BSM-127 Roll No. | | | | | | | | | | | |

B. tech-1st Year
(SEM-I) Odd Semester
TEST-2 (EXAMINATION) 2021 - 2022

Engineering Physics-II

Time: 1 Hrs. Max. Marks: 10

Note: Attempt all questions.

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

(a) Derive differential form of Maxwell's first (Gauss law of electrostatics) and third equation (Faraday's law) from its integral form. Explain its physical meaning. 3

(b) Discuss the shortcoming of Ampere's law and how the introduction of Displacement current cures this problem. 2

(c) A silver foil is exposed to microwave radiation at a frequency of 10^{10} Hz. Calculate the skin depth if its conductivity is 3×10^7 S/m (given $\mu = \mu_0$). 2

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

(a) Calculate the carrier concentration of electrons in conduction band of intrinsic semiconductor. Discuss its temperature dependence in detail. 3

(b) What are Cooper pairs? Discuss their role in BCS theory of superconductors. Write down the important characteristics of superconductors. 2

(c) Discuss the following: 2

(i) Fullerene or Buckyball

(ii) CNTs (Carbon Nanotubes)

Sub.-Code: BEE-101

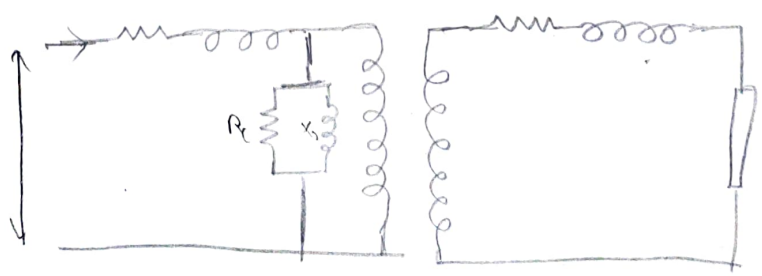
Roll No. | | | | | | | | | | | |

B. Tech.
Year: 1st Semester: 1st
Test-II (Examination): 2021-22
Fundamental of Electrical Engineering

Time: 1 Hr. Max Marks: 10

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

		Marks
Q1.	Attempt any Two parts of the following. Q. 1 (a) is compulsory.	
a)	Explain the working principle of single phase transformer. Also explain its construction.	3
b)	Explain the following terms- i. MMF ii. B-H curve	2
c)	Discuss Hysteresis and eddy current losses. How can we reduce these losses?	2
Q2.	Attempt any Two parts of the following. Q. 1 (a) is compulsory.	
a)	Explain the construction and working principle of DC motor with neat diagram. Also write classification of DC motors.	3
b)	Discuss the different types of rotor construction of 3 phase induction motor?	2
c)	Write the applications of different types of DC motors?	2



BSM-142 Roll No. 2 0 2 1 0 4 1

B.Tech.

Odd Semester

MINOR TEST II 2021-2022

Subject Name: Advanced Environmental Chemistry (for ECE)

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

Note : Answer all questions

Q1. Attempt any three of the following questions. Q1(a) is compulsary.

(a) (i) Differentiate between BOD and COD. 1
(ii) Explain the term Eutrophication. 1
(iii) Differentiate between coagulation and flocculation. 1

(b) List the major ground water pollutants and its effect on human health. 2

(c) What are the common primary treatment technique for sewage. Explain. 2

Q2. Attempt any three of the following questions. Q2.(a) is compulsary.

(a) Discuss the major causes and effects of soil pollution. 3

(b) Explain the incineration method for discarding waste. 2

(c) What are nuclear or radioactive wastes? Discuss radioactive waste management in brief. 2

Subject Code: BHM-101/151 **Roll No** 2 0 2 1 0 9 4 0 2 2

B. Tech

SEM I ODD SEMESTER

TEST-2 (EXAMINATION) 2021-2022

Professional Communication (BHM-101/151)

Time: 1 Hr. **Max. Marks: 20**

Note- Answer All the Questions

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

a) Define the following terms: 6

1. Note Making and Note Taking
2. Notice and Memo
3. Resume and Curriculum Vitae

b) Explain the meaning of Agenda? Draw the format of it. 4

c) What do you understand by Job Application? Draw its format. 4

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

a) *Explain briefly the steps of writing a Research Paper?* 6

b) *What do you mean by Bibliography? Differentiate it from Referencing.* 4

c) *What are the uses of Graphics in writing?* 4

Roll No.

BSM-01

B. Tech.

Year: I Semester: I

Test-II (Examination): 2021-22

Calculus and Linear Algebra

Max Marks: 20

Time: 1 Hr.

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

			Marks	CO	BL	PO	PI Code
Que1.		Attempt any Two parts of the following. Q. 1 (a) is compulsory.					
	a)	(i) Evaluate following integral by changing the order of integration $\int_0^1 \int_x^{\sqrt{2-x^2}} \frac{x}{\sqrt{x^2+y^2}} dydx$ (ii) Evaluate $\int_0^1 (1-x^3)^5 dx$	6	4	2/3	1	1.1.1
	b)	Evaluate $\int_0^{\log 2} \int_0^x \int_0^{x+y} e^{x+y+z} dxdydz$	4	4	3	1	1.1.1
	c)	Show that $\Gamma m\, \Gamma\left(m+\frac{1}{2}\right) = \frac{\sqrt{\pi}}{2^{2m-1}} \Gamma(2m)$	4	4	3	1	1.1.1
Que 2.		Attempt any Two parts of the following. Q. 2 (a) is compulsory					
	~~a)~~	~~(i)~~ In what direction from the point $(1, 1, -2)$, the directional derivative of $\phi = x^2 - 2y^2 + 4z^2$ is maximum? Also find the maximum value of directional derivative. ~~(ii)~~ Show that $div(grad\, r^n) = \nabla^2 r^n = n(n+1)r^{n-2}$	6	3	2/3	1	1.1.1
	~~b)~~	Evaluate $\iint_S \vec{F}.\vec{n}\, dS$ if $\vec{F} = 4y\hat{i} + 18z\hat{j} - x\hat{k}$ and S is the surface of the plane $3x + 2y + 6z = 6$ contained in the first octant.	4	3	2/3	1	1.1.1
	c)	Show that $r^n\vec{r}$ is solenoidal if $n = -3$ and irrotational for all values of n. Here $\vec{r} = x\hat{i} + y\hat{j} + z\hat{k}$ and $r = \lvert\vec{r}\rvert$.	4	3	3	1	1.1.1