GANDHI INSTITUTE OF ENGINEERING & TECHNOLOGY UNIVERSITY, GUNUPUR – 765022

B. Tech – I Semester: **CYCLE TEST - II**

Subject Code: 23BBSBS110B1 Subject Name: Engineering Mathematics-1

(**BIOTECH**)

Time: 1.15 hrs **Maximum: 30 Marks**

PART – A (2 x 5 = 10 Marks)

Q.1. Answer ALL questions		**CO #**	**BL**
a.	Find the Absolute error, Relative error and Percentage error of the point $X_T = 2.3456789$, $X_A = 2.33$	**CO 2**	**K2**
b.	Explain Bisection Method.	**CO 2**	**K2**
c.	Define Mean, median and mode.	**CO 3**	**K2**
d.	Find Mean, median and mod of the given data are 2, 3, 5, 3, 4, 7, 6, 6, 8, 3, 5, 1, 9	**CO 3**	**K2**
e.	Find the standard deviation of1, 2, 3, 4, 5.	**CO 3**	**K2**

PART – B (10 x 2 = 20 Marks)

Answer ALL Questions		**Marks**	**CO#**	**BL**
2.a.	Solve x + 5y - z = 10, x + y + 8z = 20, 4x + 2y + z = 14 by Gauss elimination method.	**5**	**CO1**	**K3**
b.	Find root of equation $x e^x - 1 = 0$ by using Iteration method up to three decimals	**5**	**CO1**	**K2**
	(OR)			
c.	Find root of equation cos x – 3x +1 = 0 by using Newtown-Raphson method up to three decimals.	**5**	**CO1**	**K2**
d.	Solve 10x + 2y + z = 9, x + 10y - z = -22, -2x + 3y + 10z=22 by Gauss – Seidel method up to two decimals.	**5**	**CO1**	**K3**
3.a.	Using Lagrange's interpolation formula, Find the polynomial of the given data and find y(2), y(5).	**5**	**CO2**	**K2**

x	0	1	3	4
Y= f(x)	-12	0	6	12

b.	Find the polynomial the given data are	**5**	**CO2**	**K3**	

x	-1	0	1	2	3
Y=f(x)	-21	6	15	12	3

(OR) **5**

c.	Find Mean, median and standard deviation of given data	**5**	**CO2**	**K2**	

x	2	2.5	3	3.5	4	4.5	5
f	1	2	3	4	3	2	1

d.	Find the value of y(6) by using divided differences interpolation of the given data are	**5**	**CO2**	**K3**	

x	4	5	7	10	11	13
Y = f(x)	48	100	294	900	1210	2028

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B. Tech – I Semester: **CYCLE TEST - II**

Subject Code: 23BBSBS110B1 Subject Name: Engineering Mathematics-1

(**BIOTECH**)

Time: 1.15 hrs **Maximum: 30 Marks**

PART – A (2 x 5 = 10 Marks)

Q.1. Answer ALL questions		**CO #**	**BL**
a.	Find the Absolute error, Relative error and Percentage error of the point $X_T = 2.3456789$, $X_A = 2.33$	**CO 2**	**K2**
b.	Explain Bisection Method.	**CO 2**	**K2**
c.	Define Mean, median and mode.	**CO 3**	**K2**
d.	Find Mean, median and mod of the given data are 2, 3, 5, 3, 4, 7, 6, 6, 8, 3, 5, 1, 9	**CO 3**	**K2**
e.	Find the standard deviation of1, 2, 3, 4, 5.	**CO 3**	**K2**

PART – B (10 x 2 = 20 Marks)

Answer ALL Questions		**Marks**	**CO#**	**BL**
2.a.	Solve x + 5y - z = 10, x + y + 8z = 20, 4x + 2y + z = 14 by Gauss elimination method.	**5**	**CO1**	**K3**
b.	Find root of equation $x e^x - 1 = 0$ by using Iteration method up to three decimals	**5**	**CO1**	**K2**
	(OR)			
c.	Find root of equation cos x – 3x +1 = 0 by using Newtown-Raphson method up to three decimals.	**5**	**CO1**	**K2**
d.	Solve 10x + 2y + z = 9, x + 10y - z = -22, -2x + 3y + 10z=22 by Gauss – Seidel method up to two decimals.	**5**	**CO1**	**K3**
3.a.	Using Lagrange's interpolation formula, Find the polynomial of the given data and find y(2), y(5).	**5**	**CO2**	**K2**

x	0	1	3	4
Y= f(x)	-12	0	6	12

b.	Find the polynomial the given data are	**5**	**CO2**	**K3**	

x	-1	0	1	2	3
Y=f(x)	-21	6	15	12	3

(OR) **5**

c.	Find Mean, median and standard deviation of given data	**5**	**CO2**	**K2**	

x	2	2.5	3	3.5	4	4.5	5
f	1	2	3	4	3	2	1

d.	Find the value of y(6) by using divided differences interpolation of the given data are	**5**	**CO2**	**K3**	

x	4	5	7	10	11	13
Y = f(x)	48	100	294	900	1210	2028

GANDHI INSTITUTE OF ENGINEERING & TECHNOLOGY UNIVERSITY, GUNUPUR – 765022

B. Tech – I Semester: **CYCLE TEST - II**

Subject Code: 23BBSBS11001 Subject Name: Engineering Mathematics-1

(Common to all branches)

