Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

M. E. - SEMESTER – II • EXAMINATION – WINTER • 2014

Subject code: 1720902 **Date: 03-12-2014**

Subject Name: Geometrical Dimensioning and Tolerancing

Time: 02:30 pm - 05:00 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)** With the help of suitable examples, explain the following terms, (i) MMC (ii) LMC **07**

(b) ñFeature control frame is the core of GD&Tò, evaluate this statement giving suitable example **07**

Q.2 **(a)** What do you mean by datum features? Explain the qualities of datum features. Also explain the term ñdatum reference frameò **07**

(b) With the help of a suitable example, explain virtual condition and its significance in mating part design **07**

OR

(b) Explain resultant condition and its significance in the context of preserving material. Give a suitable example **07**

Q.3 **(a)** Design functional gauges to check the components shown in figure 1 (a) and (b) **07**

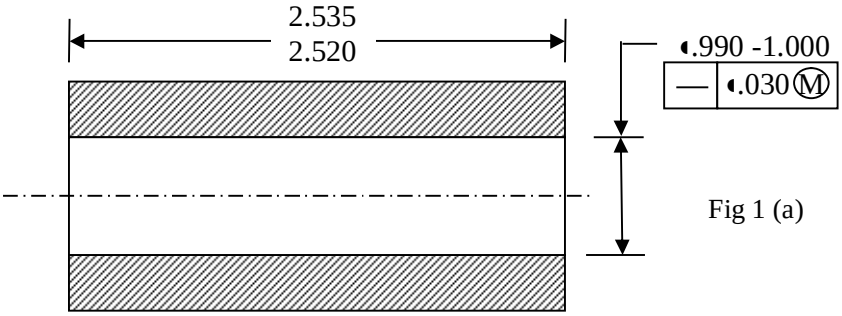

Fig 1 (a)

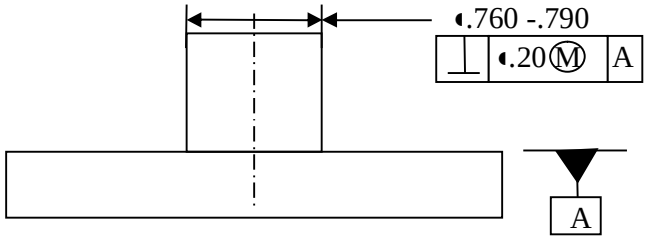

Fig 1 (b)

(b) Which physical holding system can establish the datum axis C-D for the component given in figure 2 to the best? If there is only one datum say óCô how would you propose to hold it? Justify your answers. **07**

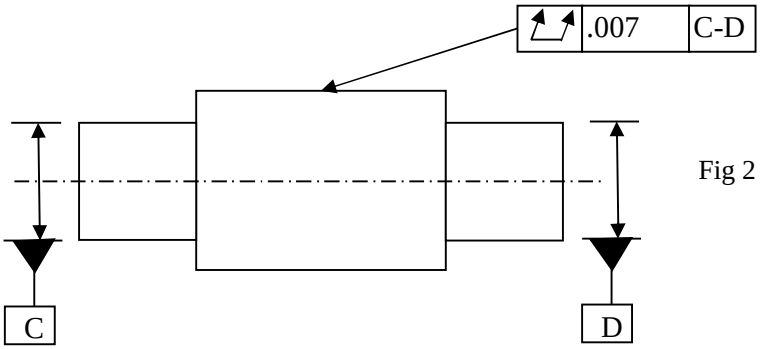

Fig 2

OR

Q.3 **(a)** Design the paper gauge for the component shown in figure 3 below **07**

Hole actual sizes: #1 = .500
#2 = .498
#3 = .495
#4 = .496

Hole Positions: Axis #1 =1.002 from datum C
=1.004 from datum B
Axis #2 =2.997 from datum C
=0.998 from datum B
Axis #3 =3.003 from datum C
=3.003 from datum B
Axis #4 =0.996 from datum C
=2.990 from datum B

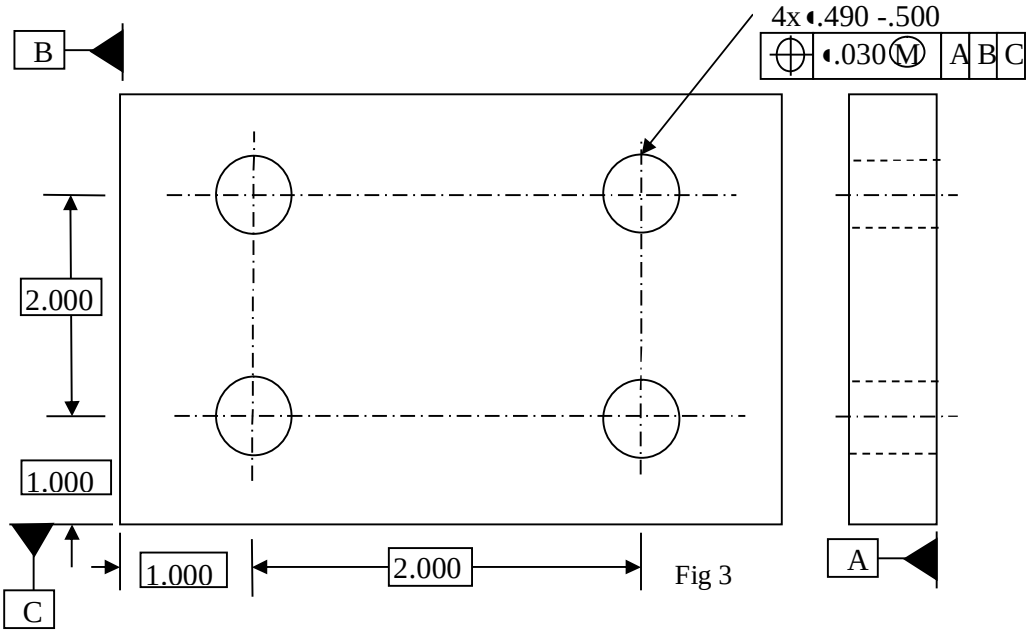

Fig 3

(b) With the help of neat sketches explain the use of any two form control symbols **07**

Q.4 **(a)** Explain, giving neat sketches, any two orientation control symbols **07**

(b) With the help of neat sketches, show the virtual boundary for a bore and a shaft under MMC **07**

OR

Q.4 **(a)** Explain, with neat sketches, how profile of a line is different from profile of a surface **07**

(b) In the context of the Taylors principle of gauging, explain the significance of MMC and LMC **07**

Q.5 **(a)** Convert the component shown in figure 3 to a non-GD&T dimensioned component **07**

(b) Giving suitable examples, explain the term ñsimulating a datum featureò. Why it is required? **07**

OR

Q.5 **(a)** Explain with the help of an example why plus and minus system of dimensioning and toleranceing is unable to express the design intent **07**

(b) Explain the terms ñfloating fastenersò and ñprojected tolerance zonesò. Give neat sketches. **07**

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