KHULNA UNIVERSITY OF ENGINEERING & TECHNOLOGY
Department of Textile Engineering
B. Sc. Engineering 2nd Year 1st Term Examination, 2019
ME-2121
(Engineering Mechanics)
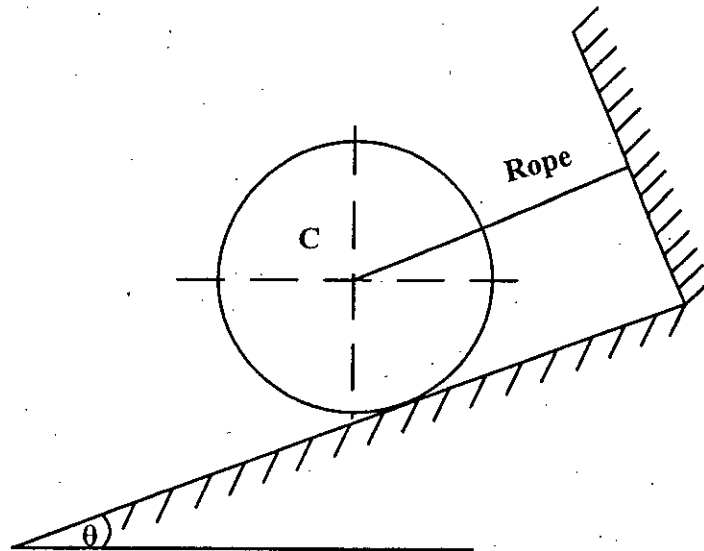
Time: 3 Hours   Total Marks: 210

N.B.: i) Answer any THREE questions from each section in separate scripts.
    ii) Figures in the right margin indicate full marks.
   iii) Assume reasonable data if missing any.

SECTION-A

1(a)   A 51 Kg cylinder C rest on a smooth inclined plane. For a tension in the rope of   17

   250 N, find the inclination of the plane and plane reaction.

1(b)   The direction of the 320N forces may vary but the angle between the forces is   18

     always 40°. Determine the value of α for which the resultant of the forces acting at A

   is directed parallel to the plane BB'. Also calculate the resultant forces.
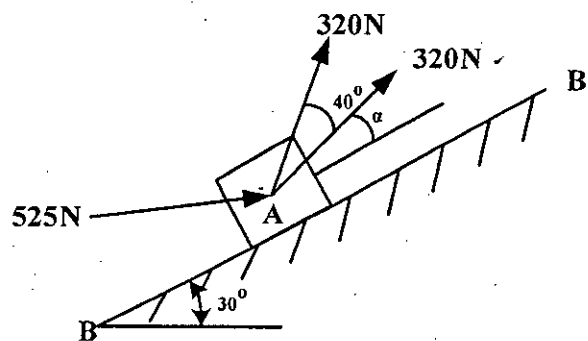
2(a)   Three cables are joined at D where two forces $\underline{P} = (3.5KN)\underline{i}$ and $\underline{Q} = (1.5KN)\underline{k}$ are   18

