GUJARAT TECHNOLOGICAL UNIVERSITY

M. E. - SEMESTER – II • EXAMINATION – SUMMER • 2014 Subject code: 1720902 Date: 18-06-2014 Subject Name: Geometrical Dimensioning and Tolerancing

Time: 02:30 pm - 05:00 pm Total Marks: 70

Instructions:

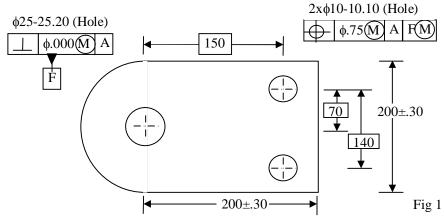
- 1. Attempt all questions.
- 2. Make suitable assumptions wherever necessary.
- 3. Figures to the right indicate full marks.
- Q.1 (a) With the help of a suitable example, detail the components common to a GD&T 07 drawing
 - (b) õSpecifying various modifiers in the feature control frame is based on components function(s)ö evaluate this statement citing suitable examples in each case
- Q.2 (a) With the help of neat sketches interpret the following (i) two co-axial diameters 07 as datum features (ii) datum features of size
 - (b) With the help of neat sketches explain how 3-2-1 location concept is applied to 07 a cube to restrict the unwanted degrees of freedom

OR

- (b) With the help of neat sketches explain how 3-2-1 location concept is applied to 07 a cylinder to restrict the unwanted degrees of freedom
- Q.3 (a) õThe resultant and virtual condition boundaries are of great significance under 07 various functional conditions of mating componentsö evaluate this statement giving suitable examples.
 - (b) With the help of suitable examples, explain the circumstances under which 07 form controls are used in GD& T drawing

OR

Q.3 (a) Calculate the minimum wall thickness for the component shown in figure 1 07



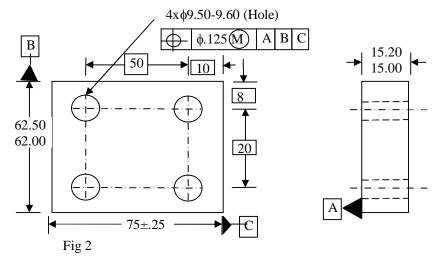
- (b) With the help of suitable examples, explain the circumstances under which 07 orientation controls are used in GD& T drawing
- Q.4 (a) Design a paper gauge for the components shown in figure 1. After inspection 07 the size of holes are: Hole #1=10.09;Hole#2=10.05 and; Datum Hole F=25.00, respectively Hole positions are:

Hole	From datum F	From Datum F
	On X-axis	On Y-axis
#1	150.10	70.05
#2	149.90	69.90

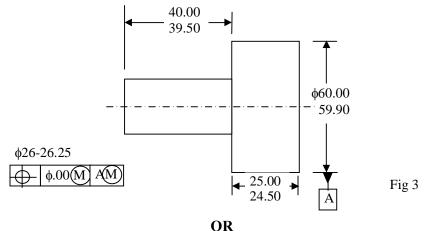
(b) List the datum simulators used by industry and schematically show the 07 locations provided by them, while processing cylindrical and rectangular workpieces.

OR

- Q.4 (a) With the help of a suitable example explain the term õfunctional Gaugingö 07
 - (b) Giving suitable examples with sketches explain various run outs
- Q.5 (a) Design, dimension and tolerance a functional gauge to verify position of the 4- 07 hole pattern Given in figure 2. Draw a sketch of the gauge



(b) Explain the meaning and significance of Taylorøs principle of gauging. Design 07 a gauge for the component given in figure 3



- Q.5 (a) õRocking of the datum feature of the component generates inconsistent part
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 Q.5 (b) õRocking
 - (b) õMating components need to be tolerance logically to meet the functional 07 requirementsö evaluate this statement giving suitable example

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