Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

P.D.D.C. Sem- II Remedial Examination Nov / Dec. 2010

Subject code: X21903

Subject Name: Mechanical Measurement & Metrology

Date: 01 / 12 /2010 **Time: 10.30 am – 01.00 pm**

Total Marks: 70

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Q.1	**(a)**	Enlist various elements of generalized measurement system. Explain in brief the function carried out by each element	**07**
	(b)	Define following terms (1) measurand (2) inspection (3)calibration	**03**
	(c)	Draw the sketch indicating reading of (1) 23.78 mm (2) 73.78 mm on a micrometer Mention the micrometer range to be used.	**04**
Q.2	**(a)**	Describe construction and applications of (1) Dial indictor (2) Bevel protractor	**07**
	(b)	Define the following terms (1) Straightness (2) Circularity (3) cylindricity (4) flatness (5) CLA & RMS related to Surface roughness (6) lay	**07**
		OR	
	(b)	Define the following terms (1)Threshold (2) Sensitivity of manometer (3) Hysteresis (4) pyrometry (5) Dead zone (6) Geometrical irregularities of 3rd &4th order	**07**
Q.3	**(a)**	Compare ventury meter & orifice meter as a flow measuring device.	**07**
	(b)	Explain the procedure ti calibrate the bourdon tube pressure gauge with help of dead weight pressure gauge tester. What precautions we have to take during calibration to minimize errors.	**07**
		OR	
Q.3	**(a)**	Compare radiation pyrometer & optical pyrometer &	**07**
	(b)	A single column manometer is using mercury of specific gravity 13.6 as the manometric fluid. To what height will the mercury rise in the narrow limb if a differential pressure of 60000 N/M^2 is applied? The wide and narrow limb diameters are 80 mm and 7 mm respectively.	**07**
Q.4	**(a)**	Explain the procedure to measure the speed of given shaft with help of flushing stroboscope.	**07**
	(b)	Clearly state the laws of thermocouple with neat sketch and state its industrial applications.	**07**
		OR	
Q.4	**(a)**	Derive the equation to measure flow rate with help of ‘ Pitot- static tube ‘.	**07**
	(b)	Explain pieozo- electric transducer to measure force, pressure and vibration.	**07**
Q.5	**(a)**	Explain various stylus prob instruments used for surface finish measurement. Explain one in detail.	**07**
	(b)	Explain working principle of bimetallic thermometer with neat sketch. Also state its working range and application.	**07**
		OR	
Q.5	**(a)**	Explain the three wire method to measure the effective diameter of screw thread.	**07**
	(b)	Explain the gear tooth thickness measurement by gear tooth vernier caliper.	**07**

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