BANGLADESH UNIVERSITY OF TEXTILES
B. Sc. in Textile Engineering (For Affiliated Collage)
Level-2 Term-2, Final Examination-2019

Subject: Fundamentals of Marketing (Code: TEM-201)

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 the Core Marketing Concepts.
    (b) Discuss the importance of marketing.
    (c) Write short note on marketing management.

    [5+5+2=12]

2. (a) Define marketing environment.
    (b) What are the elements of micro-environment of marketing?
    (c) Discuss the characteristics of consumer behavior.

    [2+5+5=12]

3. (a) Discuss the different steps of product life cycle.
    (b) Compare among public, customer, and consumer.
    (c) What are the advantages and disadvantages of integrated marketing?

    [6+3+3=12]

4. (a) Explain the consumer behavior model.
    (b) Discuss the steps of buyer decision process.
    (c) Elaborate the stages of customer adaption.

    [6+4+2=12]

Part : B
(Answer any three questions)

5. (a) Discuss various positioning strategies in RMG sector.
    (b) How will you monitor the packaging of a batch production?
    (c) Write short note on niche marketing.
    (d) Discuss about brand value and brand ambassador.

    [3+3+3+3=12]

6. (a) What characteristics affects market differentiation?
    (b) Discuss 4P in perspective of marketing mix.
    (c) Write short note on green marketing.
    (d) What are the benefits of market segmentation?

    [3+3+3+3=12]

7. (a) What are the major decisions in advertising?
    (b) Discuss the consumer sales promotion tools.
    (c) Explain various forms of direct marketing.

    [4+4+4=12]

8.   Write down the short notes on the followings:
    (a) Branding.
    (b) Retailing.
    (c) Pricing.
    (d) Public relations.

    [3+3+3+3=12]

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BANGLADESH UNIVERSITY OF TEXTILES
B. Sc. in Textile Engineering (For Affiliated Collage)
Level-2 Term-2, Final Examination-2019
Subject: Fabric Manufacturing-I (Code: FE-201)

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) Differentiate between precision winding and non-precision winding.
   (b) Describe the working principle of cone winding machine.
   (c) Discuss the different types of winding faults with their causes.

   [3+5+4=12]

2. (a) Define drafting plan, lifting plan, and denting plan.
   (b) Mention the different types of drafting plan with sketch.
   (c) What do you mean by pinning and beam gaiting?
   (d) Show the process flowchart of weaving.

   [3+4+2+3=12]

3. (a) State the function of expandable reed and tapered drum of sectional warping machine.
   (b) What are the technical changes occurred due to sizing?
   (c) What is section? How it can be calculated? Show a typical calculation.

   [4+5+3=12]

4. (a) Mention the different unit of sizing machine.
   (b) Prepare a warping plan for stripe fabric. (Assume all necessary parameters)
   (c) Enlist the major faults occurring in sizing.

   [4+6+2=12]

Part : B
(Answer any three questions)

5. (a) Introduce the historical development of looms.
   (b) Write down the features of Pit loom.
   (c) State the different motions of loom.

   [4+3+5=12]

6. (a) Define shedding mechanism with examples.
   (b) Describe the different types of shed.
   (c) Explain Basic principle of SLSC jacquard shedding mechanism with neat sketch.

   [2+5+5=12]

7. (a) Classify picking mechanism.
   (b) Differentiate between over picking and under picking mechanism.
   (c) Briefly describe the tertiary motions of a loom.

   [3+5+4=12]

8. (a) Write down the main features of modern loom.
   (b) Mention different woven fabric faults with causes and remedies.
   (c) Define Sley Eccentricity Ratio (SER)? Mention the advantages and Disadvantages of higher SER.

   [5+3+4=12]

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BANGLADESH UNIVERSITY OF TEXTILES

B. Sc. in Textile Engineering (For Affiliated College)
Level-2 Term-II, Final Examination-2018

Subject: Statistics (Code: MS 201)

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 are the different methods of collecting primary data? Which method will you prefer for collecting information regarding working environment of the workers of a knitting factory?

   (b) Following data represents average number of clothes sewed in an hour by 45 workers of ZhinShao Garments Ltd. Obtain a frequency distribution of the number of clothes sewed by the workers. Illustrate the obtained distribution using a suitable diagram.

