



--	--	--	--	--	--	--	--	--	--

Total Number of Pages: 02

3rd Semester End Semester Examination: 2023-24
Subject Name: REFRIGERATION AND AIR CONDITIONING
BRANCH(S): B.Tech

BTech
BTAG-T-PE-301

Max Marks: 100

Time: 3 Hour

Q. Code: BT311

Answer Question No. 1 (Part-I) which is compulsory, any eight from Part-II and any two from Part-III
The figures in the right hand margin indicate marks.

Part - I

		(16 x 2)	
	01	CO	BTL
a)	Answer the following questions: Define the term Tonne of Refrigeration (TR).	1	1
b)	What is the relationship between the COP of a refrigerator and COP of heat pump.	1	4
c)	Why reversed Carnot cycle is not used in actual practice.	1	2
d)	What are various components of vapour compression cycles.	2	1
e)	Define sensible heat and latent heat.	5	2
f)	Which components differentiate VARS from the VCRS.	3	2
g)	List out chemical properties of ideal refrigerant.	4	1
h)	Show cooling and humidification process on psychometric chart.	5	2
i)	Give the chemical formula and names of refrigerant R-32 and R-729.	4	5
j)	What do you mean by BPF and efficiency of heating coil.	5	1

Part-II

Answer any eight questions

(06 x 08)

	02	CO	BTL
a)	Derive the expression of COP for reversed Brayton cycle.	2	1
b)	What are the conditions for steady flow process.	1	2
c)	What are the advantages of compound vapour compression with intercooler.	2	3
d)	A cold storage plant is required to store 20 tonnes of fish. The fish is supplied at a temperature of 30° C. The specific heat of fish above freezing point is 2.93 kJ/kgK. The specific heat of fish below freezing point is 1.26 kJ/kg.K. The fish is stored in cold storage which is maintained at -8° C. The freezing point of fish is -4° C. The latent heat of fish is 232 kJ/kg .If the plant requires 75 kW to drive it, find : 1. The capacity of the plant. 2. Time taken to achieve cooling.	2	4
	Assume actual COP of the plant as 0.3 of the Carnot COP.		
e)	What are various types of vapour compression cycles.	2	1
f)	What are the desirable properties of a good refrigerant .	4	1
g)	Derive the expression for COP of ideal vapour absorption refrigeration system	3	1
h)	What is the function of the following components in an absorption system: 1. Analyser 2. Rectifier 3. Heat exchanger	3	2
i)	Write short note on the factors affecting comfort air conditioning.	5	2
j)	Describe Sol Air temperature.	5	1
k)	The amount of air supplied to an air conditioned hall is 300 m ³ /min .The atmospheric conditions are 35° C DBT and 55 % RH. The required conditions are 20°C DBT and 60% RH. Find out the sensible heat and latent heat removed from the air per minute. Also find sensible heat factor for the system.	4	5



Registration No:

--	--	--	--	--	--	--	--	--	--

	1)	What is the effect of suction and discharge pressure on the performance of vapour compression cycle	Part-III Answer any Two questions from the Q-3 to Q-6 (16 x 2)	2	1
				CO	BTL
03	a)	What are the advantages of vapour absorption refrigeration over vapour compression refrigeration system?	(6)	1	3
	b)	Explain the working principle of air refrigerator working on a Bell-Coleman cycle using P-V and T-S diagram .Derive the expression for COP.	(10)	1	2
04	a)	Discuss the factors to be considered while storing the foods in cold storage.		2	1
	b)	In a vapour absorption refrigeration system, heating, cooling and refrigeration system takes place at the temperature of 100°C , 20°C , and -5°C respectively. Find the maximum C.O.P of the system.		3	3
05	a)	In an absorption type refrigerator, the heat is supplied to ammonia generator by condensing steam at 2 bar and 90% dry. The temperature in the refrigerator is to be maintained at -5°C . Find the maximum C.O.P possible. If the refrigerator load is 20 tonnes and actual C.O.P is 70 % of the maximum C.O.P. Find the mass of steam required per hour. Take temperature of the atmosphere as 30°C and saturation temp at 2 bar is 120.2°C .	(10)	3	3
	b)	Discuss various types of heat gains that decrease the air conditioning.	(6)	5	4
06	a)	Draw a neat diagram of three fluid system of refrigeration and explain its working.		3	2
	b)	Briefly discuss on winter air conditioning system and summer air conditioning system.		5	2