     applied. Determine the tension in each cable.
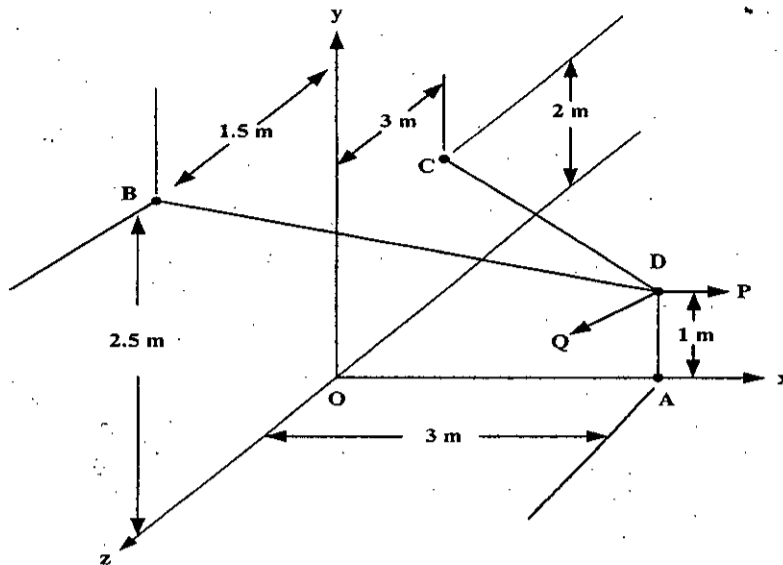
2(b) A 200 Kg cylinder is hung by means of two cables AB and AC, which are attached to the top of the vertical wall. A horizontal force $\underline{P}$ perpendicular to the wall holds the cylinder in the position shown. Determine the magnitude of $\underline{P}$ and the tension in each cable.   17
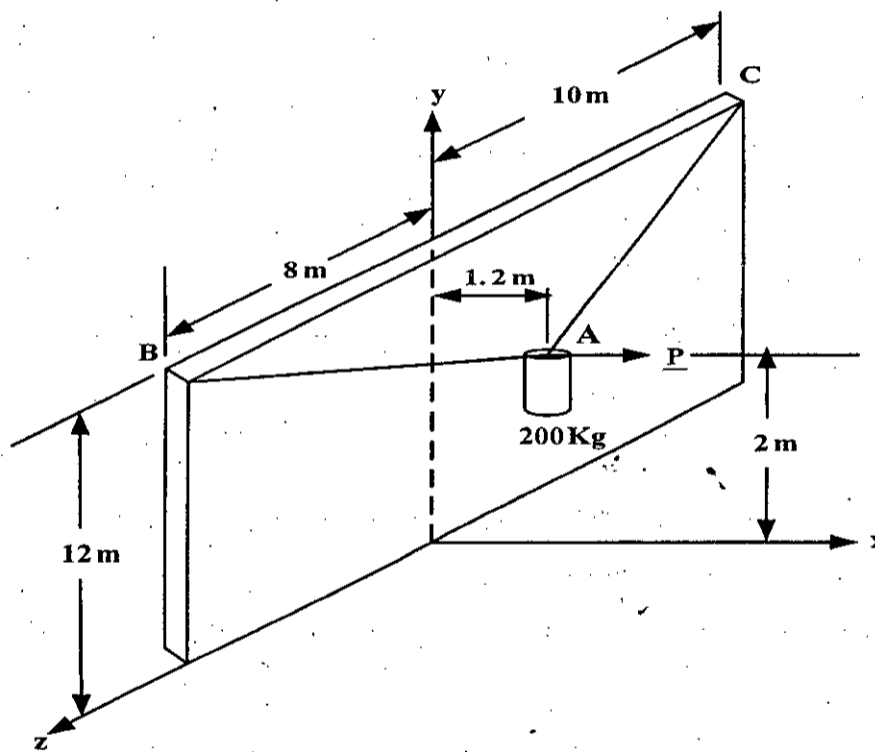
3(a) The bar AB as shown with uniform cross-section is pivoted at pin B and rests on a smooth plane at A. If the bar weighs $W = 100N$ and if $\theta = 30^o$. Find the reaction at B.   17
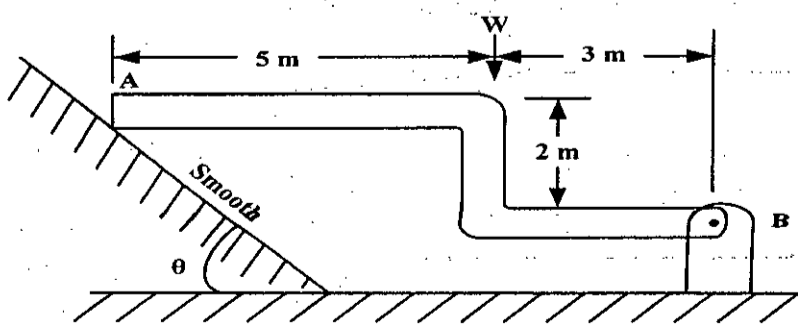
3(b) The member ABC is supported by another member BD. A force $F = 4.5\,KN$ acts   18
horizontally at C. If $\theta = 60^o$, find the reaction at A and B.
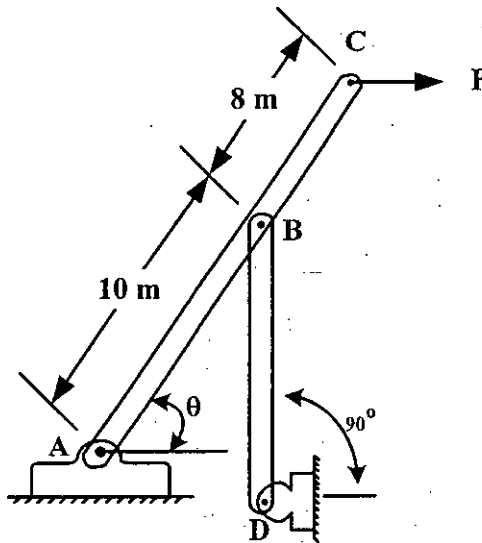
4(a) Find the forces in members AB, BD, and BE of the cantilever truss as shown, when   17
$F = 10N$ and $\theta = 30^o$.
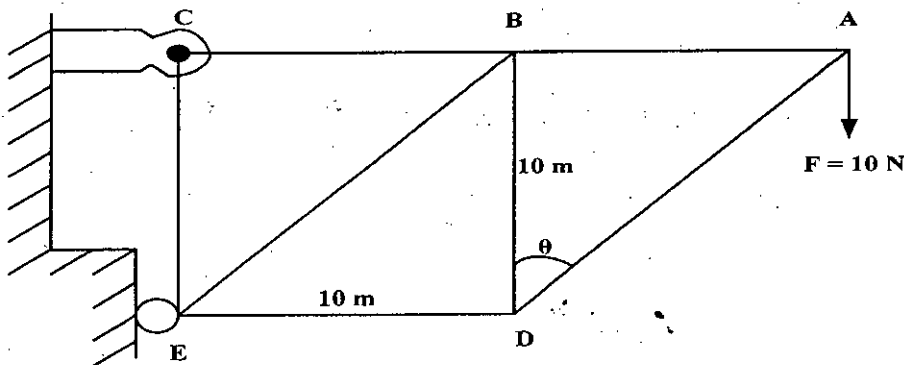
4(b) Find the forces in member $AB, BC,$ and AG of the truss as shown, when $Q = 2000N$ 18
with $\alpha = 30^o$ also $D_y = 683N, A_x = 1000N$, and $A_y = 1049N$.
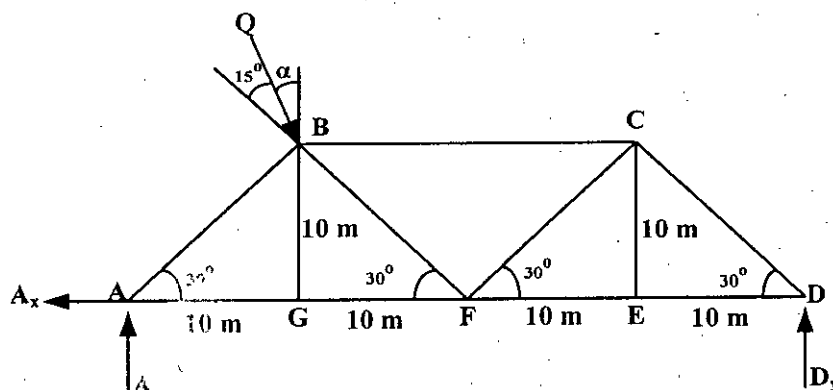
5(a) Find the centroid of the shaded area as shown in the following figure.   17
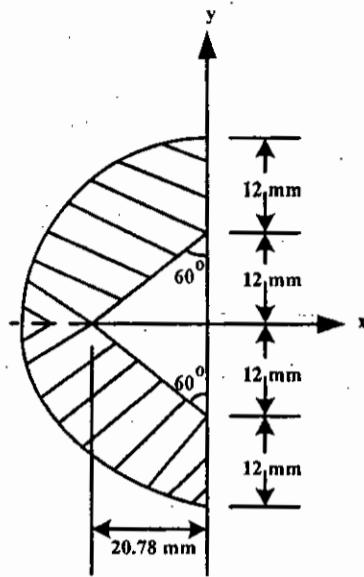
5(b) Determine the center of gravity of the shaded area as shown.   18
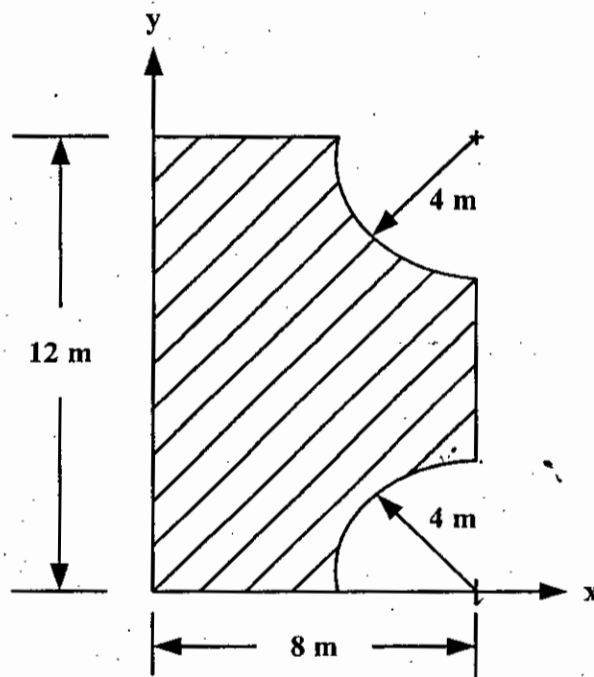
6(a) An area bounded by the parabola $y^2 = 8x$ and the straight line $x = 5\ cm$. Determine   20
by direct integration, the centroid of this area.
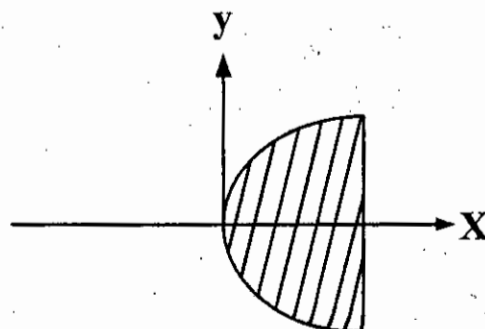
6(b) A cone and a cylinder of the same radius 'a' and height 'h' are attached as shown.   15
Determine the location of the centroid of the composite body.
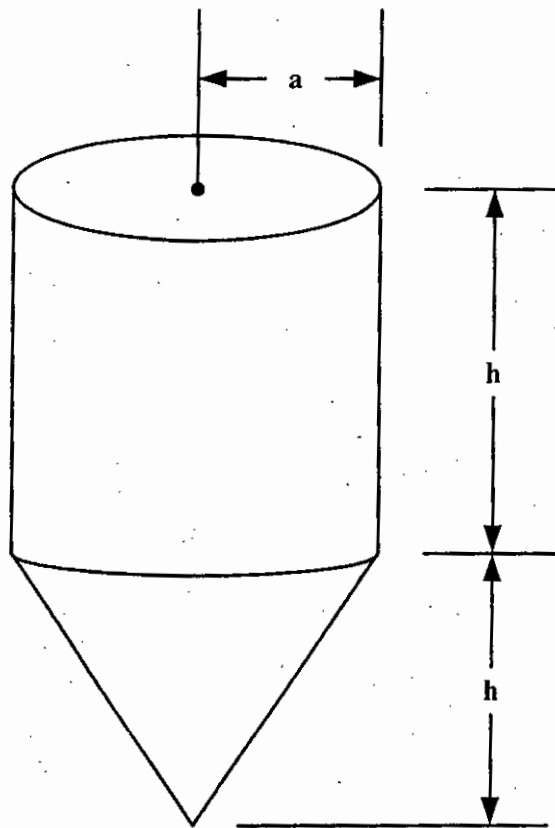
7(a) A $5Kg$ ladder rest on a horizontal floor for which $f = 0.2$ and rest against a vertical   17
       wall for which $f = 0.3$. If the length of the ladder is $12m$, what is the angle that
       makes with the wall when it is on the point of sliding down and what are the frictional
       forces at this point?
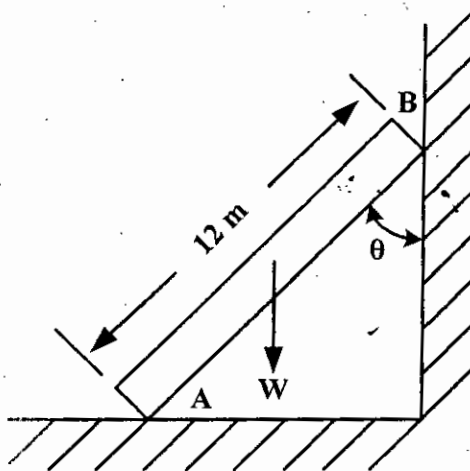
7(b) Determine the minir   n value of P which must be applied to the wedge in order to   18
       move the 203.88 K .ıck. The co-efficient of static friction is 0.3 at all surfaces of
       contact.
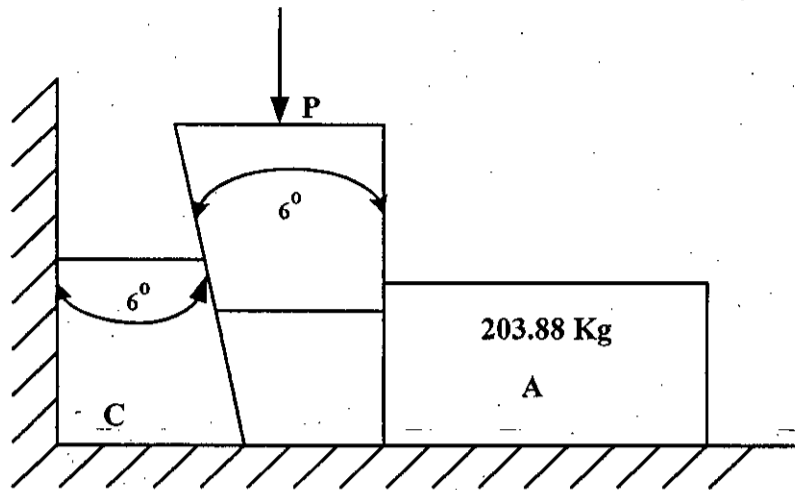
8(a) For a V-belt, prove that $\frac{T_2}{T_1} = e^{\mu_s \beta}$, where β is the angle of contact and other symbols **17** have their usual meanings.

