Roll No. ..... Total Pages : 3

BT-3/D-18 **33026**

PRODUCTION TECHNOLOGY

Paper : ME-209E

Time : Three Hours] [Maximum Marks : 100

Note : Attempt *five* questions in all, selecting at least *one* question from each unit.

UNIT–I

1. (a) In an orthogonal cutting a single point turning tool has side Rack of 12° and an approach angle of 70°. Calculate the back Rack when the inclination angle is 0°. (12)

(b) What are the Popular Tool Designation Systems in common use? Explain briefly. (8)

2. The following data were recorded while turning a work piece on a lathe : Cutting speed = 25 m/min, Feed rate = 0.3 mm/rev, Depth of cut = 2.0 mm, tool life = 100 min. The following tool life equation is given for this operation : $VT^{0.12} . F^{0.7} . d^{0.3} = C$.

If the cutting speed, feed and the depth of cut are all increased by 25% each, and also collectively, what will be their effect on the tool life? (20)

UNIT–II

3. (a) Describe the relationship among cutting speed, rate of production, and production cost. (10)

(b) Why a flat drill is considered obsolete in modern drilling practice while it is the cheapest of all the drills? (10)

4. (a) Sketch and describe a straight flute drill. (10)

(b) Calculate the machining time for drilling 4 holes of 16 mm dia. each on a flange from the following data. Flange thickness = 30 mm; cutting speed = 22 mpm, feed = 0.2 mm/rev. (10)

UNIT–III

5. In rolling process, 25 mm thick plate is rolled to 22 mm in a four high mill. Determine the coefficient of friction if this is the maximum reduction possible. Roll diameter is 500 mm. Find neutral section, backward and forward slips and maximum pressure. σ° = 100 N/mm^2 for hot rolls of mind steel at about 1100°C. (20)

6. (a) What is the six point location principle? Explain it with the help of suitable sketches. (10)

(b) Describe the design principles for drilling jigs. (10)

UNIT–IV

7. (a) What are the common instruments and devices used for testing (i) Straightness, (ii) Flatness, and (iii) squareness of a flat surface? (10)

(b) What are sine bar centres? What are they used for? (10)

8. (a) What are auto collimators? Describe the working principle of any *one*. (10)

(b) Discuss the common abrasives used in lapping and honing process. (10)