



KENYATTA UNIVERSITY

UNIVERSITY EXAMINATIONS 2011/2012

FIRST SEMESTER EXAMINATION FOR THE DEGREE OF BACHELOR OF
SCIENCE (MANUFACTURING ENGINEERING)

SET 412: MANUFACTURING PROCESSES I

DATE: Friday 2nd December, 2011

TIME: 8.00 – 10.00 a.m.

INSTRUCTIONS:

- The Question Paper consists of FIVE Questions. Each carry 20 marks
- Answer Any THREE Questions

- Q.1)
- (a) Describe the process of age hardening of aluminium alloys. (5 marks)
 - (b) What are the reasons for reclaiming sand? (3 marks)
 - (c) Why are chills used in casting? (3 marks)
 - (d) What are the main difficulties in melting aluminium and how can we overcome them? (4 marks)
 - (e) Why might directional solidification be desirable in the production of a cast product? (3 marks)
 - (f) Why do we refine metals? (2 marks)
- Q.2)
- (a) Describe how you would make a mould using the lost wax process. (8 marks)
 - (b) What causes shrinkage cavities? How can they be prevented? (5 marks)
 - (c) What are the disadvantages of using cupolas for melting cast Iron? (5 marks)
 - (d) Why are inoculants used in melting? (2 marks)

- Q.3) (a) Describe the process of annealing. What is it supposed to accomplish. (5 marks)
- (b) Why is the cupola widely used in melting cast iron? (3 marks)
- (c) What are the causes of blow holes and gas holes? (8 marks)
- (d) Outline the sources of melting losses. (4 marks)
- Q.4) (a) Discuss the effects of an improper design of a gating system. (10 marks)
- (b) What are the factors that determine the choice of a furnace? (5 marks)
- (c) Describe the process of making moulds using plaster mould process. (5 marks)
- Q.5) (a) What should the gating system be designed to Accomplish? (7 marks)
- (b) Give the advantages of shell moulding over green Sand moulding. (6 marks)
- (c) Distinguish between wet and dry reclamation. (5 marks)
- (d) List two methods of cleaning castings. (2 marks)

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