Time: 1.15 hrs **Maximum: 30 Marks**

PART – A (2 x 5 = 10 Marks)

Q.1. Answer ALL questions		**CO #**	**BL**
a.	Under what condition the equation $(Ax+By)dx-(Cx+Dy)dy=0$ is Exact.	**CO 3**	**K_2**
b.	Define Bernoulli's equation in x	**CO 3**	**K_1**
c.	Solve $(x^2D^2-3xD+4)y=0$	**CO 4**	**K_2**
d.	Define periodic function with an example	**CO 1**	**K_1**
e.	Define Half range cosine and sine series in the period 2π	**CO 4**	**K_2**

PART – B (10 x 2 = 20 Marks)

Answer ALL Questions		**Marks**	**CO#**	**BL**
2.a.	Solve $\frac{dy}{dx}=\frac{x^2+y^2}{2xy}$	5	**CO 3**	K_3
b.	Solve $(x^2+y^2)dx-2xy\,dy=0$	5	**CO 3**	K_3
	(OR)			
c.	Solve $\frac{dy}{dx}-xy=x^3y^3$	5	**CO 3**	K_3
d.	Solve $(1+x^2)\frac{dy}{dx}+y=e^{\tan^{-1}x}$	5	**CO 3**	K_3
3.a.	Find the Fourier series of $f(x)=1-x^2 \quad -\pi<x<\pi$	5	**CO 4**	K_3
b.	Find the Fourier series of $f(x)=x,-2<x<2$	5	**CO 4**	K_3
	(OR)			
c.	Solve by method of variation of parameters $y''-6y'+9y=\frac{e^{3x}}{x^2}$	5	**CO 5**	K_3
d.	Solve by method of undetermined Coefficient method $2y''+3y'+y=3sinx$	5	**CO 5**	K_3

GANDHI INSTITUTE OF ENGINEERING & TECHNOLOGY UNIVERSITY, GUNUPUR – 765022

B. Tech – I Semester: **CYCLE TEST - II**

Subject Code: 23BBSBS11001 Subject Name: Engineering Mathematics-1

(Common to all branches)

Time: 1.15 hrs **Maximum: 30 Marks**

PART – A (2 x 5 = 10 Marks)

Q.1. Answer ALL questions		**CO #**	**BL**
a.	Under what condition the equation $(Ax+By)dx-(Cx+Dy)dy=0$ is Exact.	**CO 3**	**K_2**
b.	Define Bernoulli's equation in x	**CO 3**	**K_1**
c.	Solve $(x^2D^2-3xD+4)y=0$	**CO 4**	**K_2**
d.	Define periodic function with an example	**CO 1**	**K_1**
e.	Define Half range cosine and sine series in the period 2π	**CO 4**	**K_2**

PART – B (10 x 2 = 20 Marks)

Answer ALL Questions		**Marks**	**CO#**	**BL**
2.a.	Solve $\frac{dy}{dx}=\frac{x^2+y^2}{2xy}$	5	**CO 3**	K_3
b.	Solve $(x^2+y^2)dx-2xy\,dy=0$	5	**CO 3**	K_3
	(OR)			
c.	Solve $\frac{dy}{dx}-xy=x^3y^3$	5	**CO 3**	K_3
d.	Solve $(1+x^2)\frac{dy}{dx}+y=e^{\tan^{-1}x}$	5	**CO 3**	K_3
3.a.	Find the Fourier series of $f(x)=1-x^2 \quad -\pi<x<\pi$	5	**CO 4**	K_3
b.	Find the Fourier series of $f(x)=x,-2<x<2$	5	**CO 4**	K_3
	(OR)			
c.	Solve by method of variation of parameters $y''-6y'+9y=\frac{e^{3x}}{x^2}$	5	**CO 5**	K_3
d.	Solve by method of undetermined Coefficient method $2y''+3y'+y=3sinx$	5	**CO 5**	K_3

GANDHI INSTITUTE OF ENGINEERING & TECHNOLOGY UNIVERSITY, GUNUPUR – 765022

B. Tech – I Semester: **CYCLE TEST - II**

Subject Code: 23BBSHS11001 Subject Name: Communicative English and Soft Skills

(Common to all branches)

Time: 1.15 hrs **Maximum: 30 Marks**

PART – A (2 x 5 = 10 Marks)

Q.1. Answer ALL questions		**CO #**	**BL**
a.	Define soft skills.	**CO4**	**K2**
b.	Discuss the significance of email etiquette in corporate communication.	**CO3**	**K4**
c.	What are the strategies to overcome culturally diverse workforce challenges in workplaces?	**CO3**	**K4**
d.	Explain the importance of lateral thinking as a soft skill.	**CO4**	**K2**
e.	What are the directions of corporate communication?	**CO3**	**K4**

PART – B (10 x 2 = 20 Marks)

Answer ALL Questions		**Marks**	**CO#**	**BL**
2.a.	Explain the characteristics and importance of corporate communication.	**5**	**CO3**	**K2**
b.	Explain the seven Cs of communication.	**5**	**CO6**	**K2**
	(OR)			
c.	Discuss the role of ICT in overcoming communication challenges.	**5**	**CO3**	**K3**
d.	Describe team-based organizational settings and their communication challenges.	**5**	**CO3**	**K4**
3.a.	Define soft skills and explain their importance in professional success.	**5**	**CO4**	**K2**
b.	How do emotional intelligence and networking skills contribute to effective workplace communication?	**5**	**CO4**	**K3**
	(OR)			
c.	Explain the concept of cross-cultural communication and its importance in a globalized workplace.	**5**	**CO3**	**K4**
d.	Highlight the key etiquettes to follow during a business meeting.	**5**	**CO3**	**K2**

