Registration no:

2nd Sem M.Tech Regular/ Back Examination – 2014-15
METROLOGY AND NON-DESTRUCTIVE TESTING
BRANCH(S): CAD/CAM
Time: 3 Hours
Max marks: 70
Q.CODE: T407
Answer Question No.1 which is compulsory and any five from the rest.
The figures in the right hand margin indicate marks.

Q1	Answer the following questions:	(2 x 10)
a)	What are the important features of CMM?	
b)	Define the term precision & accuracy with suitable example.	
c)	What do you mean by is static characteristic and dynamic characteristic?	
d)	What are the different types of waves?	
e)	What is sensitivity and range? Differentiate between the two with suitable example.	
f)	What are the operational characteristics of x ray equipment?	
g)	Justify the 3σ limits as control limits in any control chart.	
h)	What are the important indices for measuring the process capability?	
i)	Is Microprocessors in metrology is beneficial? Justify.	
j)	What do u means by calibration? Write the steps in performing it?	

Q2	a)	What do you mean by UMM? Explain Briefly about UMM.	(5)
	b)	Draw the block diagram of generalized measurement system and explain different stages with examples.	(5)

Q3	a)	Explain in detail about single sampling and double sampling methods. Write down the advantages and disadvantages of acceptance sampling plan over 100% inspection.	(5)
	b)	Explain the construction and interpretation of mean chart and range chart.	(5)

Q4	Why an Image Shearing Microscope is used in metrology? Explain briefly.	(10)

Q5	a)	Explain briefly about use of microscope in metrology	(5)
	b)	Explain the general characteristics of waves	(5)

Q6	a)	What is penetrating agents? What are characteristics of liquid penetrates?	(5)
	b)	Explain the various types of co-ordinate measuring machines with a neat sketch.	(5)

Q7	a)	What is the principle operation of magnetic particles?	(5)
	b)	Elaborately explain the principles of acoustic emission techniques.	(5)

Q8		Answer any two questions	(5 x 2)
	a)	Machine vision technology	
	b)	properties of d and x rays	
	c)	pulse echo method	
	d)	ABC standard	