   44 50 38 53 48 50 47 56 38 59 56 45 42 42 45 57 43 36 58 36 40 43 36
   55 49 42 44 46 35 35 50 56 40 54 45 36 45 38 51 42 56 60 50 50 45

   [5+7=12]

2. (a) Why do we need measure of central tendency? Which measure of central tendency will you prefer for a data with extreme values? Write down the formulas for your preferred method both for raw data and grouped data.

   (b) Following data comes from sewing rate for pocket setter AP-876 (for Jeans) in the sewing section of KPRC Garments Ltd. Obtain arithmetic mean, geometric mean and harmonic mean for the following data.

sti/ min	2500-2800	2800-3100	3100-3400	3400-3700	3700-4000
Number of occurance	20	27	35	45	12

   [6+6=12]

3. (a) Define measured of dispersion. Write down the types of the measures of dispersion.

   (b) For three non-zero positive values. Show that AM ≥ GM ≥ HM.

   (c) Calculate the arithmetic mean, geometric mean and harmonic mean from the following information and also show that AM > GM > HM.

Marks obtained	Below 10%	Below 20%	Below 30%	Below 40%	Below 50%	Below 60%	Below 70%	Below 80%
Number of students	7	39	95	201	281	545	631	675

   [3+4+5=12]

4. (a) Define pie chart.

   (b) Draw a pie chart for the following data: Cost of materials Tk. 40,000; Cost of labour Tk. 30,000; Direct manufacturing expenses Tk. 10,000; Factory overhead expenses Tk. 15,000; Miscellaneous expenses Tk. 5,000.

   (c) Given below are the marks obtained by 50 students in a certain examination:

87	78	58	67	66	78	60	48	51	29	82	30	33	68	76	60	
60	61	66	62	23	63	68	53	11	57	28	90	80	78	32	45	27
70	25	29	45	84	37	67	81	90	63	58	57	64	20	28	12	90

   (i) Construct a frequency table taking a suitable class interval.
   (ii) Represent the table by a frequency curve.

   [2+4+6=12]

Part: B

(Answer any three questions)

5. (a) What is sampling? Discuss advantages and disadvantages of stratified sampling. A researcher is asked to draw a sample of size 100 form all of the dyeing industries of Bangladesh. Which sampling design is most applicable in this case? Justify your answer.

   (b) Distinguish between point estimation and interval estimation. A sugar factory produces and sells bags of refined sugar. The weights of the contents of these bags are normally distributed with standard deviation 2.2 ounces. The contents of a random sample of 25 bags had mean weight 17.8 ounces. Find 95% confidence interval for the true mean weight for all bags of sugar produced by the process.

   [6+6=12]

6. (a) Define test of hypothesis. It is known from experience that the standard deviation of the weight of 8 ounces packages of cookies made by a certain bakery is 0.16 ounces. To check its production is under control on a given day, the true average of the packages is 8 ounces; they select a random sample of 40 packages and find their mean weight is 8.122 ounces. Test whether the production is under control or not at 5% level of significance.

   (b) Discuss the steps involved in an experimental design. Write short note on RBD and explain which basic principle of experimental design it fulfills.

   [6+6=12]

7. (a) What is statistical demand analysis. Write down the steps involved in demand forecasting and discuss them.

   (b) Define index number. Write down the problems in the construction of index number and three discuss them.

   (c) Compute fisher's ideal index from the following data and show that it satisfies time reversal testy and factor reversal test:

Commodity	2006		2007	
A	4	40	5	50
B	8	64	9	80
C	10	70	10	70
D	2	10	4	16

   [4+4+4=12]

8. (a) Write on short notes: (i) Level of significance (ii) Type-I error and Type-II error.

   (b) Cost accounts often estimate overhead brand on the level of production. Estimate a regression equation to predict future overhead:

Overhead expenses	191	170	272	155	280	173	234	116	153	178
Production	40	42	53	35	56	39	48	30	37	40

   Required: (i) Develop the regression equation for the cost accounts.
   (ii) Predict overhead expenses when 50 and 60 units are produced.
   (iii) Calculate the standard error of estimation.

