

**Guru Nanak Dev Engineering College, Ludhiana**  
**Department of Electrical Engineering**

Program	B.Tech(CSE, IT)	Semester	2 <sup>nd</sup>
Subject Code	ESC-101	Subject Title	BEE
MST No.	2	Course Coordinator(s)	Ranjit Singh, Baljeet Singh, Karanbir Singh, Sukhpal Singh, Balwinder Singh
Max. Marks	24	Time Duration	1 hour 30 minutes
Date of MST	25 <sup>th</sup> , April 2024	Roll Number	

Note: Attempt all questions

Q. No.	Question	COs, RBT level	Marks
Q1	What is the importance of earthing in electrical terminology?	CO2, L2	2
Q2	The primary winding of 50Hz single phase transformer has 480 turns and peak value of flux is 0.06 Wb. The secondary winding has 20 turns. Find the primary and secondary voltage.	CO5, L1	2
Q3	Discuss the various losses in a transformer. Give the condition for maximum efficiency of transformer.	CO4, L4	4
Q4	A 3 phase induction motor is wound for 4 poles and is supplied from 50 Hz system. Calculate (i) Synchronous speed (ii) Speed of the motor when slip is 4% (iii) Rotor Current frequency when motor runs at 600 rpm	CO4, L5	4
Q5	Discuss various components of LT Switchgear.	CO1, L2	4
Q6	Describe the construction and working of 3 phase Induction motor.	CO3, L6	8

**Course Outcomes (CO)**

Students will be able to

1	Analyze the behavior of electrical and magnetic circuits.
2	Inculcate the understanding about the AC fundamentals.
3	Realize the requirement of transformers in transmission and distribution of electric power and other applications.
4	Select the type of generator / motor required for a particular application
5	Analyze the various electrical networks.
6	Understand the components of low voltage electrical installations.

RBT Classification	Lower Order Thinking Levels (LOTS)			Higher Order Thinking Levels (HOTS)		
	L1	L2	L3	L4	L5	L6
RBT Level	Remembering	Understanding	Applying	Analyzing	Evaluating	Creating

Guru Nanak Dev Engineering College, Ludhiana  
Department of Applied Science

Program	B.Tech. (CSE/IT)	Semester	1 <sup>st</sup>
Subject Code	BSC-103	Subject Title	Mathematics 1
Mid Semester Test (MST) No.	2 <sup>nd</sup>	Course Coordinator(s)	Prof. Rajbir Kaur, Prof. Sukhminder Singh, Dr. Sandeep Kaur
Max. Marks	24	Time Duration	1 hour 30 minutes
Date of MST	22 <sup>nd</sup> April, 2024	Roll Number	

Note: All questions are compulsory.

Q.No.	Question	COs, RBT level	Marks
Q1	Evaluate $\lim_{x \rightarrow \infty} \left(1 + \frac{1}{x}\right)^x$ .	CO3, L2	2
Q2	Evaluate the improper integral $\int_{-1}^1 \frac{1}{x^3} dx$ .	CO2, L5	2
Q3	Test the convergence of the series: $1 + \frac{2x}{2!} + \frac{3^2 x^2}{3!} + \frac{4^3 x^3}{4!} + \dots + \frac{(n+1)^n x^n}{(n+1)!} + \dots$ $\dots \rightarrow \infty.$	CO6, L3	4
Q4	Expand $f(x) = \log(1+x)$ in powers of $x$ .	CO3, L3	4
Q5	Prove the following relation of beta and gamma functions: $\beta(m, n) = \frac{\gamma(m)\gamma(n)}{\gamma(m+n)}$	CO2, L5	4
Q6	Determine a matrix P which transforms the matrix $\begin{bmatrix} 1 & 1 & 3 \\ 1 & 5 & 1 \\ 3 & 1 & 1 \end{bmatrix}$ into a diagonal form.	CO1, L5	8