8(b) A brake drum of radius $r = 150\ mm$ is rotating clockwise when a force P of **18** magnitude $75N$ is applied at D. Knowing that $f = 0.25$, determine the moment about O of the friction forces applied to the drum when $a = 75\ mm$ and $b = 400\ mm$.
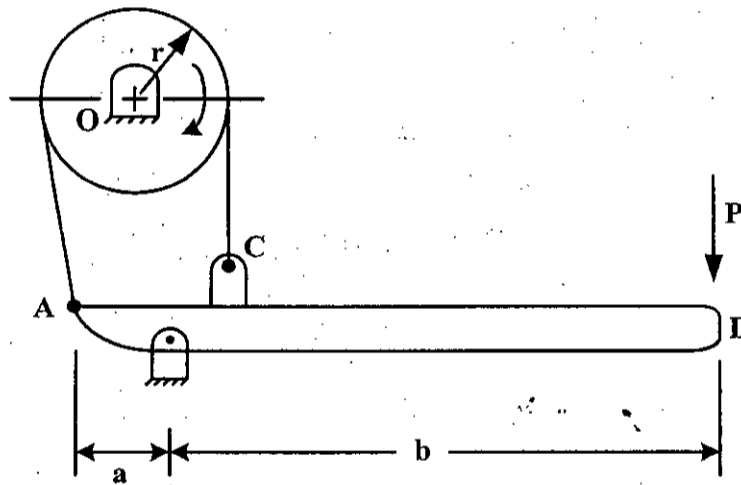
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KHULNA UNIVERSITY OF ENGINEERING & TECHNOLOGY
Department of Textile Engineering
B. Sc. Engineering 2nd Year 1st Term Examination, 2019
EE-2121
(Electrical Circuits, Machines and Electronics)
Time: 3 Hours   Total Marks: 210
N.B.: i) Answer any THREE questions from each section in separate scripts.
   ii) Figures in the right margin indicate full marks.
   iii) Assume reasonable data if missing any.