GANDHI INSTITUTE OF ENGINEERING & TECHNOLOGY UNIVERSITY, GUNUPUR – 765022

B. Tech – I Semester: **CYCLE TEST - II**

Subject Code: 23BBSHS11001 Subject Name: Communicative English and Soft Skills

(Common to all branches)

Time: 1.15 hrs **Maximum: 30 Marks**

PART – A (2 x 5 = 10 Marks)

Q.1. Answer ALL questions		**CO #**	**BL**
a.	Define soft skills.	**CO4**	**K2**
b.	Discuss the significance of email etiquette in corporate communication.	**CO3**	**K4**
c.	What are the strategies to overcome culturally diverse workforce challenges in workplaces?	**CO3**	**K4**
d.	Explain the importance of lateral thinking as a soft skill.	**CO4**	**K2**
e.	What are the directions of corporate communication?	**CO3**	**K4**

PART – B (10 x 2 = 20 Marks)

Answer ALL Questions		**Marks**	**CO#**	**BL**
2.a.	Explain the characteristics and importance of corporate communication.	**5**	**CO3**	**K2**
b.	Explain the seven Cs of communication.	**5**	**CO6**	**K2**
	(OR)			
c.	Discuss the role of ICT in overcoming communication challenges.	**5**	**CO3**	**K3**
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GANDHI INSTITUTE OF ENGINEERING & TECHNOLOGY UNIVERSITY, GUNUPUR – 765022

B. Tech – I Semester: **CYCLE TEST - II**

Subject Code: BBSES1050

Subject Name: Programming for Problem Solving

(Common to all branches)

Time: 1.15 hrs **Maximum: 30 Marks**

PART – A (2 x 5 = 10 Marks)

Q.1. Answer ALL questions		**CO #**	**BL**
a.	State the difference between recursive and iterative process	**CO3**	**K2**
b.	State the difference between formal parameters and actual parameters.	**CO2**	**K2**
c.	What is the difference between strcmp() and strncmp() functions ?	**CO2**	**K1**
d.	Write down the syntax and example for using the typedef datatype.	**CO4**	**K1**
e.	Explain, how to declare an integer pointer and store an integer memory address in it?	**CO3**	**K2**

PART – B (10 x 2 = 20 Marks)

Answer ALL Questions		**Marks**	**CO#**	**BL**
2.a.	Write a program to input a string and test whether the string is palindrome or not.	**5**	**CO3**	**K2**
b.	Write a program to find the factorial of a given number using a recursive function.	**5**	**CO4**	**K3**
	(OR)			
c.	Write a program to create a user defined function which accepts a number and test it for prime or not. [The number which is divisible by 1 and itself only and not by other numbers is prime number. Ex: prime number 17]	**5**	**CO3**	**K2**
d.	Briefly explain all the storage classes and their characteristics.	**5**	**CO2**	**K4**
3.a.	Write a program to create a structure EMPLOYEE having members employee no, name, salary. Store 10 employee details using structure array. Display only those employee names whose salary>=50000.	**5**	**CO5**	**K2**
b.	Write a program to accept 10 integers in to an array and find largest and smallest integers present in them.	**5**	**CO4**	**K2**
	(OR)			
c.	Write a C program to input two 4X4 matrices and perform matrix multiplication.	**5**	**CO5**	**K2**
d.	Write a program to input a 3-digit positive number and test whether it is Armstrong or not. (ex: 153 is Armstrong number as: $1^3+5^3+3^3=153$)	**5**	**CO3**	**K2**

GANDHI INSTITUTE OF ENGINEERING & TECHNOLOGY UNIVERSITY, GUNUPUR – 765022

B. Tech – I Semester: **CYCLE TEST - II**

Subject Code: BBSES1050

Subject Name: Programming for Problem Solving

(Common to all branches)

Time: 1.15 hrs **Maximum: 30 Marks**

PART – A (2 x 5 = 10 Marks)

Q.1. Answer ALL questions		**CO #**	**BL**
a.	State the difference between recursive and iterative process	**CO3**	**K2**
b.	State the difference between formal parameters and actual parameters.	**CO2**	**K2**
c.	What is the difference between strcmp() and strncmp() functions ?	**CO2**	**K1**
d.	Write down the syntax and example for using the typedef datatype.	**CO4**	**K1**
e.	Explain, how to declare an integer pointer and store an integer memory address in it?	**CO3**	**K2**

PART – B (10 x 2 = 20 Marks)

