

GUJARAT TECHNOLOGICAL UNIVERSITY
Diploma Engineering - SEMESTER – IV • EXAMINATION – WINTER 2012

Subject code: 341902**Date: 27/12/2012****Subject Name: Metrology and Instrumentation****Time: 02.30 pm - 05.00 pm****Total Marks: 70****Instructions:**

1. Attempt any five questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. English version is considered to be Authentic.

Q.1 (a) Explain the working of micrometer with neat sketch and write its applications. 07

(b) Differentiate 07
 (1) Metrology & Inspection (2) Centralized & Decentralized inspection (3) Line standard & End standard

Q.2 (a) Select slip gauges set from following available of M 112/1 set to obtain dimensions of (1) 79.7955 mm (2) 99.9995 mm 07

Dimension-mm	Increment-mm	Numbers
1.0005	-	1
1.001 - 1.009	0.001	9
1.01 - 1.49	0.01	49
0.5 - 24.5	0.5	49
25 - 100	25	4
		112

(b) Explain the working principle of sine bar with neat sketch. State its precautions in the use of it. 07

OR

(b) Sketch mechanical bevel protector and state the name of its parts. Explain least count of it. 07

Q.3 (a) Explain 'V' Block and dial indicator method of roundness testing. 07

(b) Explain 07
 (1) Roughness (2) Root Mean Square value (RMS)
 (3) Centre line Average method (CLA).

OR

Q.3 (a) List the different methods for measurement of effective diameter of thread and explain with sketch any one of them. 07

(b) Explain the working principle of gear tooth vernier caliper with neat sketch. 07

Q.4 (a) Write short notes. 07

(1) Plug Gauge (2) Ring Gauge (3) Gauge Materials

(b) List & Explain static characteristics of measuring instruments. 07

OR

Q. 4 (a) State the types of transducers and explain any one of its with neat sketch and state its application. 07

(b) Explain the principle of operation, construction and working of thermo couple with neat sketch. 07

- Q.5 (a) Explain working of bourdon tube pressure gauge with neat sketch and write its advantages. 07
 (b) Short notes. 07
 (1) Pitot tube (2) venturimeter

OR

- Q.5 (a) Explain closed loop system for automatic control with figure. 07
 (b) Describe procedure for calibration of vernier caliper. 07

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- p/n-É (A) Maa [ka] 13r ni SvCO Aakit dael tæl ka [p] 2it sm=vae Anetæa >] pyagae 07
 I qae
 (b) tfavt Aapae 07
 UÉY mæbae Ane [NS] pæxn UÉY s [S] l a [zD] Ane [S] l a [zD] [NS] pæxn
 UÉY l a [n] S3a [NDR] Ane [ND] (END) S3a [NDR]
 p/n-É (A) M 112/1 na > s [ma] 4l nl cæa > map ma 3e [l] p [g] e n [K] l krae 07
 (1) 79.7955 mm (2) 99.9995 mm

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- (b) sa [n] bar ni SvCO Aakit dael tæa ka [p] 2it sm=vae tæa >] pyag krtl 07
 vqtel el pDtl savcæ [A] e j ` avae
 A4va
 (b) mlkænk l blve pæ [k] 3r ni SvCO Aakit dael tæa wagæj ` avl l 6 [l] tm map 07
 nl rit sm=vae
 p/n-É (A) ra [NDR] ne 3e [l] g ma 3evl - Bl æk Ane Dayl [ND] i kær ni rit Aakit dael 07
 sm=vae
 (b) Vya [D] ya Aapl sm=vae 07
 (1) rfns (2) 1/3 mln Skve v [y] u (RMS)
 (3) s [S] l l a [n] Aæ [r] e m [D] (CLA).
 A4va
 p/n-É (A) 4 [D] na > [f] k 3lv Dayam [l] 3r map va > ma 3el j [d] l j [d] l ritæj ` avl gmetæ [k] e rit 07
 Aakit dael sm=vae
 (b) glyr 3 [u] vin [r] k [d] p [B] ni SvCO Aakit dael tæa ka [p] 2it sm=vae 07
 p/n-É (A) 3 [k] na [æ] l qae 07
 (1) Pl g g [e] (2) rlg g [e] (3) g [e] m 3lrlyls
 (b) mærlg [NS] s [u] k 3na > 4ayl l 9 ` aenl yadl l qae Ane sm=vae 07
 A4va
 p/n-É (A) 5 [a] ll s Dy s [R] na > p [k] ar l ql gmetæ [k] e Aakit dael sm=vl tæa >] pyagæ l qae 07
 (b) 4ma [p] l na ka [p] 2it, rcna Ane ka [p] 2it Aakit dael sm=vae 07
 p/n-É (A) ba [D] R 3yb p [æ] r g [e] ni SvCO Aakit dael kay [p] 2it sm=vl tæa > fayda l qae 07
 (b) 3 [k] na [æ] l qae 07
 (1) pl 3a [æ] 3yb (2) v [k] y [d] ml 3r
 A4va
 p/n-É (A) Svysæ il t iny [t] / p [æ] 2it ma 3ek l æzD l p [æ] 2it Aakit dael sm=vae 07
 (b) Vin [r] k [d] pr na > k [d] b [æ] nnl p [æ] 2it v ` æe 07