** BTL: Bloom's Taxonomy Level

** CO: Course Outcomes



GANDHI INSTITUTE FOR TECHNOLOGY (GIFT)
(An Autonomous Institution)

Registration No:

--	--	--	--	--	--	--	--	--	--

Total Number of Pages: 02

B.Tech
BTCS-T-ES-301

3rd Semester End Semester Examination: 2023-24

Subject Name: OOPs using Java

BRANCH(S): BTech

Max Marks: 100

Time: 3 Hour

Q. Code: BT317

Answer Question No. 1 (Part-I) which is compulsory, any eight from Part-II and any two from Part-III
The figures in the right hand margin indicate marks.

Part - I		
01	Answer the following questions: a) What do you know by java byte code? b) Why is the main method static in Java? c) What happens when a class doesn't contain any constructor? How its data members are initialized? d) Write difference between final and finally keyword in java? e) Differentiate between compile-time and runtime polymorphism. f) Explain equals() and compareTo() methods of String class. g) Find output. String s1="125",s2="251"; int n1=Integer.parseInt(s1),n2=Integer.parseInt(s2); System.out.println(s1+s2); System.out.println(n1+n2+Integer.parseInt(s1+s2)); h) Define the term package. Name any 5 java library packages. i) Differentiate between sleep() and wait() method in multithreading in java. j) Explain the role of the "TextField" class in AWT.	(10 x 2) 1 2 1 2 2 2 2 2 3 2 3 2 4 2 4 2 5 2 6 2
02	Answer any eight questions a) Explain instance variables, local variables and argument variables with suitable example. b) Write a java program to print the greatest and smallest of N integers. c) Write a java program that defines a class 'Rectangle' with instance variables for length and width. The class also contains a parameterized constructor and methods to display the instance variables and also a method to compare length and width of a rectangle. d) Write a Java program to calculate the ratio of male to female voters among N voters of class "Voter" with instance variables 'name' and 'gender'.	(06 x 08) 2 3 1 3 2 4 2 4
Part-II		
	Answer any eight questions a) Explain instance variables, local variables and argument variables with suitable example. b) Write a java program to print the greatest and smallest of N integers. c) Write a java program that defines a class 'Rectangle' with instance variables for length and width. The class also contains a parameterized constructor and methods to display the instance variables and also a method to compare length and width of a rectangle. d) Write a Java program to calculate the ratio of male to female voters among N voters of class "Voter" with instance variables 'name' and 'gender'.	CO BTL



GANDHI INSTITUTE FOR TECHNOLOGY (GIFT)
(An Autonomous Institution)

Registration No:

--	--	--	--	--	--	--	--	--

	e)	Write an example program to show constructor overloading in a class 'Employee' with instance variables name and age	3	3
	f)	Write a Java program that takes a string as input and counts the total number of alphabets, digits and special symbols present in it.	3	4
	g)	Explain the concept of Wrapper classes, boxing and unboxing in java.	4	3
	h)	Provide an example of creating and using a custom package.	4	3
	i)	Define the term "thread priority" in Java. How can you assign and get the priority of a thread.	5	3
	j)	What do you know by thread synchronization? How can you achieve it?	5	3
	k)	How do you use try-catch blocks for handling exceptions in Java?	6	3
	l)	Write a java program to design a Login frame using awt components.	6	3

Part-III

Answer any Two questions from the Q-3 to Q-6 (16 x 2)

