1. Why is transfer of technology required? Describe various non-equity forms of technology transfer by TNCs and Small and Medium Enterprises.

Ans: It is important to understand what is meant by technology. Technology normally implies a way of producing goods or establishing services; it manifests itself in production process and product development. Modern understanding of technology is more comprehensive than conventional understanding. It also includes organizational, informatory and motivational areas. Transfer of technology can be defined as the transfer effected from one agency to the other. There are various levels of transfer of technology. First, when the technical knowledge is transferred from the laboratory and scientific establishment to students of technology; it can be called transfer of knowledge. For example, the principles of physics and chemistry are transferred through teaching to the students. An advanced form of transfer of technology in this category is high level seminars where advancements made in a number of basic science and their applications are discussed. The same is also published for wider use. It must be noted here that there is no relationship between the costs incurred and price paid by the users.

The second level of transfer is the general knowledge of production of a product. Firms and individuals in this area would be broadly knowledgeable about the process and requirement which constitute part of the general knowledge of a concerned industry. Here again there is no relationship between costs and benefits.

Third, it can be said when a new product is either introduced in the market or imported, one can get an idea of technological possibilities.

Fourth, which is the focus of this unit is the transfer of technology which is commercially successful and this technology normally is owned by a firm with necessary property protection. Therefore, it can be transferred only through the market transaction, i.e., buying and selling.

Before identifying the main features of technology market, it is useful to understand the rationale of technology transfer. We are confining here to technology transfer between two firms which are located in two different countries, i.e., international transfer of technology. Over about a century, firms all over the developed world are buying and selling technology. Over the last thirty years in particular the technology transfer is also taking place between the firms of developed and developing countries. In this context, it is necessary to briefly understand the rationale guiding the buying and selling of technology.

A seller of technology finds that it can earn returns from selling the technology. This is particularly so in view of the fact that life cycle of the technology is short. The advances made in technological innovations are so fast that there is a tendency to sell previous generation of technology. In addition, the proprietor right in a number of cases is short. Hence, the firm is induced to sell technology.

Transfer of technology among various units of TNCs, which are globally operating, that is subsidiaries, affiliates and joint venture partners, also takes place at a price and also enjoys the benefits of total production of products and services. Buyers of technology have three main reasons for purchasing technology. They are:

i) Innovating a new process or a product by a firm is costlier than buying technology in the market, it is often said that one does not need to invent a wheel again and again.

ii) Since a commercially successful technology has already proved its utility the buyer finds it very attractive to buy the technology.

iii) A firm which has no incentive to become a leader in the market either by innovating a new product or a new process would find it more convenient to buy the most modern technology from the owner which is most often a TNC than taking the risk of innovating a similar technology.

There are a number of mechanisms other than equity participation through which technology transfers takes place. It includes outright-sale of technology, sub-contracting of production of parts, components and services, management contracts, franchise exports, strategic alliances and technology collaboration agreements.

Outright Sale Purchase of Technology: Firms at times prefer outright purchase of technology while the seller also opts for it. The advantage of this mode of transfer to the purchaser is that the buying firm gets technology at one goes and has freedom to use the technology without the interference of the seller. Further, it is argued that the buyer can find it economical. But there are certain disadvantages as well. First, outright purchase may not be adequate to transfer technology without the support of the seller. Further, the buyer will be deprived of advances that would be subsequently made. In addition, in the absence of well planned R&D, the technology absorption by the firm may not be adequate. The firm may in the ultimate analysis depend on outside source for all technological inputs.

Sub-Contracting: Many foreign enterprises sub-contract the purchase of inputs to host country’s producer. This is called supplier user relationship. Under this arrangement the TNC’s affiliate, for instance, not only assists the local firm technically but also provides information which is important in increasing its ability to coordinate the production of components and other intermediate products. (This should not be mistaken for licensing agreements.) Technology passes to sub-contractors or suppliers coming in the form of technical assistance, material handling, product and process technology, and general information with regard to production and finance, etc. This form of technology transfer is widespread in automobile industry, radio, television, shoe, etc. This form of technology transfer has also expanded to highly sophisticated products such as those of the semiconductor industry.

Management Contract: A number of firms also sign management contracts with firms in the host countries. Under these contracts foreign enterprise advises the host company about various management practices which are in use in its parent company. Occasionally, under this contract the entire management is handled by the foreign firm. For this the host company has to pay management fees, either lumpsum or in installments.