using Ashenhursts formula.

   h) If the diameter of worsted yarn is 1/125 inch. what is the count of yarn?

   i) What is cover of cloth?

   j) What is the cover percent6age. if 72 ends per inch of 48^S worsted yarn is used?

PART-B

  Answer all the following questions in detail: (4+8)X5=60

II   a) Write the advantages of shuttleless weaving.   4

     b) Write short notes on air jet and rapier shuttleless weaving.   8

OR

   c) Write the advantages of projectile shuttleless weaving.   4

   d) Write short notes on projectile and multiphase weaving.   8

III   a) Write the advantages of open-shed jacquard weaving.   4

     b) Explain briefly the functions of different parts of jacquard weaving machine.   8

OR

   c) Write short notes on double lift double cylinder jacquard weaving.   4

   d) Explain the working principle of single lift single cylinder jacquard weaving with neat diagram.   8

IV   a) Write short notes on inverted jacquard weaving.   4

     b) Explain the working principles of cross boarder jacquard weaving.   8

OR

   c) Write the advantage of self-twilling jacquard weaving.   4

   d) Explain different types of shed formation in leno jacquard weaving with neat diagram.   8

V a) Calculate the diameter of yarn as per Ashenhurst's rule: 4
   (i) $2/40^s$ cotton yarn   (ii) 40^s worsted yarn

b) Calculate the diameter of yarn as per Pierce's formula: 8
   (i) 50^s cotton yarn   (ii) 50^s worsted yarn
   (iii) 50 Tex polyester yarn   (iv) 100^s two fold cotton yarn

OR

c) If the diameter of 16^s tex yarn is 1/170 inch, then find out diameter of 30 tex and 50 tex yarn. 4

d) Assuming the diameter of 100 denier rayon is 1/200 inch, calculate the count of yarn of having diameter: 8
   (i) 2/100 inch   (ii) 1/180 inch   (iii) 1/250 inch   (iv) 2/300 inch

VI a) Ascertain warp fractional cover and weft fractional cover of the following fabric: 4
   Warp : 30 tex   Weft : 30 tex
   Ends per cm. : 30   Picks per cm. : 30

b) Calculate warp cover, weft cover and cloth cover and percentage cover of given plain fabric: 8
   Warp count : 30^s Ne   Weft count : 30^s Ne
   Ends per inch : 68   Picks per inch : 68

OR

c) Differentiate the fractional cover from clothe cover. 4

d) Calculate the fractional cover of warp and weft, percentage of cover for warp and weft and total cover of plain worsted fabric containing 60 ends of 40^s worsted yarn and 52 picks 36^s worsted yarn. 8

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Max. Marks : 80

Time : 3 Hours
FIFTH SEMESTER

5.1 WEAVING TECHNOLOGY & TEXTILE CALCULATION – IV

Part – A

2 x 10=20 Marks

1 Name a few shuttle less looms.

2 What is the form of weft yarn used in shuttle less looms?

3 What is the type of shed formed in single lift Single Cylinder Jacquard?

4 What is the functions of lingoe in jacquard weaving.

5 How many threads being operated by a hook in Inverted Hook Jacquard in weaving figured terry weave?

6 What are the advantages of Cross Border Jacquard in Fabric weaving?

7 Write down the Pierce's formula for calculating diameter of cotton yarn in inch.

8 What do you understand by the term 'Relative Diameters' of yarns?

9 What do you mean by 'Balanced Cloth'?

10 Differentiate 'Fractional Cover' with that 'Total Cover' of a fabric.

PART-B

12 x 5= 60 Marks

11 A) Write a brief note on advantages of shuttle less weaving. **(4)**

B) Discuss in sequence the weft insertion technique in Air Jet Loom. **(8)**

(Or)

C) Compare the advantages of shuttle less weaving with that of Shuttle Weaving in Powerloom Weaving. **(4)**

D) With a neat line diagram explain the mechanism of weft insertion in a Rapier loom. **(8)**

12 A) Discuss in brief the merits and demerits of Double Lift Double Cylinder Jacquard with that of Single Lift Single Cylinder Jacquard Weaving. **(4)**

B) With a suitable sketch explain the working mechanism of Single Lift Single Cylinder Jacquard Weaving. **(8)**

(Or)

C) Narrate the advantages of use of Comber Board in Figured Double cloth weaving. **(4)**

D) With a neat sketch explain the working principle of Double Lift Double Cylinder Jacquard Weaving. **(8)**

P.T.O.