CO BTL

03	a)	Write a Java program to print the common elements present in two different arrays of integers.	1	3
	b)	Imagine you have an abstract class called "Bank" that offers functionality to determine the rate of interest through the method interest Rate(). Generate subclasses named SBI, ICICI, and AXIS banks. These subclasses should specify interest rates of 8%, 7.5%, and 9%, respectively. Write a java program for it.	2	4
04	a)	Write a program to overload a method sum() as follows: i) int sum(int n)- To calculate and return sum of all multiples of 3 up to n. ii) int sum(int m , int n)- To calculate and return sum of all numbers between m and n which are divisible by 3 or 5.	3	3
	b)	Write a Java program to provide an example of using an interface to achieve multiple inheritances.	3	4
05	a)	Design a frame in java to accept students Name, Roll No, Branch , Year, CGPA and Grade by using Label, text Field and a suitable layout manager.	6	3
	b)	Define inheritance. Explain different types of inheritance by taking real world examples.	4	3
06	a)	Describe the various states a thread can be in during its lifecycle in Java.	5	3
	b)	Write a program to accept a number and print whether or not it is a lead number. A number is said to be a lead number if its sum of even digits is same as sum of odd digits. Eg. 72344 $7+3=2+4+4$	1	3



GANDHI INSTITUTE FOR TECHNOLOGY (GIFT)
(An Autonomous Institution)

Registration No:

--	--	--	--	--	--	--	--	--

Total Number of Pages: 02

BTech
BTBS-T-HS-302

Aesthetic

3rd Semester End Semester Examination: 2023-24

Subject Name: Engineering Economics

BRANCH (Mech, Civil, AG, EEE & ECE): BTech

Max Marks: 100

Time: 3 Hour

Q. Code: BT304

*Answer Question No. 1 (Part-I) which is compulsory, any eight from Part-II and any two from Part-III
The figures in the right hand margin indicate marks.*

		Part – I	
		(10 x 2)	
		CO	BTL
01	Answer the following questions:		
	a) What is Nominal interest rate?	4	1
	b) What is Net present value ?	4	1
	c) When the price of a good is Rs 12, consumer buys 24 units when price rises to Rs 34, the consumers buy 20 unit, Calculate Price elasticity of demand?	1	1
	d) What is Cost and Benefit analysis?	4	1
	e) What is discount in bill of exchange?	5	1
	f) Write any two basic Problems of an Economy?	1	1
	g) Write any two exceptions of law of supply?	1	1
	h) What do you mean by Revenue dominated cash flow diagram?	4	1
	i) What is Explicit cost in production?	3	1
	j) What is Comprehensive inflation?	5	1
		Part-II	
		(06 x 08)	
		CO	BTL
	Answer any eight questions		
02	a) A bank gives a loan to a company to purchase an equipment worth 10,00,000 at an interest rate of 18% compounded annually .This amount should be repaid in 15 yearly instalments. Find the instalment amount that the company has to pay to the bank.	4	2
	b) A company has to replace a machine after 15 years at an outlay of RS 5,00,000. It plans to deposit an equal amount at the end of every year for the next 15 years at an interest rate of 18% compounded annually. Find the equivalent amount that must be deposited at the end of every year for the next year 15 years.	4	2
	c) A person is planning for his retired life. He has 10 more years of service. He would like to deposit RS 8,500 at the end of the first year and thereafter he wishes to deposit the amount with an annual decrease of RS 500 for the next 9 years with an interest rate of 15%. Find the total amount at the end of the 10th year of the above series.	4	2
	d) Explain the causes of Depreciation?		
	e) Explain the degree of price elasticity of demand.	4	2
		1	2



Registration No:

--	--	--	--	--	--	--	--

f)	Briefly explain any four causes of inflation.	5	2
g)	What is Break-even point. Show the Breakeven point with the help of diagram?	3	2
h)	Write short notes on variable cost with diagram.	5	2
i)	What are the different types of loan provided by the commercial bank.	3	2
j)	What are the difference between average cost & marginal cost.	2	2
k)	What are the difference between short run & long run production function.	1	2
l)	Write the exception of law of demand.	CO	BTL