Answer ALL Questions		**Marks**	**CO#**	**BL**
2.a.	Write a program to input a string and test whether the string is palindrome or not.	**5**	**CO3**	**K2**
b.	Write a program to find the factorial of a given number using a recursive function.	**5**	**CO4**	**K3**
	(OR)			
c.	Write a program to create a user defined function which accepts a number and test it for prime or not. [The number which is divisible by 1 and itself only and not by other numbers is prime number. Ex: prime number 17]	**5**	**CO3**	**K2**
d.	Briefly explain all the storage classes and their characteristics.	**5**	**CO2**	**K4**
3.a.	Write a program to create a structure EMPLOYEE having members employee no, name, salary. Store 10 employee details using structure array. Display only those employee names whose salary>=50000.	**5**	**CO5**	**K2**
b.	Write a program to accept 10 integers in to an array and find largest and smallest integers present in them.	**5**	**CO4**	**K2**
	(OR)			
c.	Write a C program to input two 4X4 matrices and perform matrix multiplication.	**5**	**CO5**	**K2**
d.	Write a program to input a 3-digit positive number and test whether it is Armstrong or not. (ex: 153 is Armstrong number as: $1^3+5^3+3^3=153$)	**5**	**CO3**	**K2**

GANDHI INSTITUTE OF ENGINEERING & TECHNOLOGY UNIVERSITY, GUNUPUR – 765022

B. Tech – I Semester: **CYCLE TEST - II**

Subject Code: 23BBSBS10002 Subject Name: Engineering Physics

(**Sections: A, B, C, D, I, J, K, L**)

Time: 1.15 hrs **Maximum: 30 Marks**

PART – A (2 x 5 = 10 Marks)

Q.1. Answer ALL questions		**CO #**	**BL**
a.	State Bragg's law of X-ray diffraction.	**CO5**	**K2**
b.	What is active material in He-Ne laser? Define population Inversion.	**CO5**	**K1**
c.	The critical temperature for mercury with an isotopic mass of 179.5u is 4.215K. Calculate its critical temperature when its isotopic mass changes to 199.4u	**CO4**	**K2**
d.	The Numerical aperture of an optical fibre is 0.5 and the core refractive index is 1.54. Find the refractive index of the cladding.	**CO6**	**K1**
e.	Discuss core, cladding and outer jacket of an optical fiber.	**CO4**	**K2**

PART – B (10 x 2 = 20 Marks)

Answer ALL Questions		**Marks**	**CO#**	**BL**
2.a.	Justify that Poynting theorem is a statement of conservation of electromagnetic energy. Write the unit & dimension of Poynting vector?	**10**	**CO5**	**K2**
	(OR)			
b.	What is Miller Indices? Discuss the steps to determine the Miller Indices of a crystal plane with suitable example.	**5**	**CO6**	**K2**
c.	Differentiate between TYPE–I and TYPE– II superconductor. Show that susceptibility of a superconductor is perfectly –1.	**5**	**CO5**	**K2**
3.a.	Determine an expression for the reciprocal lattice of BCC crystal.	**5**	**CO6**	**K2**
b.	Sketch the block diagram of Fibre Optics Communication Link (FOCL).	**5**	**CO5**	**K2**
c.	Differentiate between step index and graded index optical fibres.	**3**	**CO6**	**K2**
d.	State Heisenberg uncertainty principle. Using it prove the non-existence of electron inside the nucleus?	**7**	**CO4**	**K2**

GANDHI INSTITUTE OF ENGINEERING & TECHNOLOGY UNIVERSITY, GUNUPUR – 765022

B. Tech – I Semester: **CYCLE TEST - II**

Subject Code: 23BBSBS10002 Subject Name: Engineering Physics

(**Sections: A, B, C, D, I, J, K, L**)

Time: 1.15 hrs **Maximum: 30 Marks**

PART – A (2 x 5 = 10 Marks)

Q.1. Answer ALL questions		**CO #**	**BL**
a.	State Bragg's law of X-ray diffraction.	**CO5**	**K2**
b.	What is active material in He-Ne laser? Define population Inversion.	**CO5**	**K1**
c.	The critical temperature for mercury with an isotopic mass of 179.5u is 4.215K. Calculate its critical temperature when its isotopic mass changes to 199.4u	**CO4**	**K2**
d.	The Numerical aperture of an optical fibre is 0.5 and the core refractive index is 1.54. Find the refractive index of the cladding.	**CO6**	**K1**
e.	Discuss core, cladding and outer jacket of an optical fiber.	**CO4**	**K2**

PART – B (10 x 2 = 20 Marks)

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2.a.	Justify that Poynting theorem is a statement of conservation of electromagnetic energy. Write the unit & dimension of Poynting vector?	**10**	**CO5**	**K2**
	(OR)			
b.	What is Miller Indices? Discuss the steps to determine the Miller Indices of a crystal plane with suitable example.	**5**	**CO6**	**K2**
c.	Differentiate between TYPE–I and TYPE– II superconductor. Show that susceptibility of a superconductor is perfectly –1.	**5**	**CO5**	**K2**
3.a.	Determine an expression for the reciprocal lattice of BCC crystal.	**5**	**CO6**	**K2**
b.	Sketch the block diagram of Fibre Optics Communication Link (FOCL).	**5**	**CO5**	**K2**
c.	Differentiate between step index and graded index optical fibres.	**3**	**CO6**	**K2**
d.	State Heisenberg uncertainty principle. Using it prove the non-existence of electron inside the nucleus?	**7**	**CO4**	**K2**

GANDHI INSTITUTE OF ENGINEERING & TECHNOLOGY UNIVERSITY, GUNUPUR – 765022

B. Tech – I Semester: **CYCLE TEST - II**

Subject Code: 24BBSBS10003 Subject Name: Engineering Chemistry

(**SECTIONS: E, F, G, H, M, N, O, P, Q**)

