Mech

COLLEGE OF ENGINEERING, PUNE.

END SEMESTER EXAMINATION Dec 2012

SUBJECT - (ME-305) Manufacturing Engineering-II

CLASS: T.Y. B. TECH. (Mechanical)

Date: 30th Nov. 2012 Year: 2012-13

Time: 2 p.m. to 5 p.m. Max. Marks: 50

Instructions:

1) Question No. 1 and 5 are compulsory. Solve any two questions from the remaining.
2) Draw neat figures wherever required.
3) Use of calculator is permitted.
4) Assume suitable data if necessary.

Q. No.1 **(a)** State at least eight situations when surface treatment processes are carried out. **(2)**

(b) Explain how it is possible to use laser for various manufacturing processes. **(3)**

(c) What possible information can be obtained form the type and quality of the chip produced during machining? **(2)**

(d) Obtain an expression for shear angle in terms of cutting ratio and rake angle. **(3)**

Q. N0. 2 **(a)** Explain the basic components of NC system and NC procedure in detail **(4)**

(b) With the help of neat diagram explain the principle of operation of electrochemical machining (ECM).
State the various advantages, disadvantages and applications of ECM. **(8)**

(c) With the help of neat diagram explain 3-2-1 principle of location **(3)**

Q. N0. 3 **(a)** With the help of neat sketch explain the procedure for photochemical machining. **(4)**

(b) State at least eight types of surface treatment processes and explain one in detail **(4)**

Please turn over

(c) Following data is observed during orthogonal machining
Cutting speed= 90 m/min, chip thickness before cutting= 0.14 mm, chip thickness after cutting= 0.25 mm, rake angle= 12°, width of cut= 6mm, main cutting force= 600 N, thrust force= 250 N.
Calculate: shear angle, friction angle, shear stress, chip velocity, shear strain and cutting power. (3)

(d) What do you understand by tool life? State and explain various factors (at least four), which affects on tool life. (4)

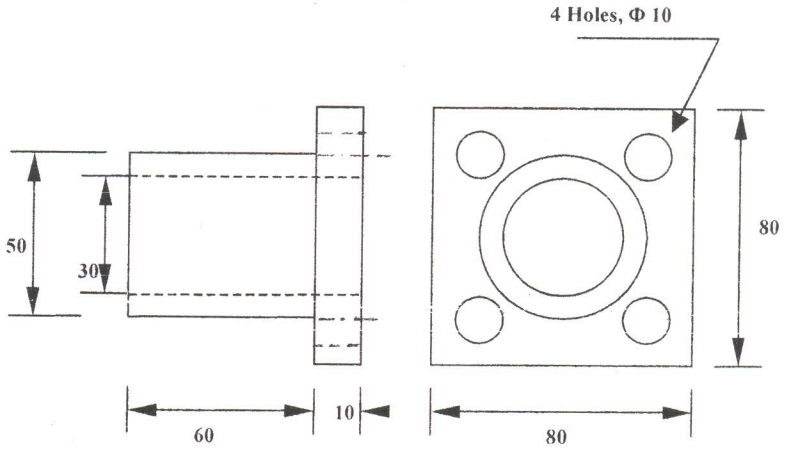
Q. N0. 4 (a) Explain the various methods of manufacturing gears and explain one in detail with the help of neat sketch. (4)

(b) State the desirable properties of cutting tool (at least six) and also state the various cutting tool materials and explain one of them. (4)

(c) Compare the NC machines with conventional machines (at least six features). (3)

(d) Draw and explain the Merchant's circle diagram and also state the various assumptions in Merchant's theory. (4)

Q. N0. 5 Design jig for drilling four holes of diameter of 10 mm each in the component as shown in the figure below. (10)



(All dimensions are in mm)