13 A) Compare the mechanism of Inverted Hook Jacquard weaving with that of Double Lift Double Cylinder Jacquard. (4)

B) With a neat diagram explain the working principle of Cross Border Jacquard Weaving. (8)

(Or)

C) Explain the main features of an electronic jacquard. (4)

D) With the help of a line sketch explain the working principles of inverted hook jacquard weaving. (8)

14 A) By taking the specific volume of yarn as 1.1 cubic cm. per gram derive the constant for calculating cotton yarn diameter in inch as per Peirce's Rule. (4)

B) Calculate the diameter in inch of the following yarns as per Asherhurst's Rule: (8)
i) 60^s cotton yarn   ii) 60^s worsted yarn

(Or)

C) By taking the specific volume of yarn as 0.6713 cubic inch per gram derive the constant for calculating cotton yarn diameter in inch as per Peirce's Rule. (4)

D) Calculate as per the Peirce's Rule the count of the following cotton yarns, whose diameter are as under. (8)
i) $\frac{1}{89}$ inch   ii) $\frac{1}{280}$ inch

15 A) Derive the formula for calculating warp and weft fractional cover and cover factor as per Peirce's Rule under Indirect system. (4)

B) A cloth is made of 30^s cotton warp and weft yarns contain 50 ends and picks per inch. Assuming that it is required to produce a new texture, but to be $1/10^{th}$ higher, what count of yarns and threads per inch will be required. (8)

(Or)

C) With a suitable line diagram explain the term "square plain structure". (4)

D) A cloth is made of 60^s warp and weft yarns with 84 ends and picks per inch. Assuming that it is required to produce a new texture but to be $1/10^{th}$ heavier, what count of yarns and threads per inch will be required. (8)

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5.1-WEAVING TECHNOLOGY & TEXTILE CALCULATIONS – IV

TIME: 3 Hours **Max. Marks: 80**

PART A

I.   Answer all the questions in ONE or TWO sentences. (2 x 10=20)

  i.   Write different types of rapier weaving machine.
  ii.   What are the limitations of water jet loom?
  iii. What is the use of "Lingoes" in Jacquard weaving?
  iv.   Who invented Jacquard loom?
  v.   Name two types of fabric produced by using cross – boarder Jacquard loom.
  vi.   Write the features of self-twilling Jacquard loom.
  vii. Calculate the diameter of 36^s cotton yarn?
  viii. Calculate the diameter of 36^s Wrosted yarn?
  ix.   What is the cover fraction of warp 36^s cotton woven with 64 ends per inch?
  x.   What is the maximum cover factor of cotton plain fabric?

PART B

Answer all the questions in detail.

II. a. Compare the weft insertion rate for different types of looms. (04)
     b. Explain with neat diagram, the weft insertion technique of rigid and
        flexiable rapier weaving machine. (08)

OR

     c. Write the advantages of shuttle less weaving. (04)
     d. Explain with neat diagram the weft insertion sequence (cycle) of air jet weaving
        or projectile weaving. (08)

III. a. Write the classification of Jacquard shedding machines. (04)
     b. Write the different parts of Jacquard shedding machine. (08)

OR

     c. Write the advantages of Jacquard weaving. (04)
     d. Explain with neat diagram, the working principle of double lift single cylinder
        Jacquard weaving. . (08)

IV. a. What is the objective of cross boarder Jacquard weaving. (04)
b. Explain with neat diagram, the working principle of self-twilling Jacquard weaving. (08)

OR

c. Briefly write the 3 types of shed formation in leno Jacquard weaving. (04)
d. Explain with neat diagram the working principle of cross border Jacquard weaving. (08)

V. a. Write the formula to identify diameter of the following yarn in inches as per Ashenhursts rule: (04)

i) Cotton yarn
ii) Woolen yarn
iii) Spun Silk Yarn
iv) Worsted yarn

b. Calculate the diameter of the following yarn: (08)

i) 60Tex polyester
ii) 40^s Worsted yarn
iii) 20^s Linen yarn
iv) $2/30^s$ Folded cotton yarn

OR

c. If the diameter of 80^s cotton yarn is 1/240 inch, what will be relative diameter of 40^s and 20^s cotton yarn (04)

d. Calculate the count of the following yarn: (08)
i) Having 1/280 inch diameter of Cotton yarn in Ne system.
ii) Having 1/151 inch diameter of Polyester yarn in Tex. System.
iii) Having 1/160 inch diameter of Two fold (cotton) yarn in Ne system.
iv) Having 1/144 inch diameter of Worsted yarn.

VI. a. Write the formula for (04)
i) Cloth fractional cover, ii) Percentage cover and iii) Total cover

b. Calculate the warp cover, weft cover and total cover of a cloth in plain weave as per the details given below: (08)

Wart Count   : 40^s Cotton yarn
Weft Count   : 40^s Spun silk yarn
Ends per inch :   80
Picks per inch :   80

OR

c. Write short note on cloth cover. (04)
d. Calculate the fractional cover and percentage cover of the following fabric: (08)

Warp count   : 50^s Worsted yarn
Weft count   : 50^s Worsted yarn
Ends per inch :   88
Picks per inch :   88

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