SECTION-A

1(a) State and explain KVL and KCL.   06

1(b) Determine the current supplied by each battery of Fig- 1(b) using mesh analysis.   12
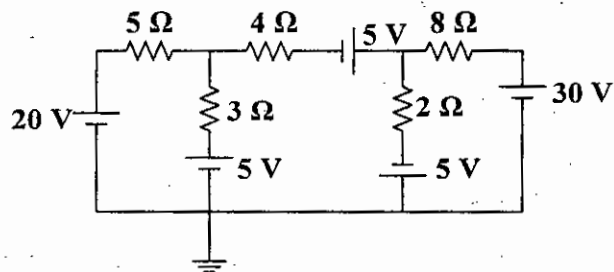
Fig- 1(b)

1(c) State superposition theorem. Using this theorem, find the voltage across 6Ω resistor in   09
the following figure.
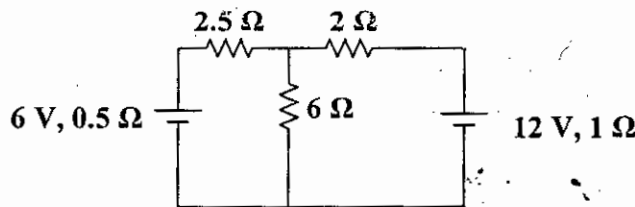
Fig- 1(c)

1(d) State and derive the condition of maximum power transfer theorem.   08

2(a) Define R.M.S. value, average value, form factor, and crest factor. Show that the crest   12
factor of sine wave is $\sqrt{2}$ and form factor of the same wave is 1.11.

2(b) Assume that the current $i = I_m \sin \omega t$ flows through a given R-L branch. Show that the   11
voltage across the branch is $v = I_m z_1 \sin(\omega t + \theta) = V_m \sin(\omega t + \theta)$.
Where,
$$z_1 = \frac{V_m}{I_m} = \sqrt{R^2 + (\omega L)^2}, \text{ and } \theta = \tan^{-1}(\frac{\omega L}{R})$$

2(c) For the circuit shown in Fig- 2(c), calculate real power, reactive power, apparent   12
power, power factor and also draw the complete vector diagram of this circuit.

80 Ω　　**0.0531 H**

110 V
50 Hz　　　　　　　　　　　**320 μF**
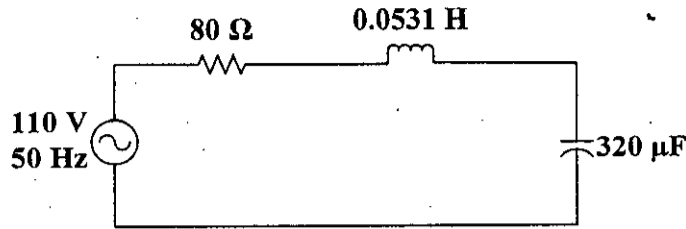
Fig- 2(c)

3(a) Define semiconductor, doping process, and $p - n$ junction. Explain the formation of　08
built in potential in a $p - n$ junction.

