Enrollment No: _____ Exam Seat No:_____

C.U.SHAH UNIVERSITY

Winter Examination-2019

Subject Name : Mechanical Measurement & Metrology

Subject Code : 4TE04MMM1 Branch: B.Tech (Mechanical)

Semester: 4 Date: 24/09/2019 Time: 02:30 To 05:30 Marks: 70

Instructions:

(1) Use of Programmable calculator & any other electronic instrument is prohibited.
(2) Instructions written on main answer book are strictly to be obeyed.
(3) Draw neat diagrams and figures (if necessary) at right places.
(4) Assume suitable data if needed.

Q-1 **Attempt the following questions:**

a) Define the term "Range". 2

b) What is Metrology? 2

c) What is the main function of surface plate? 2

d) Write the mathematical equation for linearity. 1

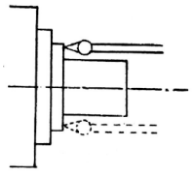
e) Give full form of NPL. 1

f) 1

Abovc figure indicates measuremtn of _____.

g) Permissible variation in size or dimension is called _____. 1

h) 1

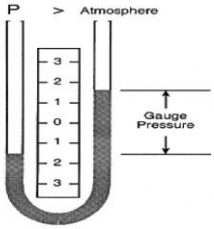


Which alignment test is this?

i) Draw only Bellow type actuating mechanism. 1

j) 1 Pascal = _____ N/m^2 1

k) 1



Which pressure is represented by the above figure? Positive or Negative?

Attempt any four questions from Que. 2 to Que. 8.

Q-2	(a)	Define the term "error". What are the main causes due to which systematic errors occur?	**7**
	(b)	Draw and discuss the working of Type – A vernier caliper with neat sketch. Set the following readings using 0.02 mm caliper. (i) 30.80 mm (ii) 45. 90 mm	**7**
Q-3	(a)	Draw and discuss the construction and working of Dead weight pressure gauge tester.	**7**
	(b)	Draw and explain the construction and working of Hot wire anemometer.	**7**
Q-4	(a)	Discuss the applications of Sine bar with neat sketches.	**7**
	(b)	Stating a suitable example explain the working of Angle gauges.	**7**
Q-5	(a)	Discuss the construction and working of outside micrometers.	**7**
	(b)	Compare and differentiate the line standard and end standard.	**7**
Q-6	(a)	Draw and discuss construction and working of Total radiation pyrometers.	**7**
	(b)	Discuss the laws of thermocouples.	**7**
Q-7		Draw and discuss the working of all elements of generalized measurement system.	14
Q-8	(a)	Explain with neat sketches (i) Levelling of the lathe machine (ii) Axial slip of main spindle and true running of face of spindle nose.	**7**
	(b)	Discuss in detail the types of inputs used in measurement systems.	**7**