Sub Code: **BEE-101**

Roll No. 2 0 7 2 0 4 1 1 4 7

B. Tech.

Year: I /Sem: I

Test- II(Examination): 2022-23

Subject: Fundamentals of Electrical Engineering

Time: 1 Hr. Max Marks: 10

Note: Attempt ALL questions. Each question carries equal marks

Q1.		Attempt any Two parts of the following. **Q. 1 (a) is compulsory.**	Marks
	a)	(i) Discuss the analogy between electric and magnetic circuits. (ii) Explain the working principle of single phase transformer. Also derive the EMF Equation of transformer.	3
	b)	Define open circuit test and short circuit test. A single phase transformer gave following test results: Rating 100 kVA, 220 V/11kV, 50 Hz OC test: 220 V, 45 A, 2 kW SC test: 500 V, 9.09 A, 3 kW Determine equivalent circuit parameters.	2
	c)	Define hysteresis and eddy current loss. A single phase transformer has total iron loss of 2500 W at 50 Hz, 400V input voltage supply. When the applied voltage is 200V, 25Hz the total iron loss is 850 W. calculate the hysteresis and eddy current loss at 400V, 50Hz.	2
Q2.		Attempt any Two parts of the following. **Q. 2(a) is compulsory.**	
	a)	(i) Derive the Torque equation of DC machine. (ii) A 20 kW, 200 V shunt generator has an armature resistance of 0.05 Ω and a shunt field resistance of 200Ω. Calculate the power developed in the armature when it delivers rated output.	3
	b)	Discuss the methods of starting of single phase Induction motors.	2
	c)	Explain the construction and working principle of DC machine.	2

BHM-101	ROLL NUMBER	2	0	2	2	0	4	1	1	4	2

B. Tech.
MINOR TEST II (EXAMINATION) 2022-23
PROFESSIONAL COMMUNICATION

TIME: 1 Hour **Max. Marks: 20**

Note: Attempt all questions.

Q. 1 Attempt any two parts of the following. Q 1 (a) is compulsory.

a) What do you understand by note-taking, note making and summarizing? (6)
b) Differentiate between official and commercial letters. (4)
c) Explain different types of reports. (4)

Q. 2 Attempt any two parts of the following. Q 2 (a) is compulsory.

a) What is a bibliography? How you will make it? (6)
b) Describe the research paper? Explain its content. (4)
c) How flowcharts and diagrams are useful in writing? (4)

Roll No. | | | | | | | | | | |

BSM-142

Bachelor of Technology
Branch: ECE Year: I. Sem: I
Test-II 2022.-23

Advanced Environmental Chemistry

Time: **1 Hr.** Max Marks: **10**

Note: Attempt **ALL** questions. ALL questions carry equal marks.

Q1.		*Attempt any Two parts of the following. Q. 1 (a) is compulsory.*	Marks	CO	BL	PO	PI Code
	a)	Explain the term "water pollution". Give examples the major sources of surface water pollution and ground water pollution. How water pollution can be controlled?	3	3, 4	2	7, 1	7.1.2
	b)	What is ocean (or marine) pollution? How the water in ocean gets contaminated? How ocean pollution can be controlled.	2	3, 4	2	7, 1	1.2.1
	c)	Write a short note on coagulation and flocculation method of the treatment of water.	2	6	1	7, 1	1.2.1
Q2.		***Attempt any Two parts of the following. Q. 2 (a) is compulsory.***					
	a)	What are the major sources of soil pollution ? How does soil pollution affect soil productivity? What measures can be taken to prevent soil pollution.	3	3, 4	1	7, 1	7.2.1
	b)	What are the harmful effects of nuclear pollution? Explain how the nuclear waste can be managed.	2	4	2	7, 1	7.2.2
	c)	What are solid wastes? How solid waste can be managed? Describe one method for solid waste management.	2	4	2	7, 1	7.2.1

Sub Code BSM-127

Roll No. | 2 | 0 | 2 | 2 | 0 | 4 | 1 | 1 | 4 | 4 |

B. Tech.- 1st Year
Semester-I (Odd Sem)
TEST-2 (EXAMINATION) 2022 – 2023
Engineering Physics

Time: 1 Hrs. **Max Marks: 10**

Note: Attempt ALL questions.