3(b) Draw the $V - I$ characteristics of a silicon crystal diode. How does transistor act as an　05
amplifier?

3(c) What are the disadvantages of Half wave rectifier? Draw and explain the operation of　12
full wave bridge rectifier circuit, and show that the rectification efficiency of a full
wave rectifier is two times of a half wave rectifier.

3(d) Write down the major differences between BJT, and FET. Why BJT and FET are　05
named so?

3(e) Define current amplification α, β, γ. Prove that $\beta = (\alpha/1 - \alpha)$, where the symbols　05
carry their usual meanings.

4(a) What are the factors to be considered for installation of wiring system? Write down the　10
methods of installing wiring.

4(b) Write down the properties of insulating material of underground cable. Mention the　10
differences between neutral and earth wire.

4(c) What is busbar? Write down the basic functions of circuit breaker, isolator, lightning　10
arrestor, and relay.

4(d) Why fuse is not connected to neutral?　05

SECTION-B

5(a) State Faraday's Law of electromagnetic induction. Derive the E.M.F. equation of a DC　13
generator.

5(b) Write down the function of pole coils, armature core, and commutator.　06

5(c) Classify DC generators according to the way in which their fields are excited. Draw the　10
complete circuit diagram of each type of DC generator.

5(d) Define critical resistance.　06

6(a) Define counter E.M.F. Derive the speed equation of DC series motor.　15

6(b) Draw the mechanical and electrical characteristics of DC series motor. Explain from　10
the characteristics, "Why DC series motors are never used unless they are directly
connected to a load?".

6(c) A 230V DC shunt motor has an armature resistance of 0.3Ω and field resistance of　10
55Ω. Determine the back E.M.F. when delivering an output of 5KW at 85% efficiency.

7(a) Prove that, EMF per turn is the same in both primary and secondary windings of a transformer. 10

7(b) Why transformer rating is KVA? Derive the condition for maximum efficiency of a transformer. 12

7(c) Briefly explain core loss, and Cu loss. Mention the uses of conservators and breathers in transformer construction. 13

8(a) Why AC motor is named as induction motor? Classify induction motor according to the construction of rotor. Show the generation of rotating flux of constant magnitude for 3 phase induction motor. 14

8(b) Draw the complete equivalent circuit of an induction motor, and the speed torque characteristics curve of I_m. 08

8(c) Why does the rotor rotate in an induction motor? Define percentage of slip and slip speed. A $3-\Phi$ I_m is wound for 4 poles and is supplied from $50\,Hz$ system. Calculate: i) Speed of the synchronous flux, ii) Rotor speed when the slip is 4%, iii) Frequency of the rotor current when the slip is 3%, and iv) Frequency and speed of rotor at stand still. 09

8(d) Mention the differences between the operating principle of DC generator and AC generator (alternator/synchronous generator). 04

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KHULNA UNIVERSITY OF ENGINEERING & TECHNOLOGY
Department of Textile Engineering
B. Sc. Engineering 2nd Year 1st Term Examination, 2019

TE-2111
(Statistical Analysis and Quality Control)

Time: 3 Hours   Total Marks: 210

N.B.: i) Answer any THREE questions from each section in separate scripts.
ii) Figures in the right margin indicate full marks.
iii) Assume reasonable data if missing any.
iv) Necessary table will be provided on request.

SECTION-A

1(a) Distinguish between descriptive and inferential statistics. What are the risks associated   08
with taking data from a secondary source?

1(b) How to construct a frequency distribution table? Draw frequency polygon from the   10
following data:

Monthly income	No. of Employees
16-20	140
20-24	320
24-28	65
28-32	300
32-36	270
36-40	50

1(c) 'The purpose of measure of location is to pinpoint the center of a value'- What is meant   07
by measure of location? How does it do so?

1(d) From the following frequency table (**Table-1d**), calculate median and mode.   10

Table-1d

Daily Wages	20-40	40-60	60-80	80-100	100-120	120-140	140-160	160-180
No. of workers	10	15	14	13	6	9	5	3

2(a) Given data 2,3,7,8, and 10; Compute SK_K and β_2 from the given data and comment on   07
the result.

2(b) Calculate first four moment about mean for the following frequency distribution: 14

Weights (gm)	65-84	85-104	105-124	125-144	145-164	165-184	185-204	Total
Frequency (f)	9	10	17	10	5	4	5	60

2(c) A collar manufacturing company is planning to produce new style of collar to attract   14
young men. The following statistics on neck circumference are available based on
measurement of a typical group:

Mid Value (inch)	13.5	14	14.5	15	15.5	16	16.5	17
No. of Men	5	19	30	62	67	29	28	2

Determine the measure of dispersion, assuming the information based on population data.

3(a) Establish a relationship between correlation co-efficient and regression co-efficient. 08

3(b) 6 test results of a given fabric sample's EPI are: 50, 66, 32, 45, 64, and 80. Find out the CV% for these data and comment on the result. 10

3(c) NAZ fashion was studying the relationship between the no. of production line and amount of garments produced in those lines in a day. The information are given below: 17

Experiment	No. of production line	Amount of garments produced
Day-1	10	200
Day-2	15	500
Day-3	20	450
Day-4	25	600

Given that, $S_x = 1.21$ and $S_y = 2.09$. Determine:

i) The correlation co-efficient.

ii) The regression equation.

iii) The amount of garments produced when 10 more lines are added on Day-4.

4(a) Define: i) Law of large numbers, and ii) Special rule of multiplication. 05

4(b) A recent study showed that 15% of jackets produced in a factory have faults. 15

i) For a sample of 500 jackets, how many of them would you expect to have faults?

ii) What is the probability that less than 50 samples have faults?

