

Technology Management (DM-443/IB-415)

Trimester – IV End-Term Examination: September 2014

Time allowed: 2.5 Hours

Max Marks: 50

Roll No: \_\_\_\_\_

Section A:

Max. Marks: 15

Short answers: Answer any 3 out of 5 questions below. Each question carries 5 marks.

A-1: Define Technology.

A-2: Write a short note on Technology Management.

A-3: How is Technology related with the Growth of an organization?

A-4: Write five considerations one should make before identifying and selecting a particular technology.

A-5: Write a note on application of technology in education.

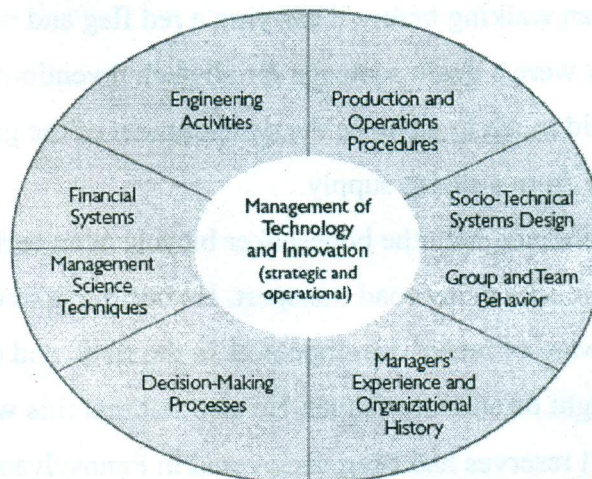
Section B

Max. Marks: 20

Long answers: Answer any 2 out of 3 questions below. Each question carries 10 marks.

B-1: The following diagram depicts a relationship between areas influencing the management of Technology and Innovation.

*Areas Influencing the Management of Technology and Innovation*



Explain, with an example, the stages through which an initial idea about a new product or service converts itself in to a physical product or service.

B-2: Explain the basic principles of Environmental Impact Assessment of Technology (EIA)" and "Sustainability Assessment of Technology (SAT)" in approx. 500 words.

B-3: Explain how Innovation is different than Invention. Give at least five examples each of Innovations and Inventions.

**Section C:**

**Case Study**

**Max. Marks: 15**

**The situation:**

Creativity can be used in management to either make a-, more effective use of a manager's time, or b- to improve a product's appeal to customers, or c- to improve motivation amongst staff, or d- to appeal to customers' wants and needs or e- to cut costs through more efficient/effective production methods or f- to identify new and profitable product-market opportunities

**FROM STEAM-DRIVEN TO PETROL-DRIVEN CARS**

The steam car was a failure as a road vehicle, for it proved too heavy and its control too difficult for this purpose. The electric motor seemed to offer one possible solution, while other would-be inventors saw the gas-powered engine as providing a possible solution. In 1863, Etienne Lenoir built an engine which used ordinary coal gas and even made a car which he drove using his invented engine as the power source. Siegfried Marcus is credited with using petrol vapour for the first time in an engine to drive a car through the streets of Vienna in 1875. However, it was considered to be such a noisy vehicle that the police banned its further use on the public highways. Very much ahead of his time, Edward Butler produced a petrol-driven tricycle, with a two-cylinder motor, a carburettor and ignition through a spark plug produced by a dynamo, in London in 1884. The 'Red Flags Laws' operated at that time in England restricting speed to 4 m.p.h. on the open road and 2 m.p.h. in built-up areas. The laws laid down that a vehicle should be accompanied by a man walking before it carrying a red flag and warning people of the oncoming vehicle. They were a death sentence for all such inventions. In Germany, however, August Nikolaus Otto did much to advance the development of the gas engine in the 1870s – although it was powered from a mains supply.

Karl Benz gained acquaintance with the boneshaker bicycle at an early age, and this prompted him to think of ways of mechanising road transport. He became interested in Lenoir's gas engine, made himself aware of recent developments in the field, and concluded that some petroleum derivative might be suitable as fuel. He also felt that this would be comparatively cheap since extensive oil reserves had been discovered in Pennsylvania in the 1850s.

In 1885, Benz produced his first car. It was a tricycle with a four-stroke engine using the Otto



principle. He invented his own electrical ignition system and surrounded the engine with a mantle containing cold water for cooling. Transmission of the drive to the rear wheels was accomplished with chains and incorporated a primitive clutch.

**Questions: Each question carries 5 marks:**

- 1 In the light of the above, consider just how the paradigm shift (from horse-driven vehicle to mechanised road vehicle) occurred in this instance.
- 2 How do you think a similar development took place in the aviation industry?
- 3: How could a similar development take place in Information Technology industry?