Guru Nanak Dev Engineering College, Ludhiana			
Department of Applied Sciences			
Program	B.Tech.(CSE and IT)	Semester	2
Subject Code	BSC-101	Subject Title	Physics
Mid Semester Test (MST) No.	2	Course Coordinator(s)	Dr. Harpreet Kaur, Dr. Randhir Singh, Dr. Paramjit Singh, Dr. Amarjot Kaur, Dr. Jaspreet Singh
Max. Marks	24	Time Duration	1 hour 30 minutes
Date of MST	24, APRIL, 2024	Roll Number	
Note: Attempt all questions			

Q. No.	Question	COs, RBT level	Marks
Q1	If $\phi(x, y, z) = 2x^3z - 3xy + 3x^3z^2$ , find the gradient of $\phi$ at point (1, -2, 1).	CO3, L1	2
Q2	Compare damped and undamped oscillations.	CO5, L5	2
Q3	(a) Determine the curl and divergence of $F(x, y, z) = 2x^2y^3\hat{i} + x^3z^2\hat{j} + 3xyz\hat{k}$ at point (1, 2, -1). (b) What will be the electric field vector $E$ and its magnitude at point P (-1, 2, 1) for the electric potential $V(x, y, z) = 5x^2 + x^2y^2 - 2\log z$ .	CO1, L3	(2+2=4)
Q4	Derive mathematical relationship between phase velocity & group velocity. Also show that particle velocity is equal to group velocity for non-relativistic case of motion.	CO1, L3	4
Q5	a) A simple harmonic motion is represented by $x(t) = 20\pi \sin(0.50(t+0.05))$ . Write down its amplitude, angular frequency, frequency and initial phase of displacement is measured in m and time in s. b) Show that total energy of simple harmonic oscillator is constant at any instant of time.	CO3, L3 CO4, L4 CO4, L4	(2+2=4)
Q6	(a) Write Max Born's interpretation of wave function. Derive time independent Schrödinger wave equation for 1-D motion of a free particle and give its importance. (b) An electron is confined to one dimensional potential box of length 3Å. Estimate the energies corresponding to the ground state and 2 <sup>nd</sup> excited quantum states in eV. ( $h = 6.626 \times 10^{-34}$ Js, mass of an electron = $9.1 \times 10^{-31}$ kg). (c) Calculate de-Broglie wavelength of i) a proton accelerated through a potential difference of 300 V and ii) 10 kg object moving with speed of 2 m/s. Given $h = 6.63 \times 10^{-34}$ Joule-sec, $m_p = 1.67 \times 10^{-27}$ kg, $1\text{eV} = 1.6 \times 10^{-19}$ Joule.	CO3, L6 CO3, L3 CO3, L5	(4+2+2=8)

Course Outcomes (CO): Students will be able to

1	Solve the problems in the fields of electromagnetism, lasers and fiber optics.
2	Apply the knowledge acquired from the study of semiconductors to identify their use in latest technology.
3	Recognise the inadequacy of classical mechanics for certain physical problems and thus find the solutions of these problems using principles of quantum physics.
4	Comprehend the concept of oscillations and hands to implement the same in the theory of machines.
5	Understand the basic characteristics of materials relevant to engineering and technology applications.
6	Apply multidisciplinary knowledge of science for reviewing complex problems from different angles/perspectives and to find the best possible solution/model.

RBT Classification	Lower Order Thinking Levels (LOTS)			Higher Order Thinking Levels (HOTS)		
RBT Level Number	L1	L2	L3	L4	L5	L6
RBT Level Name	Remembering	Understanding	Applying	Analyzing	Evaluating	Creating

**Guru Nanak Dev Engineering College, Ludhiana**  
**Department of Applied Science**

Program	B.Tech.(CSE) E	Semester	2
Subject Code	ESC-103	Subject Title	Engineering Graphics And Design
Mid Semester Test (MST) No.	1	Course Coordinator(s)	Jaswinder singh
Max. Marks	24	Time Duration	1 hour 30 minutes
Date of MST	26 -4-2024	Roll Number	2315258