Time: 1.15 hrs **Maximum: 30 Marks**

PART – A (2 x 5 = 10 Marks)

Q.1. Answer ALL questions		**CO #**	**BL**
a.	Write Nernst's equation.	**CO2**	**K2**
b.	Write Faradays law of electromagnetic induction.	**CO4**	**K2**
c.	Find the EMF of galvanic cell at standard state given that $E^{o}_{Zn/Zn^{2+}}$ = -0.76V and $E^{o}_{Cu^{2+}/Cu}$ = 0.34V.	**CO3**	**K1**
d.	Distinguish between homopolymer & copolymer?	**CO6**	**K1**
e.	Write the synthesis of PTFE & its two uses.	**CO5**	**K2**

PART – B (10 x 2 = 20 Marks)

Answer ALL Questions		**Marks**	**CO#**	**BL**
2.a.	Explain the working, construction, principle and application of Fuel cell.	**10**	**CO2**	**K2**
	(OR)			
b.	Define corrosion and explain wet corrosion with examples.	**5**	**CO6**	**K2**
c.	What is Galvanization and Tinning?	**5**	**CO3**	**K1**
3.a.	Difference between HDPE & LDPE.	**5**	**CO4**	**K1**
b.	Explain the addition & consideration of polymer with a suitable example.	**5**	**CO5**	**K2**
	(OR)			
c.	Write short notes on: (a) Cathodic protection (b) Galvanization and tinning (c) Corrosion by differential aeration	**10**	**CO4**	**K1**

GANDHI INSTITUTE OF ENGINEERING & TECHNOLOGY UNIVERSITY, GUNUPUR – 765022

B. Tech – I Semester: **CYCLE TEST - II**

Subject Code: 24BBSBS10003 Subject Name: Engineering Chemistry

(**SECTIONS: E, F, G, H, M, N, O, P, Q**)

Time: 1.15 hrs **Maximum: 30 Marks**

PART – A (2 x 5 = 10 Marks)

Q.1. Answer ALL questions		**CO #**	**BL**
a.	Write Nernst's equation.	**CO2**	**K2**
b.	Write Faradays law of electromagnetic induction.	**CO4**	**K2**
c.	Find the EMF of galvanic cell at standard state given that $E^{o}_{Zn/Zn^{2+}}$ = -0.76V and $E^{o}_{Cu^{2+}/Cu}$ = 0.34V.	**CO3**	**K1**
d.	Distinguish between homopolymer & copolymer?	**CO6**	**K1**
e.	Write the synthesis of PTFE & its two uses.	**CO5**	**K2**

PART – B (10 x 2 = 20 Marks)

Answer ALL Questions		**Marks**	**CO#**	**BL**
2.a.	Explain the working, construction, principle and application of Fuel cell.	**10**	**CO2**	**K2**
	(OR)			
b.	Define corrosion and explain wet corrosion with examples.	**5**	**CO6**	**K2**
c.	What is Galvanization and Tinning?	**5**	**CO3**	**K1**
3.a.	Difference between HDPE & LDPE.	**5**	**CO4**	**K1**
b.	Explain the addition & consideration of polymer with a suitable example.	**5**	**CO5**	**K2**
	(OR)			
c.	Write short notes on: (a) Cathodic protection (b) Galvanization and tinning (c) Corrosion by differential aeration	**10**	**CO4**	**K1**

GANDHI INSTITUTE OF ENGINEERING & TECHNOLOGY UNIVERSITY, GUNUPUR – 765022

B. Tech – I Semester: **CYCLE TEST - II**

Subject Code: 23BBSES10002

Subject Name: Elements of Mechanical Engineering

(SECTIONS: E, F, G, H, M, N, O, P, Q)

Time: 1.15 hrs **Maximum: 30 Marks**

PART – A (2 x 5 = 10 Marks)

Q.1. Answer ALL questions		**CO #**	**BL**
a.	Define intensive and extensive properties with examples.	**CO4**	**K1**
b.	The temperature of a system is increased by 27^0 C. what are the corresponding values in ^{0}F and K scale.	**CO4**	**K2**
c.	Differentiate between heat engine and heat Pump.	**CO5**	**K2**
d.	Write down the various benefits of industrial robot.	**CO6**	**K2**
e.	What do you mean by capillarity?	**CO6**	**K1**

PART – B (10 x 2 = 20 Marks)

