	Parul University **Faculty of Engineering and Technology** **Parul Institute of Engineering and Technology** **Department: AI-ML/AI-RO/AI/AI-DS/CSE/MICRO/SAP/QUICK/ORACLE/IT/AERO**		
Subject Name	**PROBABILITY, STATISTICS AND NUMERICAL METHODS**	**A.Y**	**2025/2026**
Subject Code	**303191251**	**Semester**	**4^{th}**
Chapter-3			
Sr No	**Question**	**COs**	**B.T**
1	A sample mean is 52, σ=10, n=64. Test if population mean is 50 at 5% level.	3	4
2	Test if two means differ: sample1 (n1=50, mean1=30, SD1=4), sample2 (n2=40, mean2=32, SD2=5).	3	4
3	A population proportion is claimed to be 0.45; sample proportion = 0.52 from n=200. Test claim.	3	5
4	Test equality of two variances: $s1^2$=12 (n1=20), $s2^2$=18 (n2=25).	3	5
5	Perform χ^2 goodness-of-fit test on observed data: 12,15,18,20,16,19 for a fair die.	3	6
6	Test if new teaching method increases average marks: sample mean=78, μ=75, SD=8, n=30.	3	4
7	Perform test of independence for contingency table of gender vs preference.	3	6
8	Distinguish Type-I and Type-II errors with examples.	3	2
9	Explain steps in hypothesis testing process.	3	2
10	Test if machine produces items with σ=5 when sample SD=6.2 for n=35.	3	4