Part-III

(16 x 2)

Answer any Two questions from the Q-3 to Q-6

03	a)	Explain any two methods of measuring price elasticity of demand.	1	3
	b)	Explain the law of supply with limitations.	1	3
04	a)	What is oligopoly Market? Explain the features of Oligopoly.	3	3
	b)	Explain the function of commercial bank.	5	3
05	a)	Consider the following data of a company for the year 2020 Sales = 1,20,000 Fixed cost = 25,000 Variable cost = 45,000 find (i) Contribution (ii) Profit (iii) P/V ratio (iv) BEP (v) MS	4	3
	b)	A company purchased an equipment whose first cost is 1,00,000 with an estimated life of 8 years. The estimate salvage value of the equipment at the end of its life time is Rs 20,000. Find the depreciation and book for the various years by using sum of year digits method of depreciation.	4	3
06	a)	LIC accepts Rs 10,000 at the end of every year for 20 years and pays the investor Rs 8,00,000 at the end of 20th year. Bajaj Allianz accepts RS 10,000 at the end of every year for 20 years and pays the investor 15,00,000 at the end of 25th year. Which is the best alternatives by present worth method with $i=12\%$.	4	3
	b)	A company purchased an equipment whose first cost is 1,00,000 with an estimated life of 8 years. The estimate salvage value of the equipment at the end of its life time is Rs 20,000. Determine the depreciation charge and book value by using declining balance method of depreciation by assuming $K=0.2$	4	3



GANDHI INSTITUTE FOR TECHNOLOGY (GIFT)
(An Autonomous Institution)

Registration No:

--	--	--	--	--	--	--	--	--	--

Total Number of Pages: 02

BTech

BTAG-T-PC-302

3rd Semester End Semester Examination: AGE- 2023-24

Subject Name: Agriculture for Engineering

BRANCH (AGE): BTech

Max Marks: 100

Time: 3 Hour

Q. Code: BT318

*Answer Question No. I (Part-I) which is compulsory, any eight from Part-II and any two from Part-III
The figures in the right hand margin indicate marks.*

Part - I		
	(2 x 10)	CO BTL
01	Answer the following questions:	
a)	What is the origin of soils and rocks?	I 1
b)	Fruit and vegetable crops required -----type of soil?	V 1
c)	Give two examples of Plant growing structures?	V 1
d)	Choke throat in banana is due to _____?	VI 1
e)	From which type of irrigation provide High Water Use Efficiency (WUE)?	IV 2
f)	Name the most abundant element of the earth crust ?	II 1
g)	What is the % of Nitrogen content in Urea?	II 1
h)	The major Rabi crop in India is.....?	III 1
i)	Which Mango variety is suitable for high density planting?	V 2
j)	What is the full form of DAP?	II 1
Part-II. Answer any eight questions (06x08)		
02	a) What do you mean by Kharif, Rabi and Ziad crop? Explain briefly?	III 1
b)	What are the major pest and diseases of vegetable? Explain briefly?	VI 1
c)	What are the advantages and disadvantages of intercropping?	IV 1
d)	Write notes on crop rotation principles and advantages?	IV 1
e)	Write down the important properties of soil colloids?	II 1
f)	What is soil water retention and movement?	I 1
g)	What are the physical and chemical properties of soil?	I 1
h)	What are different plant growing structures and briefly explain it?	V 1
i)	What do you mean by maturity indices.Explain various parameters briefly	VI 1
j)	What are the various symptoms of fertilizer deficiency? Explain briefly	II 1
k)	What are different planting methods used in horticulture?	V 1
l)	Write about Grades of soil structure?	I 1
		CO BTL