   [3+9=12]

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BANGLADESH UNIVERSITY OF TEXTILES

B. Sc. in Textile Engineering (For Affiliated Collage)
Level-2 Term-2, Final Examination-2019

Subject: Apparel Manufacturing-I (Code: AE 205)

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 category? Give some examples.
   (b) Explain the role of a Textile Engineer in Textile industry and RMG sector.
   (c) Backward Linkage industry plays an important role in RMG Sector-Justify your answer.
   [2+6+4=12]

2. (a) Differentiate between Basic Block and Production Pattern.
   (b) Define the following terms: Applique, Hemming, Bar tack, Flap.
   (c) List down different components of a Basic shirt with figure.
   [4+4+4=12]

3. (a) Define market.
   (b) What are the types of fabric packages used in Apparel Industry? Explain.
   (c) Discuss the method of drawing and duplicating a marker in short.
   [1+5+6=12]

4. (a) What is Rainbow Effect? How the tension of fabric can be minimized during spreading?
   (b) Discuss different spreading modes with necessary sketches.
   (c) Let, GSM of fabric=150; No. of ply=5; Fabric width=1.2 m; Lay length=3 m; Wastage=300 gm, then find out actual consumption of fabric.
   [3+5+4=12]

Part : B
(Answer any three questions)

5. (a) Compare between Lining and Interlining.
   (b) Describe the feature and working principle of Flat bed fusing press machine with neat sketch.
   (c) State the features of straight knife with advantages and disadvantages.
   [3+4+5=12]

6. (a) Briefly discuss different types of Stitch class with examples.
   (b) List down different types of sewing defects.
   (c) What are the features of Lock Stitch?
   [6+4+2=12]

7. (a) State the features of straight knife cutting machine.
   (b) Write short note on: Velcro and Button.
   (c) Describe the merits and demerits of Laser cutting.
   [4+4+4=12]

8. (a) What is Quality and Quality Control?
   (b) Discuss in details about the "international care labeling code".
   (c) Write down the features and application of stitch class-300 and stitch class 500 with neat sketch.
   [2+4+6=12]

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BANGLADESH UNIVERSITY OF TEXTILES
B. Sc. in Textile Engineering (For Affiliated College)
Level-2 Term-II, Final Examination-2018

Subject: Fundamentals of Mechanical Engineering (Code: IPE 203)

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) Show that, the Carnot cycle Efficiency is, $\eta = \dfrac{T_{max} - T_{min}}{T_{max}}$.
   (b) State Kelvin-Planck Statement and Clausius Statement of 2nd Law of thermodynamics.
   (c) A quantity of gas has a volume of 0.14 m^3 at a pressure of 1.5 bar and a temperature of 100°C. If the gas is compressed at a constant pressure until the volume becomes is 0.112 m^3. Calculate the (i) Work done in compressing the gas and (ii) Heat given out by the gas.
   Assume that, C_p = 1.005 KJ/KgK, C_v = 0.718 KJ/KgK.   **[4+3+5=12]**

2. (a) What is Enthalpy, Entropy of a gas and Governing of I.C. engine.
   (b) Distinguish between simple manometer and differential manometer.
   (c) A pipe of 5m long is inclined at an angle of 15° with the horizontal. The smaller section of the pipe, which is at a lower level, is of 80mm diameter and the larger section of the pipe is of 240mm diameter as shown in figure. Determine the difference of pressure between the two sections, if the pipe is uniformly tapering and velocity of water at the smaller section is 2 m/s.   **[3+3+6=12]**

3. (a) What is counter flow and parallel flow heat exchanger? Which will give better heat transfer? Explain with graphical representation.
   (b) Derive one dimensional heat conduction equation.
   (c) The inner & outer surface of a 0.5 cm thick 2m × 2m window glass is 10°C & 3°C. If the thermal conductivity of glass is 0.78 W/m2.
   (i) Determine the amount of heat loss in KW.
   (ii) Determine the amount of heat loss in KJ, if it occurs 5 hour.
   (iii) Determine the amount of heat loss in KW, if the glass is 1 cm thick.
   (iv) Determine the amount of heat loss in KW, if area is doubled.   **[4+4+4=12]**

