Total No. of Questions – [06]

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G.R. No.	

DECEMBER 2021 - ENDSEM EXAM
S. Y. B. TECH. (MECHANICAL) (SEMESTER - I)
COURSE NAME: MANUFACTURING PROCESSES
COURSE CODE: MEUA21202
(PATTERN 2020)

Time: [1 Hour] [Max. Marks: 30]

(*) Instructions to candidates:

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

Q.1) a) Categorize the following applications into thermoplastic and thermosetting plastics: i) Helmets, ii) Electric Plug, iii) Dishes, iv) Container taps and fittings, v) Electronic Components with molded terminals, vi) Telephone receivers, vii) Washing machine Agitators and viii) Mobile casing. [4 marks]

b) Interpret the most appropriate manufacturing process for manufacturing of plastic bathtubs, buckets, chairs and hollow containers with sketches (Any One). [6 marks]

OR

Q.2) a) Compare and suggest most appropriate process for manufacturing of following plastic components:
i) Chairs, ii) Car dash board, iii) Plumbing fittings, iv) Cosmetic packaging, v) Food and water bottles, vi) Automobile fuel tanks, vii) Luggage bags, viii) Refrigerator inner panels. [4 marks]

b) Interpret the best suited operation with reason for manufacturing of Helmet and refrigerator door liners. [6 marks]

Q.3) a) Justify your comments on the feasibility of drawing operation which is used to form cylindrical cup with inside diameter 68 mm and height 60 mm with the stock thickness of 2.4 mm. [4 marks]

b) Estimate the Press capacity required for a cup of 110 mm diameter * 90 mm deep is to be drawn from steel sheet of 1 mm thick. Assuming Yield strength of material 400 N/mm. [6 marks]

OR

Q.4) a) Apply the mathematical procedure to design press tool in which axis of ram must pass through the point about which sum of the forces are symmetrical. [4 marks]

b) Justify the suitable strip and die layout for two washers, one of 40 mm outside diameter and 25 mm inside diameter and the other of 25 mm outside diameter and 10 mm inside diameter are to be produced from 2 mm thick sheet metal for maximum percentage utilization of material. Assume scrap bridge of 3 mm and clearance of 5 % of metal thickness. [6 marks]

Q.5) a) Compare and suggest the suitable taper turning operation on the parts having large taper angle and having slight variation in the length of each part with slow production rate. [4 marks]

b) Select the appropriate gear with gear train to be fitted in the end gear train of lathe without feed box to cut 2.75 mm pitch single start threads with lead screw of 6 TPI and change gear set with 20 to 120 teeth in steps of 5 teeth with additional 127 teeth gear. [6 marks]

OR

Q.6) a) In a production turning operation, the foreman has decreed that a single pass must be completed on the cylindrical workpiece in 5.0 min. The piece is 400 mm long and 150 mm in diameter. Using a feed of 0.30 mm/rev and a depth of cut is 4.0 mm, Evaluate the cutting speed that must be used to meet this machining time requirement. [4 marks]

b) Select the appropriate the gears with the gear train for cutting a 26 TPI in lathe with leadscrew having 4 TPI and available gears are 20 to 120 in steps of five teeth. [6 marks]