

14/05/19

Roll No.

--	--	--	--	--	--	--	--	--	--

B.E / B.Tech (FT / ~~BT~~) END SEMESTER EXAMINATIONS – APRIL / MAY 2019

MATERIALS SCIENCE AND ENGINEERING

Semester

ML8301 CASTING AND MACHINING PROCESSES

(Regulation 2012)

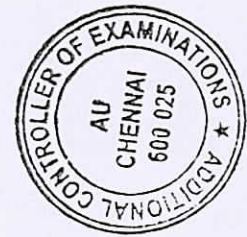
Time: 3 Hours

Answer ALL Questions

Max. Marks 100

PART-A (10 x 2 = 20 Marks)

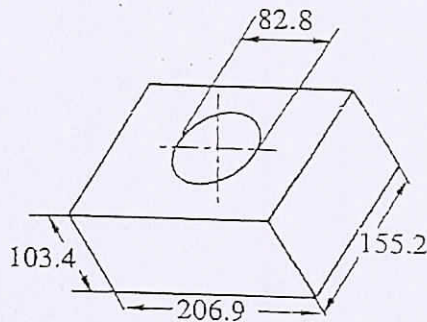
1. What are the operations typically carried out in a sand plant?
2. What do you mean by half core box?
3. How does the solidification of a pure metal and alloy differ?
4. What is the advantage in using an insulating sleeve?
5. Compare between zirconium sand and silica sand.
6. Comment on the density of castings cast in high pressure die casting process.
7. Why is it necessary to monitor the temperature of the molten metal?
8. How stainless steels are classified?
9. What are the conditions that allow a continuous chip to be formed in metal cutting?
10. How a milling machine is specified?



Part – B (5 x 16 = 80 marks)

(Question No.11 is Compulsory)

11. What is a Pattern? What the different colours on the pattern signify? For a metal pattern used in a green sand moulding process, what allowances are provided on the patterns? Explain their significance.
12. a) Calculate the gating requirements of the aluminium casting shown in the figure. Use Caine's method. Given $a=0.10$, $b=0.06$ and $c=1.08$



All dimensions in mm

(OR)

- b) What are the problems faced while casting L, T, V, X and Y shaped profiles in casting. Explain the remedial measures to overcome these problems.
13. a) Explain the procedure adopted in the following sand testing methods
(i)Moisture Content test
(ii)Green compression strength test
(iii)Mould hardness test
(iv)Compactability test
- (OR)
- b) Explain the step by step procedure adopted in plaster of paris moulding process. Compare plaster of paris moulding process with green sand moulding process.
14. a) What types of furnaces are used for melting metal for metal casting? How a furnace is selected? Describe the main features and working of a cupola.
- (OR)
- b) Describe the melting practice adopted in the melting of the following
(I)Aluminium based alloys
(ii)Magnesium based alloys
15. a) What type of surfaces that can be generated in a centre lathe? Show how these are achieved with the help of sketches.
- (OR)
- b) Compare gear hobbing and gear shaping, giving the processes and product requirements.