4. (a) Explain the functions of four important Boiler mountings.
   (b) Show that first law of thermodynamics is the law of conservation of energy.
   (c) A cylinder contained 4 kg of an ideal gas at a pressure of 8 bars and temperature 35°C. The gas is compressed adiabatically to final pressure of 18 bars. Find: (i) Initial volume (ii) Final volume (iii) Work done (iv) Change of internal energy.   **[4+4+4=12]**

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

5. (a) Show that, the intensity of pressure at any point in a fluid at rest is the same in all direction.
   (b) Differentiate between centrifugal pump and reciprocating pump.
   (c) A C/P is required to lift water to a total head of 40m at the rate of 50lt/s. Find the power required for the pump, if the overall η is 62%.   **[6+2+4=12]**

6. (a) Define factor of safety for ductile material and brittle material. Distinguish between Stress and Strain.
   (b) Show that the minimum force required to slide a body on a rough horizontal plane is $P_{min} = W\sin\theta$.
   (c) Deduce the torsion equation of a circular shaft.   **[4+4+4=12]**

7. (a) Explain the principle of Bernoulli's equation and derive it.
   (b) A 3m long both end fixed (100mm × 20mm) T section column withstands critical load. Consider, modulus of elasticity 207 GPa. Determine critical load of the column.   **[4+8=12]**

8. (a) Explain the application of compressed air in textile industry.
   (b) A solid round bar of diameter d is subject to Torque T that produces 50 KW power and rotates at 300 RPM. Find the value of d, maximum shear stress and agle of twist are 60 Mpa and 5°. Given, length of the bar = 100mm, modulus of rigidity 79.3 Gpa.
   (c) A simply supported beam of span 3 m is carrying two point loads and a uniformaly distributed load as shown in figure. Draw shear force and bending moment diagram. Calculate also maximum bending moment from this figure.

          2 KN   2 KN/m   4 KN

Subject: Fundamentals of Electrical & Electronic Engineering (Code: MDM 201)

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 understand by the terms potential and current?
   (b) Write down the characteristics of series and parallel circuit.
   (c) Calculate the current through 4Ω resistance by using Thevevin therom of the following circuit. All resistance in ohms.
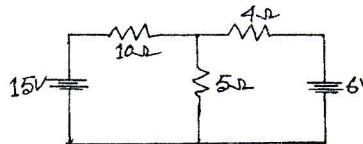
[2+4+6=12]

2. (a) Define parameter and node with example.
   (b) State and explain Kirchhoff's law.
   (c) Using KCL, find the values of the current I_1 and I_2 in the circuit of fig. Which contains current dependent current source.
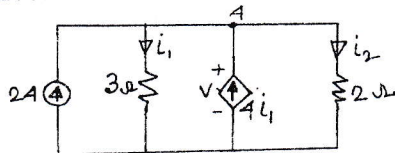
[2+4+6=12]

3. (a) What is alternating current?
   (b) If R = 10Ω, L = 0.056 H and C = 50 μf. Calculate impedance of the RLC branch when frequency 60 Hz.
   (c) 110 volts are applied to a seris circuit consisting of 8Ω resistance, 0.0531H inductance and 189.7 μf. capacitance. When frequency 60Hz calculate (i) Impedance (ii) Current (iii) Power factor (iv) Power (v) Voltage across R, L and C.

[2+4+6=12]

4. (a) Define form factor and pack factor.
   (b) What is polyphase system? Write down the advantage of 3φ system.
   (c) Derive the expression for instantaneous current and power when alternating voltage is applied to a purely resistive element 'R' branch.

[2+4+6=12]

Part: B
(Answer any three questions)

5. (a) Why transformer rating is KVA not KW?
   (b) Prove that, frequency of rotor current is $f/ = s \times f$, where symbols have their meaning.
   (c) The maximum flux density in the core of 250/3000v, 50Hz single phase transformer is 1.2 weber per meter square. If the e.m.f per turn is 8 volts. Determine the (1) primary and secondary turn (2) area of the core.

[2+4+6=12]

6. (a) State Faraday's two laws of electromagnetic induction.
   (b) Explain eddy current loss and hysteresis loss in a transformer.
   (c) Derive the EME equation of a transformer.

[2+4+6=12]

7. (a) What is substation?
   (b) List and explain four common equipment's of a switchgear.
   (c) Discuss about HT and LT for electrical power system. Draw a typical AC power supply scheme.