Note: Attempt all questions

Q. No.	Question	COs, RBT level	Marks
Q1	Differentiate between right and oblique solids	CO1, L1	2
Q2	What is the shape obtained by development of a cone?	CO1, L2	2
Q3	A right regular pentagonal prism, side of base 25 mm and 60 mm long, rests on one of its base corners on ground plane such that its long edge containing that corner is inclines to the ground plane at 45°. Draw its projections in third angle	CO2, CO3, CO4, L4	4
Q4	A right circular cone, diameter of base 45 mm, axis 55 mm long. Rests on its base on HP. A section plane perpendicular to both HP and VP cuts the cone 8 mm away from the axis. Draw its front view, top view and left side view	CO3, L3	4
Q5	Differentiate between line and ray, copy and array, trim and delete, move and scale	CO2, CO3, CO4, L4	4
Q6	Draw isometric projections of a cylindrical block of 50 mm diameter and 20 mm thickness having a cube of 25 mm side resting centrally on top of it, which in turn is having a sphere of 25 mm diameter resting centrally on top of it	CO2, CO3, CO4, L4	8

**Course Outcomes (CO)**  
*Students will be able to*

1	Understand various terms used in engineering drawing and Interpret the drawing in terms of Engineering requirement.
2	Conceptualize, and deliver the fundamentals of engineering drawing for any given application
3	Apply rules and conventions as per International Standards for engineering drawing.
4	Learn and apply orthographic as well as isometric projections as per engineering requirement.
5	Integrate ideas for offering efficient and effective solutions to the engineering problems
6	Use computer to draw engineering drawings (2D) and basic 3D models.

RBT Classification	Lower Order Thinking Levels (LOTS)			Higher Order Thinking Levels (HOTS)		
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RBT Level Name	Remembering	Understanding	Applying	Analyzing	Evaluating	Creating

**Guru Nanak Dev Engineering College, Ludhiana**  
**Department of Applied Science**

<b>Program</b>	B.Tech. (CSA, CSB, CSC, CSD, CSE, ITC, ITB)	<b>Semester</b>	I
<b>Subject Code</b>	HSMC-103	<b>Subject Title</b>	PEEM
<b>Mid Semester Test No.</b>	2	<b>Course Coordinator</b>	Dr. Puran Singh Pf. Jasmine Kaur
<b>Max. Marks</b>	24	<b>Time Duration</b>	1 hour 30 minutes
<b>Date of MST</b>	23-04-2024	<b>Roll Number</b>	

**Note:** Attempt all questions

Q. No.	Question	COs, RBT level	Marks
Q1	Differentiate between cost and price	CO1, L1	2
Q2	Units of labour	TP	MP
	1	10	- 10
	2	30	- 20
	3	45	- 15
	Calculate the Missing figures.		
Q3	Nature plays role in diminishing returns and man plays role in increasing returns. Comment.	CO6, L4	4
Q4	Explain the concept of Learning curve.	CO3, L2	
Q5	Explain the relation between TFC, TVC, TC		4
Q6	Calculate I. Break even point in units II. Break even sales III. P/V ratio IV. Margin of Safety Given: Fixed cost= Rs 9000 Selling Price= Rs 5 per unit Variable cost= Rs 3 Per unit <b>Actual sales = Rs 30,000</b>	CO3, L3, L4  CO6, L6	4  8

**Course Outcomes (CO) Students will be able to**

1	Understand economics and basic concepts.
2	Understand demand and its application in analyzing consumer behavior.
3	Evaluate cost of various factors of production.
4	Ensure effective and efficient use of various cost analysis.
5	Apply various techniques for replacement studies.
6	Evaluate various factors of production and ensure its applications for cost reduction.

RBT Classification	Lower Order Thinking Levels			Higher Order Thinking Levels		
	L1	L2	L3	L4	L5	L6
RBT Level Number						
RBT Level Name	Remembering	Understanding	Applying	Analyzing	Evaluating	Creating