Code - 2019

G. S. Mandal's

Maharashtra Institute of Technology, Aurangabad

(An Autonomous Institute)

END SEMESTER EXAMINATION

Second Year B.Tech (ME) – Feb/Mar-2023

Course Code :MED-203 **Course Name :Metrology and Quality Control**

Duration : 2 Hrs **Max. Marks : 50** **Date :** 08/02/2023

08 FEB 2023

Instructions :

i) **All questions are compulsory**

ii) **Assume suitable data wherever necessary and clearly state it**

iii) **Figures to right indicate full marks**

Q. 1	Answer any five(Marks:10)				
		Marks	CO	BL	PI
a)	What is accuracy and precision?	2	CO1	1	1.3.1
b)	Define process capability	2	CO1	1	1.3.1
c)	What is tolerance?	2	CO1	1	1.3.1
d)	Classify methods of measurement.	2	CO1	2	2.1.3
e)	Compare line standard with end standard	2	CO2	2	2.1.3
f)	What are the benefits of acceptance sampling?	2	CO1	1	1.3.1
g)	What are the limitations of statistical quality control?	2	CO4	1	1.3.1
h)	Discuss the term surface terminology	2	CO1	1	1.3.1
Q.2	Explain with neat sketch working principle of micrometer OR Explain the working principle of profile projector.	8	CO2	5	5.1.1
Q.3	Apply the use of co-ordinate measuring machine for determination of dimension of a component.	8	CO3	3	3.1.3
Q.4	Analyze the following data of measurement and comment on process capability by representing it on control chart.	8	CO4	4	4.1.2

Sample Number	1	2	3	4	5	6	7	8	9	10
$\bar{X}$	43	49	37	44	45	37	51	46	43	47
R	5	6	5	7	7	4	8	6	4	6

Given the following control chart constraint for : n = 5, A_2 = 0.58, D_3 = 0 and D_4 = 2.115

Q.5	Distinguish between producers' risk and Consumer's risk with suitable example. **OR** Explain Quality of Design and Quality of conformance. Discuss the factors affecting on it.	8	CO6	5	5.1.1

Q.6	Explain the operating characteristic curve and its importance in acceptance sampling.	8	CO6	5	5.1.1
	OR				
	In the measurement of surface roughness, heights of 20 successive peaks and valley were recorded over a length of 20 mm. Calculate CLA and RMS Value of the surface over a given data. 13,10,15,22,16,32,25,26,24,9,11,16,14,21,18. Microns.		CO5		

Note:- All course outcomes shall be addressed.