

MET3
MANUFACTURING ENGINEERING TRIPOS PART IIB

Thursday 23 April 2015

9 to 12

PAPER 2

*Answer not more than **four** questions.*

Answer each question in a separate booklet.

All questions carry the same number of marks.

*The **approximate** percentage of marks allocated to each part of a question is indicated in the right margin.*

*Write your candidate number **not** your name on the cover sheet.*

STATIONERY REQUIREMENTS

8 page answer booklet x 4

Rough work pad

SPECIAL REQUIREMENTS TO BE SUPPLIED FOR THIS EXAM

CUED approved calculator allowed

Engineering Data Book

10 minutes reading time is allowed for this paper.

You may not start to read the questions printed on the subsequent pages of this question paper until instructed to do so.

1 You have been appointed by the Minister for Industry to undertake a review of the country's approach to the development of industrial strategies. Describe, with rationale and illustrations as appropriate, how you would approach the following aspects of the task:

- (a) international comparisons with leading industrialised countries. [35%]
- (b) identifying possible future manufacturing trends. [35%]
- (c) developing a structure for industrial policy statements for key sectors. [30%]

2 Compare the challenges of managing teams within:

- (a) a high-growth potential product-based start-up company that has just received its first round of venture capital investment;
- (b) a long-established multinational manufacturing corporation that is facing a major disruption to its current business operations caused by the emergence of low cost competitors. [100%]

3 (a) Describe three activities that companies might be expected to undertake within each of the five technology management processes below:

- (i) identification;
- (ii) selection;
- (iii) acquisition;
- (iv) exploitation;
- (v) protection.

[25%]

(b) Discuss how a medium-sized manufacturing firm in the automotive sector could apply technology management tools and techniques in order to respond to the emergence of a much hyped but highly uncertain technology such as Additive Manufacturing. [75%]

4 It is argued that the industrial system cannot become sustainable through efficiency and technology changes only.

(a) Describe one system level change that would help move industry towards sustainability. [20%]

(b) Explain, with examples, why that change cannot be delivered through an accumulation of separate sub-system changes. [30%]

(c) Use system maps to describe your chosen industrial system both before and after the proposed system level change. [30%]

(d) What are the possible consequences for using system maps to guide action? [20%]

5 Scentiful, a perfume company, has decided to launch its new perfume, Rosentine, only in luxury boutiques and high-end department stores in London three months before Easter. Scentiful intends to rely on television advertisements, and recommendations of customers who use the perfume, to capture a significant market share during the Easter sales. In this context:

(a) explain the concept of the *Bass diffusion model*; [20%]

(b) use the concept of the Bass diffusion model to explain how and why Scentiful plans to capture market share of the Easter sales for its new perfume; [35%]

(c) explain the limitations of the Bass diffusion model in forecasting the sales for Rosentine perfume. [45%]

6 (a) Explain, giving examples, why collaborations are a common feature of technology-intensive industries. [50%]

(b) Discuss the people management challenges of setting up and running collaborations between organisations within technology-intensive industries. [50%]

END OF PAPER

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