GANDHI INSTITUTE FOR TECHNOLOGY (GIFT)
(An Autonomous Institution)

Registration No:

--	--	--	--	--	--	--	--	--	--	--	--

Part-III				
Answer any Two questions from the Q-3 to Q-6			(16 x 2)	
03	a)	What are fertilizer? Describe different Fertilizer types.	II	1
	b)	Calculate Urea Fertilizer application per/ha of the Kharif and Rabi Rice	VI	4
04	a)	Describe major pest and diseases of ornamental plants?	VI	2
	b)	Describe major control method of pest and diseases of ornamental plants?	VI	2
05	a)	Describe modern concepts of tillage briefly?	III	2
	b)	Explain the package and practice of major Kharif field crops of tillage in the context of Odisha?	IV	2
06	a)	What is phosphate retention or fixation? Why is it important agriculturally?	II	1
	b)	Briefly explain about soil taxonomy and their characteristics?	I	2



GANDHI INSTITUTE FOR TECHNOLOGY (GIFT)
(An Autonomous Institution)

Registration No :

2 2 0 1 2 9 8 4 3 8

Total Number of Pages: 02

BTech
BTSC-T-SC-301

3rd Semester End Semester Examination: 2023-24

Subject: EET

BRANCH(S) : All

Time: 3 Hour

Max Marks: 100

Q. Code : BT323

Answer Question No. 1 (Part-I) which is compulsory, any eight from Part-II and any two from Part-III

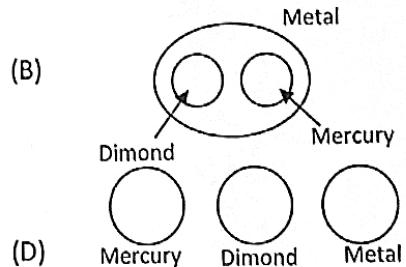
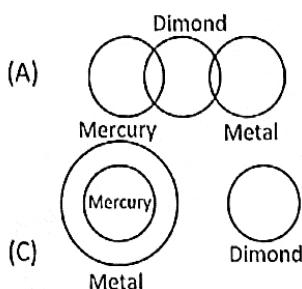
The figures in the right hand margin indicate marks.

Part -I

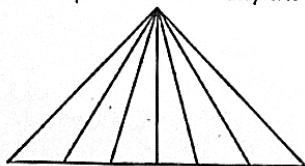
(2 x 10)

Q1. Answer the following questions:

- a) This of the following Venn diagram best represents the relation.



- b) Find the day of the date 4th January 1246?
c) Find the unit digit of 3^{442} .
d) Price of an article first increase by 10% then reduces by 10%. What is the net percentage change in the price of the article?
e) Population of a city increase by 10% every year. What is the percentage change in the population after 3 years?
f) Find the compound interest on Rs. 4000 in 3 years, rate of interest being 10% per annum.
g) In a chess board how many square are there?
h) $100!$ Ends with how many zeros?
i) In the picture how many triangles are there?



- j) What is the unit digit of $1! + 2! + 3! + \dots + 1777!$?

Part -II

(6 x 8)

2. Answer any eight out of twelve.

- a) Find the last two digits of $25!$?
b) A man invests Rs. 80,000 in two different banks are bank is offering 10% SI and other are offering 10% CI. The end of two year total investment received from both the banks is Rs.16400. Find the ratio of Investment in both the banks.
c) Find the difference between SI and CI in 4 years on Rs.15000, rate of interest being 8% per annum.



