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The Open University of Sri Lanka
Faculty of Engineering Technology



Study Programme	:	MASTER OF TECHNOLOGY IN INDUSTRIAL ENGINEERING - LEVEL 07
Name of the Examination	:	Final Examination
Course Code and Title	:	MEX7118 - TECHNOLOGY MANAGEMENT
Academic Year	:	2013/14
Date	:	17 August 2014
Time	:	0930 - 1230 hrs
Duration	:	3 hours

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General instructions

1. Read all instructions carefully before answering the questions.
2. This question paper consists of seven (7) questions.
3. Answer **Question 1** (40 marks) and **four other** questions (15 marks each).
4. Answer only five (5) questions.

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1. **Read the following article, and answer the questions (a) to (d).**

The Henry Ford of Ophthalmology

High-volume operations can be found in some surprising places – even surgery. Not all surgery conforms to our preconceptions of the individual ‘super-craftsperson’, aided by his or her back-up team, performing the whole operation from first incision to final stitch. Many surgical procedures are, in fact, fairly routine. There can be few examples, however, of surgery being made quite as routine as in the Russian clinics of eye surgeon, Svyatoslav Fyodorov.

He has been called the ‘Henry Ford of ophthalmology’, and his methods are indeed closer to the automobile assembly plant than the conventional operating theatre. The surgical procedure in which he specializes is a revolutionary treatment for myopia (short-sightedness) called radial keratotomy.

In the treatment the curvature of the cornea is corrected surgically – still a controversial procedure among some in the profession, but very successful for Fyodorov. From his Moscow headquarters he controls nine clinics throughout Russia.

The source of his fame is not the treatment as such – other eye surgeons around the world perform similar procedures – but the way he organizes the business of the surgery itself. Eight patients lie on moving tables arranged like the spokes of a wheel around its

central axis, with only their eyes uncovered. Six surgeons, each with his or her 'station', are positioned around the rim of the wheel so that they can access the patients' eyes. After the surgeons have completed their own particular portion of the whole procedure, the wheel indexes round to take patients to the next stage of their treatment. The surgeons check to make sure that the previous stage of the operation was performed correctly and then go on to perform their own task. Each surgeon's activity is monitored on TV screens overhead and the surgeons talk to each other through miniature microphones and headsets.

The result of this mass production approach to surgery according to Fyodorov is not only far cheaper unit costs (he and his staff are paid for each patient treated, so they are all exceptionally wealthy as a result) but also a better success rate than that obtained in conventional surgery.

Questions:

- a) How does this approach to eye surgery compare with a more conventional approach considered from an Operations Management point of view?
- b) What are the advantages and disadvantages of this approach to eye surgery?
- c) How do the five performance objectives of quality, speed, dependability, flexibility, and cost apply themselves in this approach to surgery?
- d) How do the stakeholders - Customers, Suppliers, Shareholders, Employees, Society benefit in this example?

(40 marks)

2. Explain the technological leap within the Industrial Revolution. What are the Social changes that resulted from the Industrial Revolution? Give examples of similar leaps in Technology.

(15 marks)

3. What are the social and cultural effects of Automation and new Information Technology? Are these effects applicable to all countries? Discuss with examples.

(15 marks)

4. How did the market affect the Technology Management at the time of Industrial Revolution? Is it correct to say that Innovation was Independent of Management? Give reasons.

(15 marks)

5. What are the important features of Technology used in modern industry? Are they oriented for mass production without much quality? If so, how would you orient towards producing quality goods?
(15 marks)
6. Answer **either a) or b)**
- a) If we have an industrially developed country with no unemployment how should labour be treated as a production resource?
(15 marks)
- b) The most important consequence of Automation results in a firm no longer having concerns about a large labour supply. This means that new plants can be located away from the major cities. Is this the way to counter urbanization and improve the environment? Can we think of a society without towns?
(15 marks)
7. Answer **either a) or b)**
- a) Discuss how a developing country firm could develop its research and development capabilities under the current economic environment.
(15 marks)
- b) Taking Sri Lanka as a nation identify, analyse and critically comment on the factors (both good and bad) that influence the application of appropriate technology to the development of Sri Lanka.
(15 marks)

_____END OF QUESTION PAPER_____