

NOV-DEC-2012

Total No. of Questions—12]

[Total No. of Printed Pages—4+1

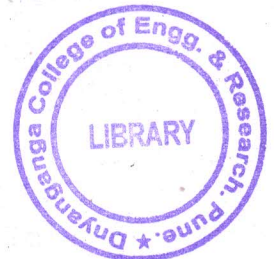
Seat No.	
-------------	--

[4262]-120

S.E. (Mech.) (II Sem.) EXAMINATION, 2012

PRODUCTION TECHNOLOGY

(2008 PATTERN)



Time : Three Hours

Maximum Marks : 100

- N.B. :-**
- (i) Answers to the two Sections should be written in separate answer-books.
 - (ii) Neat diagrams must be drawn wherever necessary.
 - (iii) Figures to the right indicate full marks.
 - (iv) Use of logarithmic tables, slide rule, Mollier charts, electronic pocket calculator and steam tables is allowed.
 - (v) Assume suitable data, if necessary.
 - (vi) Solve Q. No. 1 or Q. No. 2, Q. No. 3 or Q. No. 4, Q. No. 5 or Q. No. 6 from section A, Q. No. 7 or Q. No. 8, Q. No. 9 or Q. No. 10, Q. No. 11 or Q. No. 12 from section B.

SECTION A

1. (a) An orthogonal cut 2.5 mm wide is made at a speed of 0.5 m/s and feed of 0.26 mm with a H.S.S. tool having a 20° rake angle. The chip thickness ratio is found to be 0.58, the cutting force is 1400 N and the feed thrust force is 360 N, find :
- (i) Chip thickness

[10]

P.T.O.

- (ii) Shear plane angle
- (iii) Resultant force
- (iv) Coefficient of friction on the face of the tool
- (v) Friction force and normal force on the chip
- (vi) Shearing force and normal force on the shear plane.
- (b) Sketch a single-point cutting tool and show on it the various tool elements and tool angles. Give the function of each tool elements. List the various tool angles and discuss their significance. [6]

Or

2. (a) A seamless tube of 50 mm outside diameter is turned on lathe with cutting speed of 20 m/min. The tool rake angle is 15° and feed rate is 0.2 m/rev. The length of chip in one revolution measures 80 mm. Calculate : [10]
- (i) Chip thickness ratio
- (ii) Shear plane angle
- (iii) Shear flow speed
- (iv) Shear strain.
- (b) Prove that $T = \left(\frac{1}{n} - 1\right) K_2$, where 'T' is a tool life for maximum production, 'n' is the exponent in the tool life equation and K_2 is the tool changing time. [6]