Answer ALL Questions		**Marks**	**CO#**	**BL**
2.a.	During working stroke of an engine, the heat transfers out of the system was 150 KJ/Kg of working substance. The internal energy also decreased by 400 KJ/Kg of working substance. Determine the work done and state whether the work is done by or on the system.	**5**	**CO4**	**K3**
b.	If the velocity distribution over a plate is given by $u = \frac{2}{3}y - y^2$ in which u is velocity in metre per second at a distance y metre above the plate, determine the shear stress at y = 0 and y = 0.15 m. Take dynamic viscosity of fluid as 8.63 poises.	**5**	**CO6**	**K3**
	(OR)			
c.	A mass of 1.5 kg of air is compressed in a quasi-static process from 0.1 MPa to 0.7 MPa for which pv = constant. The initial density of air is 1.16 kg/m3. Find the work done by the piston to compress the air.	**5**	**CO4**	**K3**
d.	Explain briefly about the basic components of CNC Machine.	**5**	**CO6**	**K2**
3.a.	A turbine operates under steady flow conditions, receiving steam at the following state: Pressure 1.2 MPa, temperature 188°C, enthalpy 2785 kJ/kg and velocity 33.3 m/s. The steam leaves the turbine at the following state: Pressure 20 kPa, enthalpy 2512 kJ/kg, and velocity 100 m/s. Heat is lost to the surroundings at the rate of 0.29 kJ/s. If the rate of steam flow through the turbine is 0.42 kg/s, what is the power output of the turbine in kW?	**5**	**CO5**	**K3**
b.	An inventor claims to have developed an engine that takes in 105 MJ at a temperature of 400 K, rejects 42 MJ at a temperature of 200 K, and delivers 15 kWh of mechanical work. Would you advise investing money to put this engine in the market?	**5**	**CO5**	**K3**
	(OR)			
c.	With neat sketch Explain the working principle of 4 stroke IC engine.	**10**	**CO5**	**K2**

GANDHI INSTITUTE OF ENGINEERING & TECHNOLOGY UNIVERSITY, GUNUPUR – 765022

B. Tech – I Semester: **CYCLE TEST - II**

Subject Code: 23BBSES10002

Subject Name: Elements of Mechanical Engineering

(SECTIONS: E, F, G, H, M, N, O, P, Q)

Time: 1.15 hrs **Maximum: 30 Marks**

PART – A (2 x 5 = 10 Marks)

Q.1. Answer ALL questions		**CO #**	**BL**
a.	Define intensive and extensive properties with examples.	**CO4**	**K1**
b.	The temperature of a system is increased by 27^0 C. what are the corresponding values in ^{0}F and K scale.	**CO4**	**K2**
c.	Differentiate between heat engine and heat Pump.	**CO5**	**K2**
d.	Write down the various benefits of industrial robot.	**CO6**	**K2**
e.	What do you mean by capillarity?	**CO6**	**K1**

PART – B (10 x 2 = 20 Marks)

Answer ALL Questions		**Marks**	**CO#**	**BL**
2.a.	During working stroke of an engine, the heat transfers out of the system was 150 KJ/Kg of working substance. The internal energy also decreased by 400 KJ/Kg of working substance. Determine the work done and state whether the work is done by or on the system.	**5**	**CO4**	**K3**
b.	If the velocity distribution over a plate is given by $u = \frac{2}{3}y - y^2$ in which u is velocity in metre per second at a distance y metre above the plate, determine the shear stress at y = 0 and y = 0.15 m. Take dynamic viscosity of fluid as 8.63 poises.	**5**	**CO6**	**K3**
	(OR)			
c.	A mass of 1.5 kg of air is compressed in a quasi-static process from 0.1 MPa to 0.7 MPa for which pv = constant. The initial density of air is 1.16 kg/m3. Find the work done by the piston to compress the air.	**5**	**CO4**	**K3**
d.	Explain briefly about the basic components of CNC Machine.	**5**	**CO6**	**K2**
3.a.	A turbine operates under steady flow conditions, receiving steam at the following state: Pressure 1.2 MPa, temperature 188°C, enthalpy 2785 kJ/kg and velocity 33.3 m/s. The steam leaves the turbine at the following state: Pressure 20 kPa, enthalpy 2512 kJ/kg, and velocity 100 m/s. Heat is lost to the surroundings at the rate of 0.29 kJ/s. If the rate of steam flow through the turbine is 0.42 kg/s, what is the power output of the turbine in kW?	**5**	**CO5**	**K3**
b.	An inventor claims to have developed an engine that takes in 105 MJ at a temperature of 400 K, rejects 42 MJ at a temperature of 200 K, and delivers 15 kWh of mechanical work. Would you advise investing money to put this engine in the market?	**5**	**CO5**	**K3**
	(OR)			
c.	With neat sketch Explain the working principle of 4 stroke IC engine.	**10**	**CO5**	**K2**

GANDHI INSTITUTE OF ENGINEERING & TECHNOLOGY UNIVERSITY, GUNUPUR – 765022

B. Tech – I Semester: **CYCLE TEST - II**

Subject Code: 23BBSES10001

Subject Name: Basic Electrical and Electronics Engineering

(**SECTIONS: A, B, C, D, I, J, K, L**)

Time: 1.15 hrs **Maximum: 30 Marks**

PART – A (2 x 5 = 10 Marks)

Q.1. Answer ALL questions		**CO #**	**BL**
a.	What are the majority and minority charge carriers in a n-type semiconductor?	**CO3**	**K2**
b.	Define back emf in a DC motor.	**CO5**	**K1**
c.	Define an ideal transformer.	**CO5**	**K2**
d.	Convert $(10011.011)_2$ to a hexadecimal equivalent.	**CO4**	**K1**
e.	Define universal gates.	**CO4**	**K2**

PART – B (10 x 2 = 20 Marks)

