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GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-V (OLD) - EXAMINATION - SUMMER 2017

Subject Code: 152502 Date: 05/05/2017 **Subject Name: Tool Design** Time: 02:30 PM to 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** Describe each type of chips with the help of suitable sketches. 07 (a) Give the difference between Jig & Fixture. 07 **(b)** Make a neat sketch of a die set & describe its various details & accessories. 07 **Q.2** Draw a Merchant's circle diagram & derive expression to show relationship **07** among the different forces acting on the cutting tool & different parameters involved in metal cutting. OR **(b)** What are the possible reasons of tool failure? Explain in brief. **07** Q.3 **07** Describe in brief the common shearing operations performed on press. (a) What basic requirements a good clamping devices is expected to meet in a jig or 07 fixture? Describe the various feeding mechanisms used in power press. 0.3 07 What are 'Jig Bushes'? Describe the construction & use of different types of jig **07** bushes. (a) Discuss various types of cutting fluids. 07 **Q.4** Discuss the various types of chip breakers. **07 (b)** Discuss the following design features of a milling cutter: 07 **Q.4** (a) (i) Size of cutter, (ii) Tool angles, (iii) width of land, (iv) Number of teeth, (v) Power required for milling. **(b)** Discuss criterion for selection of cutting tool materials. **07** State & explain Taylor's principle of limit gauging 0.5 07 (a) Explain & compare "Hole basis System" & "Shaft basis System" of fits. **07 (b)** OR (a) A shaft 100 + 0.02 mm diameter is to be checked using a 'go-not go' snap **Q.5 07** gauge. Give the dimensions. Allow for wear & gauge maker's tolerance. Write a short note on 'Thermal Aspects in Machining'. 07
