c) How the amount of material needed for casting estimated. 4

d) A medium steel block is to machined with a HSS tool on a crank shaper at a feed of 0.25mm/stroke the width of the block is 10cm and the stroke length is 14cm. Determine

i) Number of strokes/min

ii) Machining time

iii) The Return stroke 6

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BT-7/D11 : 7855

ME-419E : Advance Manufacturing Technology

Time : Three Hours Maximum Marks : 100

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

UNIT - I

Q.1. a) Describe any three methods of heating the work material in the process of hot machining. Give their relative advantages and disadvantages. 8

b) What are the materials used for plastic cooling? Discuss. 6

c) Explain graphite mould coating in details. 6

Q.2 a) Discuss the properties of composite materials show how the properties of composite materials depend upon their basic materials 6

b) What do you understand by particulate strengthened materials? Discuss 6

c) Discuss the fabrication of laminates in details. 8

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UNIT - II

Q.3 a) What is polymerization? Distinguish between addition polymerization and condensation polymerization. Describe the polymerization by which polymers can be synthesized by these processes. 12

b) Discuss the importance of plastics and its mazor properties. What is the importance of laminating plastics. 8

Q.4 a) Explain the process of transfer moulding. What points should be considered while designing the transfer moulding. Where it is employed? 10

b) Explain the following in details. 10

i) Thread Rolling

ii) Die threading and Tapping

UNIT - III

Q.5 a) Differentiate between hot working and cold working in metal forming Bring out the advantages and disadvantages of each of these techniques. 6

b) How will you reduce the pressure in wire drawing? 4

c) An aluminum alloy is not extruded at 400°C through square dies without lubrication from 15cm diameter to 5cm diameter. The extrusion speed is 5cm/sec. The flow stress of the material

at the above temperature is 250MPa. The length of the billet is 37.5cm Determine the extrusion load. 10

Q.6 a) Discuss the effects of temperature, stain rate and friction on metal forming process. 6

b) What do you understand by limiting Draw Ratio (LDR)? Explain why such a limit exists and give the principles underlying the estimation of LDR in a given situation. 8

c) A wide strip is rolled to a final thickness of 6.35mm. With a reduction of 30 percent. The roll radius is 50cm and coefficient of friction is 0.2 Determine the neutral plane. 6

UNIT - IV

Q.7 a) How will you compare a cold chamber die casting process with that of hot chamber process? Why is aluminum preferred to be done by cold chamber die casting than hot chamber die casting? 10

b) Explain the following

i) Preheating of Dies

ii) Vaccum Die Casting

Q.8 a) Define economic lot size, How it is related to setup time? 6

b) List the principal elements of metal machining and discuss the various factors for the selection of (i) Cutting speed (ii) feed and depth. of cut. 4