[2+4+6=12]

BANGLADESH UNIVERSITY OF TEXTILES

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

Level-2 Term-II, Final Examination-2018

Subject: Man-Made Textile Fibers (Code: YE 203)

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 viscose rayon is a regenerated fibers? Explain with reaction.
   (b) What is xanthation? Differentiate among viscose, model and lyocel.
   (c) Compare the properties of rayon, polyester, nylon and acetate.   [4+4+4=12]

2. (a) Why acetate fiber is called "Fibers of Beauty"?- Explain.
   (b) Explain the manufacturing process of Acetate fiber with diagram.
   (c) Distinguish between Acetate and Tri-acetate fiber.   [2+7+3=12]

3. (a) Classify man-made textile fibre on the basis of physical structure and chemical composition.
   (b) "Spinneret is the most important part of Man-made fibre manufacturing machine"-Justify this statement.
   (c) Describe the dry spinning process for synthetic fibre production with appropriate sketch.   [4+3+5=12]

4. (a) Discuss the chemistry involved in polyester fibre production.
   (b) What are the reasons behind popularity of polyester microfiber nowadays?
   (c) Illustrate the manufacturing process of polyester microfiber.
   (d) Explain texturization process of polyester fibre.   [3+3+3=12]

Part: B
(Answer any three questions)

5. (a) Define: polymerization. Classify major types of polymerization reaction with example.
   (b) What is caprolactum? Write the manufacturing process of Nylon 6 fiber.
   (c) Explain the polymer system of nylon fiber.   [3+6+3=12]

6. (a) Why viscose is more hydrophilic than cotton fibre?
   (b) Why Lyocell fibre used to confer "Peach Skin Effect"?
   (c) Describe the manufacturing process of viscose rayon fibre with appropriate sketch.
   (d) Distinguish between regenerated and modified cellulose fibre.   [2+3+5+2=12]

7. (a) Discuss about the various route of manufacturing of acrylic fiber.
   (b) State the fiber morphology of polyacrylonitrile fiber.
   (c) Write about the different types of polyacrylonitrile fiber.   [4+4+4=12]

8. (a) Why Nylon fibre consume higher dye affinity in comparison with Polyester?
   (b) Enlist the key properties of bi-component fibre.
   (c) "Kevlar® Para-Aramid is stronger than steel"- clarify this statement.
   (d) Analyze the reason behind excellent flame retardant characteristics of Meta Aramid fibre.   [3+3+3=12]

BANGLADESH UNIVERSITY OF TEXTILES

B. Sc. in Textile Engineering (For Affiliated College)
Level-2 Term-II, Final Examination-2018

Subject: Short Staple Spinning-II (Code: YE 207)

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) Write the function of lap former.
   (b) Write down the specification of super lap former.
   (c) Why lap feed is required instead of sliver in a comber? Explain shortly.
   (d) Draw a lap former and describe its working principle.

        [3+2+3+4=12]

2. (a) What is noil? How to calculate noil?
   (b) Describe the combing operation with necessary diagram.
   (c) Find out the production in kg/day of a comber from the following data-nips/min = 300, feed per nip = 6.5 mm, no. of head = 8, lap weight = 1200 grains/yd, noil extraction = 18% and efficiency = 90%.

        [2+7+3=12]

3. (a) Narrate the winding principle used in a roving frame.
   (b) Mention the faults occurred in a speed frame. Write the causes and remedies of the faults.
   (c) Briefly write about the recent developments in Roving frame machine.

        [5+5+2=12]

4. (a) Write short note on spacer used in roving frame machine.
   (b) Briefly describe the building mechanism of a roving frame.
   (c) There are six roving frames in a spinning mill. Each frame is running with following parameters- spindle speed = 1400, roving hank = 0.8 Ne, TPI = 1.02, efficiency = 85%, wastage = 0.5%, no.of spindle per frame = 120. Calculate the production in kg per shift per frame.

        [3+5+4=12]

Part: B
(Answer any three questions)

5. (a) Why ring spinning is an universal spinning system?
   (b) Discuss the factors considered for selection a traveler in ring frame.
   (c) Write the causes of end breakage.
   (d) Find out the number for long ring frame required to produce 2000 pounds/day if spindle speed = 17000 rpm, yarn count = 30Ne, efficiency = 95%, TM = 4.5.