Answer ALL Questions		**Marks**	**CO#**	**BL**
2.a.	A single-phase transformer develops 200V at the secondary terminals on no load condition. If the secondary winding has 1000 turns, find the maximum flux in the core. Assume 30V, 50 Hz single phase in the primary.	**5**	**CO5**	**K2**
b.	Derive the EMF equation of a DC generator.	**5**	**CO5**	**K1**
	(OR)			
c.	Explain the operation principle of a single-phase transformer.	**5**	**CO6**	**K1**
d.	A 4 pole, 32 conductors, lap-wound dc shunt generator with terminal voltage of 200 volts delivering 12 amps to the load has armature resistance 2 ohm and field resistance of 200ohms. It is driven at 1000rpm. Calculate the flux per pole in the machine. If the machine has to be run as a motor with the same terminal voltage and drawing 5A from the mains, find the speed of the motor.	**5**	**CO6**	**K2**
3.a.	Explain the operation and waveform of bridge rectifier with suitable circuit diagram.	**5**	**CO3**	**K1**
b.	Explain different types of clampers with suitable circuit diagram and waveforms.	**5**	**CO3**	**K1**
	(OR)			
c.	Define universal gates and design all the fundamental gates using NAND gate only.	**5**	**CO4**	**K2**
d.	Explain p-type and n-type semiconductors.	**5**	**CO4**	**K1**

GANDHI INSTITUTE OF ENGINEERING & TECHNOLOGY UNIVERSITY, GUNUPUR – 765022

B. Tech – I Semester: **CYCLE TEST - II**

Subject Code: 23BBSES10001

Subject Name: Basic Electrical and Electronics Engineering

(**SECTIONS: A, B, C, D, I, J, K, L**)

Time: 1.15 hrs **Maximum: 30 Marks**

PART – A (2 x 5 = 10 Marks)

Q.1. Answer ALL questions		**CO #**	**BL**
a.	What are the majority and minority charge carriers in a n-type semiconductor?	**CO3**	**K2**
b.	Define back emf in a DC motor.	**CO5**	**K1**
c.	Define an ideal transformer.	**CO5**	**K2**
d.	Convert $(10011.011)_2$ to a hexadecimal equivalent.	**CO4**	**K1**
e.	Define universal gates.	**CO4**	**K2**

PART – B (10 x 2 = 20 Marks)

Answer ALL Questions		**Marks**	**CO#**	**BL**
2.a.	A single-phase transformer develops 200V at the secondary terminals on no load condition. If the secondary winding has 1000 turns, find the maximum flux in the core. Assume 30V, 50 Hz single phase in the primary.	**5**	**CO5**	**K2**
b.	Derive the EMF equation of a DC generator.	**5**	**CO5**	**K1**
	(OR)			
c.	Explain the operation principle of a single-phase transformer.	**5**	**CO6**	**K1**
d.	A 4 pole, 32 conductors, lap-wound dc shunt generator with terminal voltage of 200 volts delivering 12 amps to the load has armature resistance 2 ohm and field resistance of 200ohms. It is driven at 1000rpm. Calculate the flux per pole in the machine. If the machine has to be run as a motor with the same terminal voltage and drawing 5A from the mains, find the speed of the motor.	**5**	**CO6**	**K2**
3.a.	Explain the operation and waveform of bridge rectifier with suitable circuit diagram.	**5**	**CO3**	**K1**
b.	Explain different types of clampers with suitable circuit diagram and waveforms.	**5**	**CO3**	**K1**
	(OR)			
c.	Define universal gates and design all the fundamental gates using NAND gate only.	**5**	**CO4**	**K2**
d.	Explain p-type and n-type semiconductors.	**5**	**CO4**	**K1**

GANDHI INSTITUTE OF ENGINEERING & TECHNOLOGY UNIVERSITY, GUNUPUR – 765022

B. Tech – I Semester: **CYCLE TEST - II**

Subject Code: 23BBSHS10002

Subject Name: Human Values and Professional Ethics

(**SECTIONS: E, F, G, H, M, N, O, P, Q**)

Time: 1.15 hrs **Maximum: 30 Marks**

PART – A (2 x 5 = 10 Marks)

Q.1. Answer ALL questions		**CO #**	**BL**
a.	Define the term “Trust”.	**CO3**	**K2**
b.	What is meant by "interconnectedness" in the context of nature?	**CO3**	**K1**
c.	Define the term “self-regulation” in the four orders of nature.	**CO3**	**K2**
d.	What is meant by professional ethics?	**CO4**	**K1**
e.	Explain the term “climate change.”	**CO4**	**K2**

PART – B (10 x 2 = 20 Marks)

Answer ALL Questions		**Marks**	**CO#**	**BL**
2.a.	Describe the role of understanding harmony in the family in building a harmonious society.	**5**	**CO3**	**K2**
b.	Discuss the concept of interconnectedness and its significance in understanding harmony in nature.	**5**	**CO3**	**K2**
	(OR)			**K2**
c.	Elaborate on the relationship between human beings and the rest of nature in the context of mutual fulfillment.	**5**	**CO3**	**K2**
d.	How can understanding harmony in nature contribute to solving environmental challenges?	**5**	**CO3**	**K2**
3.a.	Discuss the role of professional ethics in ensuring workplace harmony and effectiveness.	**5**	**CO4**	**K2**
b.	Define personal ethics and its importance in the workplace.	**5**	**CO4**	**K2**
	(OR)			**K2**
c.	Analyse the causes and impacts of climate change, providing examples.	**5**	**CO4**	**K2**
d.	Explain the Sustainable Development Goals with a focus on sustainable consumption and production patterns.	**5**	**CO4**	**K2**

