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S. Y. B. TECH. (MECHANICAL ENGINEERING) (SEMESTER - I)

COURSE NAME: MANUFACTURING PROCESSES

COURSE CODE: MEUA21173

(PATTERN 2017)

Time: [2 Hours]

[Max. Marks: 50]

(*) Instructions to candidates:

- 1) Answer Q.1, Q.2, Q.3, Q.4, Q.5 OR Q.6, Q.7 OR Q.8
- 2) Figures to the right indicate full marks.
- 3) Use of scientific calculator is allowed
- 4) Use suitable data where ever required

Q.1 a) Explain commonly used materials for pattern making. State [6]
advantages and limitations of for each material.

OR

b) Why should turbulent flow of molten metal into the mould be [6]
avoided?

Q.2 a) What is rolling in the context of the bulk deformation [6]
processes? List some of the products produced on a rolling
mill.

OR

b) Distinguish between direct and indirect extrusion. Name some [6]
products that are produced by extrusion.

Q.3 a) What is strip layout? State different allowances to be [6]
considered while preparing strip layout with proper sketch.

OR

b) Write four points of comparison between blanking and piercing [6]
operations with neat sketches.

Q.4 a) What is the distinction between plastic sheet and film? What is [4]
the technical difference between a fiber and a filament?

OR

b) Briefly describe the injection molding process. [4]

Q.5 a) What are the advantages and disadvantages of welding [6]
compared to other types of assembly operations?

b) State the four advantages of laser beam welding over electron [4]

beam welding.

- c) What is the technical difference between brazing and soldering? [4]

OR

- Q.6 a) With neat sketches state the characteristics of different types of gas flames. [6]
b) What are the factors that affect weldability? [4]
c) How do brazing and soldering differ from the fusion-welding processes? [4]

- Q.7 a) Name and briefly describe the types of chips that occur in metal cutting. [6]
b) Calculate the change gears for cutting two start right hand threads of 1.4 mm pitch on a lathe having 6 mm pitch of lead screw. Available gears are 20 to 120 teeth in steps of 5 teeth. Sketch the gear train. [4]
c) The angles of a single point cutting tool mentioned according to American Standard System are as follows: 6° - 10° - 7° - 7° - 10° - 30° -0.5 mm. Name all the elements with their values. [4]

OR

- Q.8 a) The rake angle in an orthogonal cutting operation is 12° . The chip thickness before the cut is 0.30 mm and the resulting chip thickness after the cut is 0.70 mm. Calculate (a) the shear plane angle and (b) the shear strain for the operation. [6]
b) Define machinability. What are the criteria by which machinability is commonly assessed in a production machining operation? [4]
c) Draw the standard twist drill geometry. [4]