Total No. of Questions—**12**] [Total No. of Printed Pages—**4**

Seat No.	

[4957]-120

S.E. (Mechanical/Auto.) (Second Semester) EXAMINATION, 2016

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*) Figures to the right side indicate full marks.

(*iii*) Neat diagrams must be drawn wherever necessary.

(*iv*) Use of non-programmable electronic pocket calculator is allowed.

(*v*) Assume suitable data, if necessary.

(*vi*) Answer Q. **1** or Q. **2**, Q. **3** or Q. **4**, Q. **5** or Q. **6**. from Section I and Q. **7** or Q. **8**, Q. **9** or Q. **10**, Q. **11** or Q. **12** from Section II.

Section I

1. (*a*) In orthogonal cutting operation, the feed is 0.1 mm/rev and the chip thickness is 0.3 mm. The cutting force is 1400 N and the feed thrust force is 800N. Rake angle of the tool is 12° cutting speed is 25 m/min. Find : [10]

(*i*) Shear plane angle

(*ii*) Shear force

(*iii*) Normal force

(*iv*) Coefficient of friction on the face of the tool

(*v*) Power consumed at tool in kW.

P.T.O.

(*b*) Explain basic requirements of cutting fluids. [6]

Or

2. (*a*) While machining the following are observations as uncut chip thickness is 0.27 mm, chip thickness is 0.7 mm, rake angle is 10^{o}, cutting force is 900N and Feed force is 450N.

Calculate :

(*i*) Chip thickness ratio

(*ii*) Shear angle

(*iii*) Coefficient of friction

(*iv*) Shear stress

(*v*) Friction angle. [10]

(*b*) Explain with sketch types of chip breakers and why they are required. [6]

3. (*a*) Explain with sketch self-opening die heads. [8]

(*b*) Explain with sketch Gear Grinding. [8]

Or

4. (*a*) State types and explain rack planning process with a neat sketch. [8]

(*b*) With sketch explain reciprocating flat die machine and cylindrical die machines used for thread rolling. [8]

5. (*a*) State advantages, disadvantages and applications of CNC machines. [8]

(*b*) Explain with a neat sketch HMC and VMC. [10]

Or

6. (*a*) Explain DNC machines with advantages and disadvantages. What is AGV ? [10]

(*b*) Write the functions of the following codes : [8]

G01, M03, G02, M09, M23, M06, G91, G63

Section II

7. (*a*) Explain with neat sketch power press machine. [8]

(*b*) Explain the following press operations : [10]

Blanking, Piercing, Notching, Lancing, Drawing.

Or

8. (*a*) Explain with sketch types of strippers. [8]

(*b*) A rectangular plate with 20 mm internal hole, 35 mm length, 25 mm width and is made of 2 mm thickness strip of C45 material. Given ultimate shear strength 300 N/mm^2, penetration 62% of sheet thickness, clearance 10% of sheet thickness. Find :

(*i*) Cutting force without staggering and no shear.

(*ii*) Cutting force with staggering and no shear.

(*iii*) Cutting force with staggering and with full shear.

(*iv*) Comment on the above answer.

(*v*) Dimensions of die and punch for first draw. [10]

9. (*a*) What is Laser ? Explain LBM in detail with neat sketch. [8]

(*b*) Explain plasma arc machining in detail with neat sketch. Which are commonly used gases in Pam and applications. [8]

Or

10. (*a*) Explain Electro-Discharge machining in detail with sketch. State advantages, limitations and applications. [8]

(*b*) Explain Electro-Chemical Machining with sketch. State parameters in ECM. [8]

11. (*a*) Explain design principles of locating system and with sketch explain support pins used for this purposes. [8]

(*b*) Explain 3-2-1 principle of location. [8]

Or

12. (*a*) Explain types of bushes used in jigs. [8]

(*b*) State various types of jigs and explain any *one* in detail with neat sketch. [8]