GANDHI INSTITUTE OF ENGINEERING & TECHNOLOGY UNIVERSITY, GUNUPUR – 765022

B. Tech – I Semester: **CYCLE TEST - II**

Subject Code: 23BBSHS10002

Subject Name: Human Values and Professional Ethics

(**SECTIONS: E, F, G, H, M, N, O, P, Q**)

Time: 1.15 hrs **Maximum: 30 Marks**

PART – A (2 x 5 = 10 Marks)

Q.1. Answer ALL questions		**CO #**	**BL**
a.	Define the term “Trust”.	**CO3**	**K2**
b.	What is meant by "interconnectedness" in the context of nature?	**CO3**	**K1**
c.	Define the term “self-regulation” in the four orders of nature.	**CO3**	**K2**
d.	What is meant by professional ethics?	**CO4**	**K1**
e.	Explain the term “climate change.”	**CO4**	**K2**

PART – B (10 x 2 = 20 Marks)

Answer ALL Questions		**Marks**	**CO#**	**BL**
2.a.	Describe the role of understanding harmony in the family in building a harmonious society.	**5**	**CO3**	**K2**
b.	Discuss the concept of interconnectedness and its significance in understanding harmony in nature.	**5**	**CO3**	**K2**
	(OR)			**K2**
c.	Elaborate on the relationship between human beings and the rest of nature in the context of mutual fulfillment.	**5**	**CO3**	**K2**
d.	How can understanding harmony in nature contribute to solving environmental challenges?	**5**	**CO3**	**K2**
3.a.	Discuss the role of professional ethics in ensuring workplace harmony and effectiveness.	**5**	**CO4**	**K2**
b.	Define personal ethics and its importance in the workplace.	**5**	**CO4**	**K2**
	(OR)			**K2**
c.	Analyse the causes and impacts of climate change, providing examples.	**5**	**CO4**	**K2**
d.	Explain the Sustainable Development Goals with a focus on sustainable consumption and production patterns.	**5**	**CO4**	**K2**

GANDHI INSTITUTE OF ENGINEERING & TECHNOLOGY UNIVERSITY, GUNUPUR – 765022

B. Tech – I Semester: **CYCLE TEST - II**

Subject Code: 23BBSBS10004 Subject Name: Environmental Science

(SECTIONS: A, B, C, D, I, J, K, L)

Time: 1.15 hrs **Maximum: 30 Marks**

PART – A (2 x 5 = 10 Marks)

Q.1. Answer ALL questions		CO #	BL
a.	Write the causes of Soil erosion.	CO3	K2
b.	Write the examples of non-renewable resources.	CO3	K2
c.	Name two boards established for the Air and Water Act.	CO4	K1
d.	Write four objectives of the Wildlife Protection Act.	CO4	K2
e.	Write the Consequences of Deforestation.	CO3	K2

PART – B (10 x 2 = 20 Marks)

Answer ALL Questions		Marks	CO#	BL
2.a.	Differentiate between Conventional and non-conventional energy resources.	5	CO3	K2
b.	Write short notes on (i) Deforestation and (ii) The Air Act.	5	CO4	K2
	(OR)			K2
c.	Illustrate the formation of soil and soil erosion.	5	CO3	K2
d.	What are the sources of freshwater? Discuss the Causes of the Depletion of Water Resources.	5	CO3	K2
3.a.	Illustrate the Water (Prevention and Control of Pollution) Act.	5	CO4	K2
b.	Illustrate Forest Conservation Act.	5	CO4	K2
	(OR)			K2
c.	Differentiate between Renewable Resources and non-renewable Resources.	5	CO3	K2
d.	Write the resources of the forest and the causes of Deforestation	5	CO3	K2

GANDHI INSTITUTE OF ENGINEERING & TECHNOLOGY UNIVERSITY, GUNUPUR – 765022

B. Tech – I Semester: **CYCLE TEST - II**

Subject Code: 23BBSBS10004 Subject Name: Environmental Science

(SECTIONS: A, B, C, D, I, J, K, L)

Time: 1.15 hrs **Maximum: 30 Marks**

PART – A (2 x 5 = 10 Marks)

Q.1. Answer ALL questions		CO #	BL
a.	Write the causes of Soil erosion.	CO3	K2
b.	Write the examples of non-renewable resources.	CO3	K2
c.	Name two boards established for the Air and Water Act.	CO4	K1
d.	Write four objectives of the Wildlife Protection Act.	CO4	K2
e.	Write the Consequences of Deforestation.	CO3	K2

PART – B (10 x 2 = 20 Marks)

Answer ALL Questions		Marks	CO#	BL
2.a.	Differentiate between Conventional and non-conventional energy resources.	5	CO3	K2
b.	Write short notes on (i) Deforestation and (ii) The Air Act.	5	CO4	K2
	(OR)			K2
c.	Illustrate the formation of soil and soil erosion.	5	CO3	K2
d.	What are the sources of freshwater? Discuss the Causes of the Depletion of Water Resources.	5	CO3	K2
3.a.	Illustrate the Water (Prevention and Control of Pollution) Act.	5	CO4	K2
b.	Illustrate Forest Conservation Act.	5	CO4	K2
	(OR)			K2
c.	Differentiate between Renewable Resources and non-renewable Resources.	5	CO3	K2
d.	Write the resources of the forest and the causes of Deforestation	5	CO3	K2