4(c) An analysis of final test scores for statistics course reveals that the score follows the normal distribution. The mean of the distribution is 75 and S.D. is 8. The professor wants to award an 'A' to students whose score is in highest 10%. What is the dividing point for those students who earn 'A' and those earn 'B'? 15

SECTION-B

5(a) What is ANOVA? Write the steps involved in one way analysis of variance. 11

5(b) Write short notes on: i) Level of significance, ii) Degree of freedom, and iii) Hypothesis. 09

5(c) A group of researchers studied the market price of computers manufactured by HP and Dell for the purpose of comparison. 10 computers from both manufacturers with similar features were studied and the price was recorded in USD as following: 15

Computer	1	2	3	4	5	6	7	8	9	10
Dell	535	510	531	542	505	530	531	511	525	549
HP	528	505	519	540	498	523	527	515	522	545

At 0.05 significance level, can you conclude there is a difference in the mean values of the computers?

6(a) What is sampling? Describe different types of probability and nonprobability sampling. 15

6(b) Discuss the design procedure of control chart for variables with example. 12

6(c) Briefly discuss the steps of Chi-square test. 08

7(a) A process that produces bearing housing is investigated. Ten samples of size 100 are 15 selected (**Table-7a**). Is this process operating in statistical control?

Table-7a

Sample No.	1	2	3	4	5	6	7	8	9	10
Non-Conf. No.	5	2	3	8	4	1	2	6—	3	4

7(b) Following table (**Table-7b**) represents the no. of nonconformities observed in 10 20 successive samples having 120 printed fabric rolls as one inspection unit. Set up a control chart using the data from the table.

Table-7b

Sample No.	1	2	3	4	5	6	7	8	9	10
Non-Conf. No.	21	24	16	12	15	6	27	21	30	25

8(a) Determine mean chart and range chart from the following data and comment on it. 24

Sample No.	X_1	X_2	X_3	X_4
1	83.0	81.2	78.7	75.7
2	86.6	78.3	78.8	71.0
3	85.7	75.8	84.3	75.2
4	80.8	74.4	82.5	74.4
5	83.4	78.4	82.6	78.2

8(b) Write down the objectives of control chart for nonconforming units. 05

8(c) Write short notes on: i) Cause and effect diagram, and ii) Histogram. 06

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KHULNA UNIVERSITY OF ENGINEERING & TECHNOLOGY
Department of Textile Engineering
B. Sc. Engineering 2nd Year 1st Term Examination, 2019
CSE-2121
(Computer Fundamentals and Programming)
Time: 3 Hours
Total Marks: 210
N.B.: i) Answer any THREE questions from each section in separate scripts.
   ii) Figures in the right margin indicate full marks.
   iii) Assume reasonable data if missing any.

SECTION-A

1(a) Briefly explain the 3rd and 4th generation computers.   10

1(b) What is meant by sequential access and random access memory? Depict the   15
classification of secondary storage.

1(c) Briefly discuss about laser printer. What are the criteria by which you can evaluate a   10
printer?

2(a) Explain machine cycle and break down the steps of machine cycle.   10

2(b) Perform the following operation by using 2's compliment.   10
1101110 − 101000

2(c) Do the following conversions: 10
i) $(645)_8 = ?_{16}$
ii) $(A1F)_{16} = ?_8$

2(d) Write the differences between compiler and interpreter.   05

3(a) What is operating system? Describe the functions of operating system.   10

3(b) "Software and Hardware are reciprocal but unlike Hardware, Software never dies"-   10
Explain.

3(c) Compare and contrast: 15
   i)   Flowchart and Pseudo code.
   ii)   Cache memory and RAM.
   iii) Primary memory and secondary memory.

4(a) Write the differences between internet and intranet. What services are provided by the   10
internet?

4(b) What is Network Topology? Discuss various types of network topologies.   10

4(c) Write short note on OSI model of networking.   10

4(d) Write the differences between coxial cable and optical cable.   05

SECTION-B

5(a) Differentiate keywords and identifiers with example in perspective of C language. 05

5(b) Write a program using while loop to print the digits of a number in reverse order. 10

5(c) What is library function? Draw the process of computing and running C program. 10

5(d) Write a mechanism to bypass a part of a loop. 05

5(e) Why C is called structural programming language? 05

6(a) What is array? Why array is used in program? How can we declare and initialize two-dimensional array? 10

6(b) Write a program which will find the largest and smallest number within an array of data. 10

6(c) What do you mean by run time and compile time initialization of an array? Give example. 10

6(d) Write the output of the given code: 05

```
For (i=1; i<=20/5; i++){
    If (i%2) { printf ("%d", i);
            }
    }
```

7(a) What is actual and formal argument? Write the benefits of using functions. 10

7(b) What is recursion function? Using recursive function, write a program which will calculate GCD of two numbers. 10

7(c) What is function prototyping? Discuss call by value and call by reference with examples. 10

7(d) Write a program to display the following series: 05

1   1   2   3   5   8   13   21

8(a) Write a program which stores a student's information in a file named input.txt and find the file size. 10

8(b) Distinguish between do-while and while loop. 05

8(c) What are the ways to access the members of a structure variable? Explain with example. 10

8(d) What is file? Describe how to open a file in different modes. 10

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KHULNA UNIVERSITY OF ENGINEERING & TECHNOLOGY
Department of Textile Engineering
B. Sc. Engineering 2nd Year 1st Term Examination, 2019

TE-2101

(Yarn Manufacturing Engineering-I)

Time: 3 Hours　　　　　　　　　　　　　　　　　　　　　Total Marks: 210

N.B.: i) Answer any THREE questions from each section in separate scripts.
　　　ii) Figures in the right margin indicate full marks.
　　　iii) Assume reasonable data if missing any.

