COLLEGE OF ENGINEERING, PUNE

(An Autonomous Institute of Government of Maharashtra.)
SHIVAJI NAGAR, PUNE - 411 005

END Semester Examination

(ME-202) Machine Drawing and Computer Graphics

Course: B.Tech Branch: Mechanical Engineering

Semester: Sem III

Year: 2014-2015 Max.Marks:60

Duration: 3 Hours Time:- 10am-1pm Date: 26 NOV 2014

Instructions: MIS No. | | | | | | | | | | |

1. Figures to the right indicate the full marks.
2. Mobile phones and programmable calculators are strictly prohibited.
3. Writing anything on question paper is not allowed.
4. Exchange/Sharing of anything like stationery, calculator is not allowed.
5. Assume suitable data if necessary.
6. Write your MIS Number on Question Paper
7. Draw neat figures and assume suitable data wherever required.
8. All questions are compulsory. Figures to the right indicate full marks.

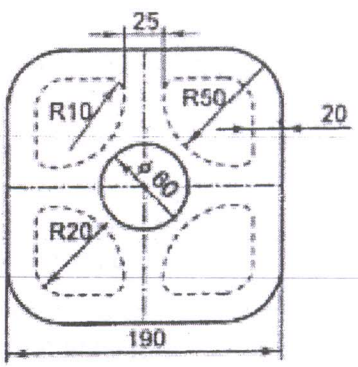
Q1	a)	Sketch the conventional representation of a) internal threads, b) external treads, c) Assembled threads parts	4
	b)	Why do we need Tolerancing to the critically performing components? Also explain the term 'Interchangeability' essentially required for selection of fit.	4
	c)	Differentiate between: i) Machine drawing and Production drawing, and ii) Tolerance vs Allowance	4
Q2	a)	Show by means of sketches, the method of showing location, symbol, size and depth of following forms of weld: i) Single butt weld, ii) Single-bevel butt weld, iii) Continuous fillet weld, iv) Double –U butt weld, v) Single-J butt weld, and vi) seam weld	6
	b)	Define: tolerance, basic size, allowance and deviation. What is mean by term 'fit' and how are fits classified.	6
OR	b)	What are fundamental tolerances and fundamental deviations? How they can be used to find limit dimensions of the hole and shaft features in components?	6
Q3	a)	Write answer to ***any two*** following questions with the help of neat sketches i) Define the following terms: a) reference profile b) datum profile c) surface roughness number. What is the importance of surface roughness? ii) Define the following a) row pitch b) diagonal pitch and c) margin. How are riveted joints made air tight? iii) What is the use of a pulley? Where and why a step cone pulley is used?	6
	b)	Write answer to ***any two*** following questions with the help of neat sketches	6

P.T.O.

		i) What are the various ways/rules by which a tolerance frame is connected to the tolerance feature? Explain with the help of sketches. ii) Sketch the conventional representation of i) splined shaft, ii) square on shaft, iii) compression spring, iv) tension spring, v) spur gear, and vi) helical gear iii) What is the importance of surface roughness? Indicate how various surface roughness specifications are placed relative to the symbol.	
Q4	**a)**	The assembly is to be designed for a type of fit as ø 45 G7/h9 for the shaft and hole of diameter 85 mm. Obtain the tolerance value for shaft and hole and mention those on the self explanatory sketch of shaft & hole along with all final dimensions on the sketch. Fundamental deviation for hole $= 1.6\ D^{0.44}$ Tolerance Grade $i = 0.45\ \sqrt[3]{D} + 0.001\ D$	6

Sr. No.	1	2	3	4	5	6	7	8	9
Groups of dia. Values	1 - 3	3 - 6	6 - 10	10 - 18	18 - 30	30 – 50	50 - 80	80 - 120	120 - 180

Sr. No.	1	2	3	4	5	6	7	8
Grades	IT 5	IT 6	I T 7	IT 8	IT 9	IT 10	IT 11	IT 12
Fundamental Tolerance	7 i	10 i	16 i	25 i	40 i	64 i	100 i	160 i

	b)	with the help of sketches, show how the geometrical tolerances are indicated, for the following cases: i) symmetry, ii) Angularity, iii) Coaxiality, iv) Position, v) Profile and vi) Cylindricity	6
OR	**b)**	Distinguish between the following: a) Spur gear and Helical gear b) Square and ACME thread and c) Left hand and right hand threads	6
Q5	**a)**	Write the AutoLISP programme required for completion of the sketch given in the following Figure. Minimum inputs from user at the start of the programme are compulsory. Complete the programme with minimum number of Autolisp language statements. **Elaborations for the important stage or command in the programming is must.** Assume starting point, suitable data, required dim….. etc. wherever necessary. Also, draw flowchart / algorithm of program. 	6
	b)	Write a short note for ***any three*** of the following. i) Need of Looping in AUTOLISP and relevant functions ii) Entities in AUTOLISP programming ***(any four functions)*** iii) Various functions used for filtering of list. ***(any four)*** iv) Various data conversions in LISP programming ***(any four functions)***	6