GANDHI INSTITUTE FOR TECHNOLOGY (GIFT)
(An Autonomous Institution)

Registration No :

2	2	0	1	2	9	8	9	3	8	
---	---	---	---	---	---	---	---	---	---	--

- d) Population of city increase by 10% in the 1st year 20% in the second year and 30% in the 3rd year, Present population is 80000. What was the approximate population 3 years back?
- e) There is a cube of size 8cm x 8 cm x 8cm. All the 6 faces are painted Red colour and core is white. Then it is cut into 512 small cubes of size 1 x 1 x 1. How many small cubes are there having 1 side red painted?
- f) What is the unit digit of $3^{544} \times 5^{544} \times 6^{544} \times 7^{544}$?
- g) HCF of two numbers is 13 and LCM is 1690. If one of the numbers is 130 then what is the other number?
- h) TEN
 TEN
 TEN
 ONE
(TEN + TEN + TEN + TEN = ONE)
- If each letter stands for a different digit, then TEN stands for what.
- i) A car covered a distance of 200 km. During the journey 5 wheels are used. If every wheel covered equal distance then find the distance covered by each wheel?
- j) Which of the following are Prime number and why? And also which are not prime number and why ? 493, 621, 667, 247, 131, 233.
- k) What is the unit digit of $(2343)^{523} \times (724)^{245} \times (933)^{244}$.
- l) One day a man added all the page numbers of a booklet. He got the answer as 2000. But he realized that by mistake he has skipped one page number. Find the missing page number.

Part -III

(16x 2)

Answer any two out of four.

3. In statements followed by 4 conclusions. Identify which conclusion can be derived from the given statements (draw the appropriate Venn diagram)

- A) St-1 : All doctors are clever.
St-2 : All cleavers are rich.

Conclusion:

- 1) Some clever are rich. 2) Some doctors are rich. 3) Some doctors are not rich.
4) Some rich are doctors.

- B) St-1 : Some poor are intelligent. St-2 : Some intelligent are rich.

Conclusion:

- 1) Some poor are rich. 2) Some rich are intelligent 3) Some poor may be rich
4) Some intelligent are poor

4. (A) Find the digit in the tens place and unit place last two digits of $(41)^{293}$.

(B) If 4th January 1976 was on a Thursday, then what is the day of the date 15th Aug 1947?

5. (A): HCF of two numbers is 17 and LCM is 2210. How many such pairs exist?

(B): What is the remainder when $27!$ Is divided by 10^7 .

6.

(A): A mixture contains milk and water in the ratio 80% and 20% another mixture contain milk and water in the ratio 30% and 70 %. In what ratio they must be added so that ratio between milk and water is the resulting number is 1: 1?

(B): In a certain code

0 is written as β

1 is written as Ψ

2 is written as $\Psi\beta$

3 is written as $\Psi\Psi$

4 is written as $\Psi\beta\beta$

What is the value of $\Psi\Psi\beta\beta\Psi\Psi$



GANDHI INSTITUTE FOR TECHNOLOGY (GIFT)
(An Autonomous Institution)

Registration No:

2 2 0 1 2 9 8 4 2 6

Total Number of Pages: 02

BTech
BTBS-T-BS-302

3rd Semester End Semester Examination: 2023-24

Subject Name: Applied Mathematics

BRANCH (AG, Mech & Civil): BTech

Time: 3 Hour

Max Marks: 100

Q. Code: BT301

Answer Question No. 1 (Part-I) which is compulsory, any eight from Part-II and any two from Part-III
The figures in the right hand margin indicate marks.