SECTION-A

1(a)	What is spinning? Write down the different spinning systems with examples.	07
1(b)	Write down the process sequence of 50 Ne combed yarn mentioning input, output, and machine sequence.	08
1(c)	Differentiate between mixing and blending.	05
1(d)	Describe different fiber properties considered for spinning.	10
1(e)	Write short notes on: i) HVI, and ii) AFIS.	05

2(a)	Make a list of the components of blowroom machines. State the faults of blowroom.	12
2(b)	Describe the working principle of 'UNIclean' of Rieter blowroom line with neat sketch.	10
2(c)	Show different elements of grid with sketches.	08
2(d)	Calculate the blow-room cleaning efficiency from the following data:	05

Trash in raw cotton = 6%

Trash in card sliver = 0.45%

Carding cleaning efficiency = 80%

3(a)	Mention the merits of a chute-feed over lap feed system of the carding.	10
3(b)	Explain the major setting points of carding machine with their effects. What is 'thou'?	10
3(c)	Explain (mathematically and graphically) the effects of doubling and draft on drawn sliver quality.	08
3(d)	Calculate the production/shift in Kg of 10 carding machines when-	07

Doffer speed = 30 rpm

Doffer dia = 27 inch

Lap weight = 13 oz/yd

Card draft = 100

Waste = 3%, and Efficiency = 95%

4(a)	Draw a carding machine and indicate different parts of it.	10
4(b)	Mention the surface speed and wire direction for the following parts of carding:	10
	i) Licker-in, ii) Cylinder, iii) Flat, and iv) Doffer.	
4(c)	Where and how is the carding action occurred?	05

4(d) What happens in carding when- i) DCP changes, and ii) Barrow Wheel changes. 05

4(e) Find out the required DCP of a carding machine from the following data: 05

Present DCP = 18 T

Present sliver hank = 0.16

Required sliver hank = 0.12

SECTION-B

5(a) Write down the objectives and faults of draw frame. 08

5(b) What are the requirements of the drafting arrangement? 08

5(c) Mention the technical data of a high performance draw frame. What is roller hanging? 08

5(d) Define roller lapping. Which factors are responsible for roller lapping? 06

5(e) Find out the production/shift in lb of a modern draw frame from the following particulars: 05

Delivery speed = 800 m/min

Feed sliver weight = 60 gr/yd

Draw frame draft = 7.5, and doubling = 7

Efficiency = 90%

6(a) Show the process flowchart of jute yarn mentioning input, output, and machine sequence. 08

6(b) What is emulsion? Write down the ingredients of emulsion with their functions. 12

6(c) Point out the basic requirements of a good JBO. 07

6(d) What is batch and batching? Write the objects of pilling. 08

7(a) Define clock length, and dollop weight. Mention the positioning of the clock pointer for the jute spinning machine. 10

7(b) Worsted yarn is better than woolen yarn; why? List out the types of jute yarn. 08

7(c) Mention the batch composition for the following jute yarn: i) CBC, ii) 8 lb/spyndle Hessian yarn, and iii) 10 lb/spyndle sacking weft. 06

7(d) Describe the working principle of a jute spreader machine. 11

8(a) Write down the objectives of jute carding. Show types of jute carding. 10

8(b) Why the types of carding machines are used in jute spinning? 05

8(c) Describe a Breaker Carding machine of jute spinning with neat sketch. 12

8(d) What is shell setting? Calculate the weight of sliver in lb/100 yd from the following data 08

Dollop weight = 30 lb, Clock length = 12.9 yd, Draft = 12, and Waste = 4%

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KHULNA UNIVERSITY OF ENGINEERING & TECHNOLOGY
Department of Textile Engineering
B. Sc. Engineering 2nd Year 1st Term Examination, 2019
TE-2127
(Textile Physics)

Time: 3 Hours   Total Marks: 210
N.B.: i) Answer any THREE questions from each section in separate scripts.
    ii) Figures in the right margin indicate full marks.
    iii) Assume reasonable data if missing any.

SECTION-A

1(a) Show a schematic diagram of a SEM with brief description.   10

1(b) Describe X-ray diffraction method to investigate fiber structure.   15

1(c) Distinguish between infrared radiation method and x-ray diffraction method.   10

2(a) What is torsional rigidity? Prove that Specific Torsional Rigidity $= \frac{\eta\varepsilon}{\rho}$, where the   15

      symbols have their usual meanings.

2(b) Breaking twist of a cotton fiber is 50 and diameter is 0.015 mm. Find out the BTA of   03

      the fiber.

2(c) Write short notes on: 08

      i) Flexural rigidity, ii) Breaking twist, and iii) Breaking twist angle.

2(d) Briefly describe the factors affecting the frictional intensity of textile materials.   09

3(a) Define swelling. Classify swelling with brief description and sketch.   15

3(b) Establish the relationship between transverse area swelling and transverse diameter   12

      swelling.

3(c) How the swelling phenomenon can be used practically in textiles to improve   08

      functionality?

4(a) Write short notes on: 09

      i) Glass transition temperature, ii) Heat of wetting, and iii) Bi-refringence.

4(b) Discuss the problems caused by friction and its remedy in textile industry.   12

4(c) State the factors which have influence on lusture.   09

4(d) Describe the methods for solving static electricity problems in textile industry.   05

SECTION-B

5(a) Show that, twist contraction factor, $C_y = \frac{1}{2}(1 + \sec \alpha)$, where the symbols have their usual meanings. **15**

5(b) From idealized yarn geometry, prove that $\tan \alpha = 0.0112 \, V_y^{\frac{1}{2}} \tau$, where the symbols have their usual meanings. **12**

5(c) Define Packing Fraction, and Schwartz Constant. **08**

6(a) Establish the relation between yarn diameter and yarn count (Ne). **10**

6(b) Find out the yarn diameter of a 36 Ne cotton yarn in i) Mils unit, ii) Inch unit, and iii) Micrometer unit. **06**

6(c) Define crimp interchange. Derive the equation from crimp interchange. **13**

6(d) In warp jamming condition, $D = 0.02 \, cm, \theta_1 = 20^o, C_1 = 0.15$. Find out the value of h_1. **06**

7(a) Considering Pierce's model of fabric geometry, prove that $h_1 = \frac{4}{3} P_2 \sqrt{C_1}$, where the symbols have their usual meanings. **15**

