Vidyavardhini's College of Engineering and Technology, Vasai (West)

First Year Engineering

Academic Year: 2024−2025

Internal Assessment Test-I (IAT-I)

Subject/Code: Elective Physics/BSC2023 **NEP−2020** **Semester: II**
Max. Marks / Duration: 15 / 1 Hr **Date: 28/02/2025**
Instructions: All questions are compulsory and figures to the right indicates full marks

Q. No.	Questions	Marks	BL	CO
Q1	**Each question of two marks (solve any three)**	**6**		
(a)	Define the following terms: (i) Calibration (ii) Sensitivity	2	1	1
(b)	A researcher measures the following data (x, y): (1, 1), (9, 3), (36, 6). Find the equation of the best-fit line $y = mx + c$ using the least squares method.	2	3	1
(c)	What is the sample mean and sample standard deviation of the measurement: 10.2, 10.4, 10.3 and 10.5.	2	3	1
(d)	Differentiate between accuracy and precision.	2	2	1
Q2	**Solve any one**	**4**		
(a)	What is an optical flat? Describe its application in checking the flatness of a surface using fringe patterns.	4	2	2
(b)	Explain the surface contour test. A scratched surface is tested using an optical flat using a light of wavelength 5893 A°. If the distance between two fringes is 1 mm and the distance due to scratch is 0.5μm. Determine the depth of the scratch.	4	3	2
Q3	**Solve any one**	**5**		
(a)	Explain the construction and working of an optical transducer. Give two examples of an optical transducers.	5	2	3
(b)	What is piezoelectric effect? Explain the construction and working of piezoelectric transducer.	5	2	3

BL−Bloom's Taxonomy Levels (1−Remembering, 2−Understanding, 3−Applying, 4−Analyzing , 5−Evaluating, 6−Creating)
CO−Course Outcomes
CO1: To provide students with a basic understanding of measurements in the field of basic engineering.
CO2: To explain the basic importance of interference in the field of measurements.
CO3: To learn the foundation of transducers in the area of measurements.