Part - I				
01	Answer the following questions: a) Find $L\{e^{-2t} \sin 3t\}$ b) Define unit step function? What is the Laplace transform of Unit step function? c) Find Convolution of t & π d) What is the Fourier expansion of the $f(x) = \cos x + 2 \cos^2 2x$. e) Test $f(x) = x x , -\pi < x < \pi$ is even or odd f) What is the Normal form of the equation $u_{xx} + 4u_{xy} + 4u_{yy} = 0$. g) Write down two dimensional Wave equation h) Solve $u_y = u$ i) If the density $f(x) = \frac{x}{16}, (2 < x < 6)$, then find C such that $P(X \leq 5)$. j) State Cauchy Reimann equation	(16 x 2)	CO	BTL
		1	2	
		1	1	
		1	3	
		2	3	
		2	2	
		3	3	
		3	1	
		4	3	
		5	3	
		6	1	
Part-II				
02	Answer any eight questions a) Find the inverse of the $\ln \frac{s^2 + 4}{s^2 + 16}$ b) Solve the integral equation $y(t) = e^{2t} + \int_0^t y(\tau) \sin(t-\tau) d\tau$ c) Solve the pde $u_x + u_y = 0$. d) Find the Fourier series of the function $f(x) = \begin{cases} k, & -1 < x < 0 \\ kx, & 0 < x < 1 \end{cases}$ e) Find Fourier cosine series of the $f(x) = e^{-ax}$, where $a \geq 0$ f) Find Fourier transform $f(x) = e^{-ax}, x \geq 0$ g) Find the deflection of the string where $L = \pi, c^2 = 1$, the initial velocity is zero, and the initial deflection is $f(x) = 2 \sin 3x$. h) Find the deflection of the string where $L = \pi, c^2 = 1$, the initial velocity is zero, and	(06 x 08)	CO	BTL
		1	2	
		1	4	
		1	4	
		1	3	
		2	3	
		2	2	
		3	2	
		3	2	



GANDHI INSTITUTE FOR TECHNOLOGY (GIET)
(An Autonomous Institution)

Registration No:

--	--	--	--	--	--	--	--	--	--

		the initial deflection is $f(x) = 0.01\sin 3x$.	
i)	Solve $u_{xx} + u_y = 0$		4
j)	If $u = x^2 + y^2 + x$ is a real part of the analytic function, then find its imaginary part.		5
k)	Let X be normal with mean 60 and variance 9, determine c such that : (i) $P(X > c) = 1\%$, (ii) $P(X < c) = 5\%$		6
l)	If the probability of hitting a target is 25% and 4 shots are fired independently, what is the probability that the target will hit at least once?		6
Part-III Answer any Two questions from the Q-3 to Q-6			CO
03	Solve the ode $y'' + 3y' + 2y = 2t$, $y(0) = 1$ & $y'(0) = 1$		2
04	Find the Fourier series of $f(x) = \frac{x^2}{2}$, $-\pi < x < \pi$, then show that $1 - \frac{1}{4} + \frac{1}{9} - \frac{1}{16} + \dots = \frac{\pi^2}{12}$		3
05	Find the deflection of the rectangular membrane with sides a and b and $c=1$, if the initial velocity is zero and the initial deflection is $f(x, y) = \sin \frac{2\pi x}{a} \sin \frac{3\pi y}{b}$,		5
06	Average marks in Mathematics of the ICC 10 th class result is 65 and variance is 16, then find number of the students lies between 60 to 80 and more than 90.		6

** BTL: Bloom's Taxonomy Level

** CO: Course Outcomes



GANDHI INSTITUTE FOR TECHNOLOGY (GIFT)
(An Autonomous Institution)

Registration No:

--	--	--	--	--	--	--	--

Total Number of Pages: 02

BTech

BTAG-T-PC-301

1st Semester End Semester Examination: 2023-24

Subject Name: Farm Machinery and Equipment I

BRANCH (AGE): B.Tech

Time: 3 Hour

Max Marks: 100

Q. Code: BT306

*Answer Question No. 1 (Part-I) which is compulsory, any eight from Part-II and any two from Part-III
The figures in the right hand margin indicate marks.*