        [2+3+4+3=12]

6. Make a spin plan to produce 30 tons/day of 30 Ne card yarn.

        [12]

7. (a) Draw the material passage diagram of a ring frame.
   (b) Mention the limitations of ring frame.
   (c) Draw a spindle and write the function of spindle.
   (d) State the parameters which should be changed of a ring frame for changing yarn count 30 Ne to 80 Ne.

        [2+3+4+3=12]

8. (a) Briefly describe the working procedure of a winding machine.
   (b) Discuss about the faults classification matrices of a winding machine.

BANGLADESH UNIVERSITY OF TEXTILES

B. Sc. in Textile Engineering (For Affiliated College)
Level-2 Term-II, Final Examination-2018

Subject: Weaving-I (Code: FE 205)

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 the brake with classification.
    (b) Show the chronological development of looms.
    (c) Write down the features of Chittaranjan loom.
    (d) Discuss the tertiary motions of loom.

    [2+3+3+4=12]

2. (a) What do you mean by casting out?
    (b) Illustrate any type of jacquard shedding mechanism.
    (c) Differentiate between dobby and jacquard.
    (d) Define card cutting and lacing.

    [2+5+3+2=12]

3. (a) Define loom and show a typical calculation of shed open time, picking time and beating time for a standard loom cycle.
    (b) Make peg plan for $\frac{3}{2}$ twill design.
    (c) Illustrate various types of shed with shed position diagram.

    [4+3+5=12]

4. (a) What is shedding? Mention the classification of shedding.
    (b) Discuss the basic components of shed geometry.
    (c) Describe the negative tappet shedding mechanism with neat sketch.

    [4+4+4=12]

Part: B
(Answer any three questions)

5. (a) Differentiate between over picking and under picking mechanism.
    (b) Briefly describe the different types of picking faults.
    (c) Find out the picking force of a loom running at 200 ppm which has a reed space of 60″ and mass of shuttle is 0.42 kg.

    [4+4+4=12]

6. (a) If the PPM (Picks Per Minute) of a tappet loom is 210, calculate the Shedding, Picking, and Beat up time for a typical loom cycle.
    (b) Define Double beat up mechanism with its advantages.
    (c) Describe the working principle of 'Crank and crank arm beat up' mechanism with neat sketch.

    [3+4+5=12]

7. (a) Write down the definition and function of let off motion.
    (b) What is meant by pick spacing?
    (c) Narrate 7-wheel take up mechanism.
    (d) Find out loom constant for 7-wheel take up motion if PPI are 52 and change pinion is 52T.

    [3+1+6+2=12]

8. (a) Which motion of loom is responsible for the PPI of a woven fabric? Briefly describe with necessary examples.
    (b) How does 5- Wheel differ from 7 Wheel Take up mechanism?
    (c) Narrate the causes of warp and weft breakages during weaving.

    [5+4+3=12]

BANGLADESH UNIVERSITY OF TEXTILES
B. Sc. in Textile Engineering (For Affiliated Collage)
Level-2 Term-2, Final Examination-2019
Subject: Textile Testing and Quality Control (Code: YE-211)

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) "Quality of a product mainly depends on 3M's"- Explain.
   (b) Write down the objectives of sampling.
   (c) Differentiate between Random sampling and Biased sampling.
   (d) What do you mean by staple length and 2.5% span length.

   [3+3+3+3=12]

2. (a) How does longer fiber enhance the product quality and profit money?
   (b) Briefly explain hysteresis effect.
   (c) Describe the factors affecting Moisture Regain of textile materials.
   (d) The count of yarn was 30 Tex and it has been found that the moisture regain at the time of testing was 5%. Find out the count of the yarn corrected to a standard regain of 7.5%.

   [3+2+4+3=12]

3. (a) Write down the importance of maturity of cotton fiber.
   (b) Prove that Maturity ratio, $M=\frac{N-D}{200}+0.7$, where N= no. of normal fibers and D= no, of dead fibers.
   (c) Describe WIRA cotton fineness meter with figure and determine the cotton fiber fineness of a supplied sample.

