B.E. PRODUCTION ENGINEERING
THIRD YEAR
FIRST SEMESTER EXAM 2019

MASS PRODUCTION TECHNOLOGY & AUTOMATION

Time:3 Hrs. Full Marks -100

Answer any **5** Q.s

1. Write the names of 2 production methods for producing each shape/feature of the following: Small holes, Curvature on thin sheets, Tubular shapes, Cross sections, Very large parts, Thin hollow shapes, Surface textures, Square edge, Flat surfaces, Detailed surface features. 2X10

2. a) Write short notes on:
i) Sunderland method;
ii) Gear shaping method. 5+5
b) What are chucks & collets? Classify them. 6
c) Write the differences between Blanking & Punching. 4

3. a) Describe the following:
i) Interchangeability, ii) Generation of gear by rack. 5+5
b) Using the following values, determine the no. of pieces that would have to be made to justify the use of a jig costing Rs. 1.8 lac; R = Rs. 345/-; R_t = Rs. 270/-; t_t = 1.25; t=2.5; i = 10%; R_m = Rs. 270/-; n = 3. The notations have their usual meanings. 5
c) Write a short note on Thread Milling. 5

4. Write shortly on:
a) Wheel forming in Thread Grinding,
b) Fly Press,
c) Gear Hobbing Method. 5+5+10=20

5. a) Calculate the blank dia. suitable for rolling to a 60 ° vee thread of 12 mm. dia. & 1.25 mm. pitch. Deduce the expression for solving the Prob. 4+6
b) Elucidate the following plastic moulding processes using figures:
Positive Mould, Transfer Mould 5+5

6. a) Describe the basic elements of adaptive control loop. 3
b) Briefly describe:
i) Automatic gear cutting machine.
ii) Circular Die Rolling Process (for producing screw threads) 5+5
c) Describe the "Injection Moulding" process. 7

7. Describe briefly the following processes (with sketches, if possible):
a) Blow Moulding.

b) Screw Thread Grinding.
c) Hot compression Moulding.
d) Open flash method of moulding. 5X4=20

8. a) Differentiate between the Capstan Lathe & Turret Lathe with description & neat sketches. 10

b) Explain the following terms giving examples of each:
Tools or tooling, Job (or station), Production System, Operation or process. 10

9. a) What are the safety arrangements of power presses that are considered while designing it? 3

b) What are the different orders of automation? Describe each with examples. 7
c) How is the capacity of a press expressed? Explain. 2
d) What are the basic forms of raw materials required for moulding of plastics? Describe each. 8