Part - I		Marks		
01	Answer the following questions;	(02 x 10)	CO	BTL
a)	Define farm mechanization?	1	1	
b)	What are needs of farm mechanization?	1	2	
c)	Define quenching?	2	1	
d)	Write down different process of heat treatment?	2	2	
e)	What is an alloy?	3	1	
f)	What is the Break Even Point?	3	2	
g)	Write down different earth moving equipment name?	4	2	
h)	What is different procedure for design consideration?	4	2	
i)	How do use discuss about scope of farm mechanization?	5	1	
j)	Suppose a new tractor is purchased for Rs. 3,00,000.00 and its life is assumed to be 15 years. Assume salvage value as 10% of purchase price; then find the depreciation in 6th year?	6	3	
02	Answer any 8 questions out of 12	(06 x 08)	CO	BTL
a)	Explain in briefly about tractor and custom hiring?	1	2	
b)	Explain about objectives of farm mechanization and classification of farm Machines?	1	2	
c)	Solve the problem; The following results were obtained while calibrating a seed drill. Calculate the seed rate per hectare a) Number of furrows = 10 b) Spacing between furrows = 20 cm c) Diameter of drive wheel = 1.5 m d) Speed = 500 rev/min e) Seed collected = 20 kg	2		2
d)	Write down at least 5 types of alloy with its composition and where it is used?	2	2	
e)	What is the earth moving equipment's commonly used for handling of earth?	3	3	
f)	What do you mean by case hardening and its types?	3	5	
g)	Write down different types of tillage?	4	2	
h)	What is different procedure for calibration of seed drill?	4	3	
i)	What are the functions of furrow openers in seed drill? Explain in briefly about different types of furrow openers?	5	2	
j)	A machine costing Rs. 3,00,000.00 has a total life of 15 years. If the rate of inflation is taken as 5% constant throughout its life period, find the future price of machine, total depreciation, remaining value and annual depreciation charge at the end of 12th year. Take salvage value as 10%	5	3	



GANDHI INSTITUTE FOR TECHNOLOGY (GIFT)
(An Autonomous Institution)

Registration No:

--	--	--	--	--	--	--

		of inflated price.			
k)	-	A four bottom 40 cm MB plough has a working depth of 15 cm and draft of 1600 kg. It is working at a speed of 15 cm and draft of 1600 kg. it is working at a speed of 4.5 km/hr with field efficiency of 70%. What will be the drawbar power?	6		
l)		What are different types sowing methods and Which seeding method uses Malobansa?	6		
Answer any Two questions from the Q-3 to Q-6			(16 x 2)	CO	
03	a)	Discuss about cost calculation of farm tractor by using straight line method?	8	1	
	b)	Solve the problem consists of a three bottom 40 cm MB plough has a working depth of 15 cm and draft is 1600 kg. field efficiency is 70% and working speed is 4 km/h. Find i) Unit draft ii) Power required iii) Actual field capacity	8	2	
04	a)	What are the different sources of farm power? Explain them	8	1	
	b)	A farmer purchased a tractor of 35 kW power at a total cost of Rs. 500000 and a three bottom plough of 30 cm bottom width at Rs. 30000/- only. The fuel consumption of the tractor was 6ltr/h at the ploughing speed of 5 km/h. Calculate a) Area ploughed per hour and b) Determine the cost of ploughing per ha. Make necessary assumptions if any.	8	2	
05	a)	The initial cost of 35 hp Massy Ferguson Tractor owned by a farmer is Rs. 3,00,000/. The tractor is expected to work for 10 years. In a year the farmer uses the tractor for 1000 hours. The farmer also owns a 11 tined cultivator. The tynes are spaced at 20 cm apart. The cost of the cultivator is Rs. 12,000/. The tractor consumes 3 liters of diesel while ploughing with the cultivator. The life of the cultivator is 10 years. The farmer uses the cultivator for 400 hours in a year. The cultivator is operated at a speed of 4 km/h. Calculate the cost of ploughing 2 ha of land with the cultivator. Assume all other necessary data.	8	3	
	b)	Distinguish between standard disc plough and vertical disc plough?	8	4	
06	a)	What do you mean by adjustments of M B plough and describe its classification with diagram?	8	5	
	b)	Solve the problem consists of a three bottom 40 cm MB plough has a working depth of 15 cm and draft is 1600 kg. field efficiency is 70% and working speed is 4 km/h. Find i) Unit draft ii) Power required iii) Actual field capacity	8	6	