   [3+4+5=12]

4. (a) Define humidity, relative humidity and absolute humidity.
   (b) Explain the absorption curves of wool, cotton, viscose, acetate and nylon fibre.
   (c) Differentiate between process control and product control.
   (d) Calculate the CIW of 65/35 Polyester/Cotton blended yarn if the oven dry weight of the consignment is 275 Kg.

   [3+4+2+3=12]

Part : B
(Answer any three questions)

5. (a) Define English Count, Tex, and Denier.
   (b) Calculate the yarn length of which weight is 1.2 kg and count number is 30 Ne.
   (c) Explain the twist measurement procedure with ordinary twist tester.
   (d) Write short note on Classimat.

   [3+3+3+3=12]

6. (a) What are the objectives of fabric testing?
   (b) Describe the method of measuring bursting strength of fabric with sketch.
   (c) What is the effect of crimp on fabric properties?
   (d) Calculate the reed width required to give a cloth with a loom state width of 38% if crimp% is 6%.

   [2+4+3+3=12]

7. (a) Illustrate the fabric thickness measurement procedure.
   (b) How fabric weight can be measured by GSM Cutter?
   (c) Introduce thread density and stitch density.
   (d) Define fabric stiffness, handle and drape.

   [3+3+3+3=12]

8. (a) What is meant by air resistant and air permeability of fabric?
   (b) Describe the factors that affecting the flame resistance properties of a fabric.
   (c) Distinguish between water proof and water repellent fabrics.
   (d) Briefly discuss the spray test method for measuring wet ability of fabric.

   [2+3+3+4=12]

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BANGLADESH UNIVERSITY OF TEXTILES

B. Sc. in Textile Engineering (For Affiliated College)
Level-2 Term-II, Final Examination-2018

Subject: Textile Physics (Code: YE 209)

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 crystallinity and amorphousness. Which properties of fibre are influenced by crystallinity and amorphousness?
   (b) Which modern methods are used to identify fibre structure?
   (c) Explain X-ray diffraction method to identify fibre.

   [4+2+6=12]

2. (a) Write the application of infrared radiation and Scanning Electron Microscope.
   (b) Write the advantages of infrared radiation method over X-ray diffraction method.
   (c) Which factors influence the result of tensile experiment and how?

   [4+4+4=12]

3. (a) State the effects of frictional properties from fibre to fabric stage.
   (b) How the excessive frictional intensity can be minimized?
   (c) Write down the importance of heat setting in textile processing.

   [4+4+4=12]

4. (a) Define Bi-refringence.
   (b) Write down the requirements of dichroism.
   (c) Discuss the factors on which the fibre lusture depends on.
   (d) Why synthetic dresses are not suitable in summer or winter season?

   [2+2+5+3=12]

Part: B
(Answer any three questions)

5. (a) What is static electricity? Write down the theories of static electricity.
   (b) State the problems occurred due to static electricity formation during textiles processing?
   (c) Discuss the measurement of static electricity by Farad's cylinder.

   [(2+2)+4+4=12]

6. (a) Through light on 'ideal fibre migration'.
   (b) Discuss the parameters on which the fibre migration depends on.
   (c) Describe the riding's method for measurement of ideal fibre migration.

   [2+4+6=12]

7. (a) Define thermal conductivity, heat setting, birefringence, and Tg.
   (b) Explain the effects of yarn twist on yarn strength.
   (c) Find out following geometrical relation $\tan\theta = \frac{2\pi r}{h}$ from idealized helical yarn structure, where the symbols have their usual meanings.

   [4+4+4=12]

8. (a) Define yarn jamming, warp jamming, and weft jamming.
   (b) Explain the methods of minimizing static electricity.
   (c) Write short notes on: shear, drape, and buckling.

   [2+3+6=12]

BANGLADESH UNIVERSITY OF TEXTILES

B. Sc. in Textile Engineering (For Affiliated College)
Level-2 Term-II, Final Examination-2018

Subject: Wet Processing-I (Code: WPE 205)

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) Write down the standard specification of a textile dye house water.
   (b) What are the potential problems caused by hard water in textile wet process?
   (c) What are the factors should be considered in the selection of soap?
   (d) Calculate the water hardness in PPM of water containing 0.22 gm/L $CaSO_4$.