			Marks	CO	BL	PO	PI Code
Q1.		**Attempt any two parts of the following. Q.1 (a) is compulsory. Unit-III**					
	a)	Explain the concept of electrostatics and magnetostatics. Elaborate the laws of electrostatics and magnetics in differential and integral form. Explain their physical significances.	**3**	**3**	**1**	**1**	
	b)	Prove that electromagnetic waves are transverse in nature.	**2**	**3**	**1**	**1**	
	c)	For silver, and mhos/m. Calculate the skin depth at 10^8 Hz frequency. $\sigma = 3 \times 10^7$ $\mu = \mu_0$ =	**2**	**4**	**1**	**1**	
Q2.		**Attempt any two parts of the following. Q.2 (a) is compulsory. Unit-IV**					
	a)	What is the band theory of solids? Classify conductors, insulators and semiconductors on the basis of band theory of solids.	**3**	**5**	**1**	**1**	
	b)	Explain the variation in magnetisation with applied magnetic field in Type I and Type II superconductors. Give some examples of both types.	**2**	**6**	**1**	**1**	
	c)	Introduce the use and applications of nanoscience and technology. Discuss the important properties of nanomaterials.	**2**	**6**	**1**	**1**	

BL – Bloom's Taxonomy Levels (1- Remembering, 2- Understanding, 3 – Applying, 4 – Analysing, 5 – Evaluating, 6 - Creating)
CO – Course Outcomes
PO – Program Outcomes
PI Code – Performance Indicator Code

BSM- 101

B. Tech.
Year: I Semester: I
Test -2(Minor Examination): 2022-23
Title of Subject: Calculus and linear algebra

Time: 1 Hrs. Max Marks: 15

Note: Attempt ALL questions. Each question carries equal marks

		Marks	CO	BL	PO	PI Code
Q1.	Attempt any two **parts** of the following. Q1(a) is compulsory.					
a)	(i)Change the order of integration and evaluate $\int_0^{a/\sqrt{2}} \int_x^{\sqrt{a^2-x^2}} y^2 \, dx \, dy$.	3		2,3	1	1.1.1
	(ii) Find by double integral the are enclosed by the pair of curves $y = 2 - x$ and $y^2 = 2(2 - x)$.	2				
b)	Show that $\beta(m,n) = \frac{\Gamma m \, \Gamma n}{\Gamma(m+n)}$.	3	2	3	1	1.1.1
c)	Show that $\int\int\int \frac{dx\,dy\,dz}{(x+y+z+1)^3} = \frac{1}{2}log2 - \frac{5}{16}$, the integral being taken throughout the volume bounded by the planes $x = 0, y = 0, z = 0, x + y + z < 1$.	3	2	1	1	1.1.1
Q2.	Attempt any two **parts** of the following. Q2(a) is compulsory.					
a)	(i)Find the directional derivative of $f(x,y,z) = e^{2x}\cos yz$ at (0, 0, 0) in the direction of the tangent of the curve $x = a\,sint, y = a\cos t, z = at$ at $t = \frac{\pi}{4}$.	2	1	2	1	1.1.1
	(i) Find the scalar potential of the vector function $F = yz\,i + zx\,j + xy\,k$ if given vector function is irrational.	2				
b)	Show that $r^n \vec{r}$ is solenoidal if $n = -3$ and irrational for all values of n where $\vec{r} = x\hat{\imath} + y\hat{\jmath} + z\hat{k}$ and $r = \lvert\vec{r}\rvert$.	3	1	3	1	1.1.1
c)	Evaluate line integral $\int_c (xy\,dx + x^2 dy)$ around the sides of the square with vertices (0, 0), (1, 0), (1, 1), (0, 1). Also, evaluate $\int_S \vec{F}.\hat{n}\,dS$ given that $\vec{F} = yz\,\hat{\imath} + zx\,\hat{\jmath} + xy\,\hat{k}$ and S is the part of the surface $x^2 + y^2 + z^2 = 1$ which is lies in the first octant.	3	1	3	1	1.1.1