7(b) What are the conditions of weft jamming in fabric? Derive the equation for weft jamming in plain fabric. **14**

7(c) If $l_1 = 0.0448 \, cm, l_2 = 0.042 \, cm, C_1 = 0.12, EPI = 72$; Calculate D, θ_1, and $C_2\%$. **06**

8(a) Mention the assumptions of idealized helical yarn structure. **07**

8(b) Classify yarn on the basis of fiber structure. **08**

8(c) What is cover factor? State the concept of similar cloth. **10**

8(d) Prove that, yarn retraction factor $R_y = \tan^2 \frac{\alpha}{2}$, where the symbols have their usual meanings. **10**

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KHULNA UNIVERSITY OF ENGINEERING & TECHNOLOGY
Department of Textile Engineering
B. Sc. Engineering 2nd Year Backlog Examination, 2018
TE 2213
(Textile Testing and Quality Control-I)
Time: 3 Hours
Total Marks: 210

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

SECTION-A

1(a)	Define moisture content and moisture regain.	05
1(b)	Establish a relation between M.R & M.C.	10
1(c)	Explain the effects of moisture on textiles.	08
1(d)	Describe the working principle of wet and dry bulb hygrometer with sketch.	12

2(a)	What is yarn evenness? Describe a yarn evenness test.	10
2(b)	What is CSP? Describe a process of measuring single yarn strength.	10
2(c)	Write short notes on the followings:	15
	(i) Multifiber fabric, (ii) Grey scales, and (iii) Uster tester 5.	

3(a)	What is yarn hairiness? Discuss an established yarn hairiness test.	12
3(b)	Define irregularity. Discuss the causes of irregularities of a yarn.	13
3(c)	Write short note on Twist factor.	10

4(a)	Define drape. Briefly explain the process of determining drape of a fabric.	10
4(b)	Show a format of a lab report.	10
4(c)	Write short notes on : (i) HVI, and (ii) AFIS.	05
4(d)	Define shear. State the process of measuring shear of a fabric.	10

SECTION-B

5(a)	Show a relation between yarn diameter and count.	12
5(b)	Define count. Describe different systems which are available for the determination of yarn count with example.	13
5(c)	Calculate the CIW of 70/30 Cotton/Nylon, if oven dry weight of the consignment is 150kg.	04
5(d)	If 240yds of cotton yarn weighs 40grains, what is count of yarn in Ne? Also convert Ne into Tex and Nm.	06

6(a)	What is Twist and TM? State the twist direction with neat sketch.	10
6(b)	Prove that $Ne \times Tex = 590.5$.	10
6(c)	Describe the working principle of Shirley twist tester.	10
6(d)	Find out the resulting yarn count in both direct & indirect system when you have 60^s and	05

80^s yarn count.

7(a) Write the aims of testing. Differentiate between testing and inspection. 10

7(b) What criteria's are needed to be fulfilled for a factory to want Oeko-tex standard 100? 10

7(c) What is GOT_s and DIN? 08

7(d) Explain REACH and WRAP. 07

8(a) Show a relation between yarn count & twist angle. 10

8(b) What is meant by EPI and PPI? Explain cover factor effect for fabric structure. 10

8(c) What is crimp and take up%? Prove that $C = \dfrac{100\,T}{100 - T}$; where C=crimp% and T= Take up%. 15

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KHULNA UNIVERSITY OF ENGINEERING & TECHNOLOGY
Department of Textile Engineering
B. Sc. Engineering 2nd Year 1st Term Examination, 2019

TE-2103
(Weaving Engineering)

Time: 3 Hours   Total Marks: 210

N.B.: i) Answer any THREE questions from each section in separate scripts.
   ii) Figures in the right margin indicate full marks.
   iii) Assume reasonable data if missing any.

SECTION-A

1(a)	Write down the flow chart of weaving process.	08
1(b)	State the requirements of winding.	10
1(c)	Show the schematic way of winding.	10
1(d)	The winding drum of a high speed cone winder having a diameter of 3.5 inch makes 2500 rpm. The actual amount of yarn wound in a day was found to be 879200 yds. Find out the efficiency of that machine.	07

2(a)	Mention the features of a good warp.	08
2(b)	Differentiate between side withdrawl and over end withdrawl of yarns from packages.	07
2(c)	Describe the different methods of winding package driving with figure.	12
2(d)	Calculate the total number of ends on back beam which weighs 242 lb. The weight of the empty beam as indicate from the marking on its flanges is 62 lb. The count of the yarn is 40^S cotton and the length of warp on the beam is 15000 yds.	08

3(a)	What are the auxiliary functions in winding?	07
3(b)	Write the requirements of a tensioning device.	10
3(c)	Sketch different types of yarn guides.	12
3(d)	Make a list of faults occurred during winding.	06

4(a)	Distinguish between sectional warping and beam warping.	10
4(b)	Describe the working principle of a beam warping machine with neat sketch.	14
4(c)	Narrate the major faults and their remedies of warping.	11

SECTION-B

5(a) Make a comparison between Hessian loom and Sacking loom. 10

5(b) Classify the loom. 10

5(c) Describe the primary motion of a loom. 10

5(d) Write a short note on drawing-in. 05

6(a) "Sizing is the heart of weaving"- Justify the statement. 10

6(b) State the technological changes due to sizing. 10

6(c) Write functions and example of i) Adhesive, ii) Antifoaming agent, and iii) Lubricant. 15

7(a) Mention different techniques of sizing. Also briefly describe the slasher sizing machine. 15

7(b) Describe the factors affecting the size take-up%. 10

7(c) A set of beams each containing 32000 yds of warp is to be used for producing of weavers on a high speed slasher. If % of elongation is ½% and wastage of warp is 60 yds. Calculate the number of beams. The length of sized warp on a weaver is 1200 yds. 10

8(a) What are the advantages of a shuttle loom? 10

8(b) Present the schematic diagram of a loom and describe the principle of weaving. 15

8(c) What are the advantages and disadvantages of combined drying method? 10

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