   [3+5+3+1=12]

2. (a) What is Bio-Polishing? Write the differences between Singeing and Bio-Polishing.
   (b) Explain the cleansing action of soap.
   (c) Prove that, all soaps are detergent but all detergents are not soap.

   [4+4+4=12]

3. (a) What is enzymatic desizing? Describe an enzymatic desizing of cotton fabric with suitable recipe and process parameters.
   (b) What are the precautions should be taken in case of scouring in kier boiler?
   (c) How can scouring effect be assessed?

   [(1+4)+3+4=12]

4. (a) Why protein fibre are bleached by reducing agent?
   (b) Write the advantages of H_2O_2 bleaching.
   (c) Explain the faults of bleaching.
   (d) Write the basic requirements of dyeing machine.

   [1+3+4+4=12]

Part: B
(Answer any three questions)

5. (a) Define the following terms- (i) Hue, (ii) Tint, (iii) Shade, and (iv) Tone.
   (b) Write the properties of direct dye.
   (c) Classify dyestuff according to application.
   (d) Show the basic differences between dye and pigment.

   [2+3+3+4=12]

6. (a) How can we improve the fastness properties of direct dyes?
   (b) Compare among different methods of dyeing polyester fibre with disperse dye. Which method is better? – Justify your answer.
   (c) Why reduction clearing is necessary after dyeing with disperse dye? Give a suitable recipe for reduction clearing process.
   (d) What is diffusion number?

   [3+4+(2+2)+1=12]

7. (a) Why reactive dyes are so named?
   (b) What is hydrolysis of reactive dye? How can we prevent it?
   (c) Explain the mechanism of dyeing with Vat Dye.

   [2+4+6=12]

8. (a) What is mordanting?
   (b) How acid dyes bond with nylon fiber?
   (c) Write the factors affecting the color fastness properties.
   (d) Write short note on- (i) Grey Scale, (ii) Blue Scale.

   [2+3+3+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) Discuss about the fibre properties that are considered for mixing.
    (b) Write about the usefulness of bale management.
    (c) State the process flow chart of 12 Ne rotor carded yarn.

    [7+3+2=12]

2. (a) State the most important objective of blow room.
    (b) Discuss the technical points considered for opening and cleaning.
    (c) A cotton of 3% trash is feed to a blow room having 65% cleaning efficiency. If the card sliver contains 0.45% trash, What would be the cleaning efficiency of the card?

    [5+3+4=12]

3. (a) What is NRE%?
    (b) Draw a carding machine and describe the stripping, carding, and doffing action.
    (c) Write a short note on card clothing.
    (d) Find out the production in kg/day of 10 carding machine from the following data:- delivery speed=200m/min, doffer dia =27 inch, efficiency-90%, waste=3%, and sliver weight=70 grains/yd.

    [2+4+3+3=12]

4. (a) What is roller setting?
    (b) Mention the function of a draw frame.
    (c) Describe a modern drafting system used in draw frame.
    (d) Find out DCP to produce 60 grains/yd sliver from 62 grains/yd sliver if delivery speed=400m/min, no. of doubling=8, draft constant=320.

    [1+3+4+4=12]

Part : B
(Answer any three questions)

5. (a) Describe the operating principle of a simplex machine with figure.
    (b) Why simplex is essential for ring spinning?
    (c) Find out simplex production in kg/day if; Flyer speed=1400 rpm, roving count=490 Tex, TPI=1.18, total spindles=120 and efficiency=87%.

    [7+3+2=12]

6. (a) Define noil%. How to calculate noil%?
    (b) Write down the function of index wheel.
    (c) Mention the factors which effects on noil extraction percentage.
    (d) Describe the lap preparation process for comber.

    [3+2+3+4=12]

7. (a) Describe the functions of ring frame.
    (b) Write the function of traveler, ring, and spacer.
    (c) Find out production in kg/shift if spindle speed=17000, total spindles=30000, yarn count=30/1 Ne, TM=3.6, and effi=97%.

    [5+4+3=12]

8. (a) Mention the objectives of winding.
    (b) Write the working principle of a Auto Coner with figure.
    (c) Why yarn conditioning is done in spinning.
    (d) Describe the finishing process sequence and describe it.

    [2+4+2+4=12]

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