

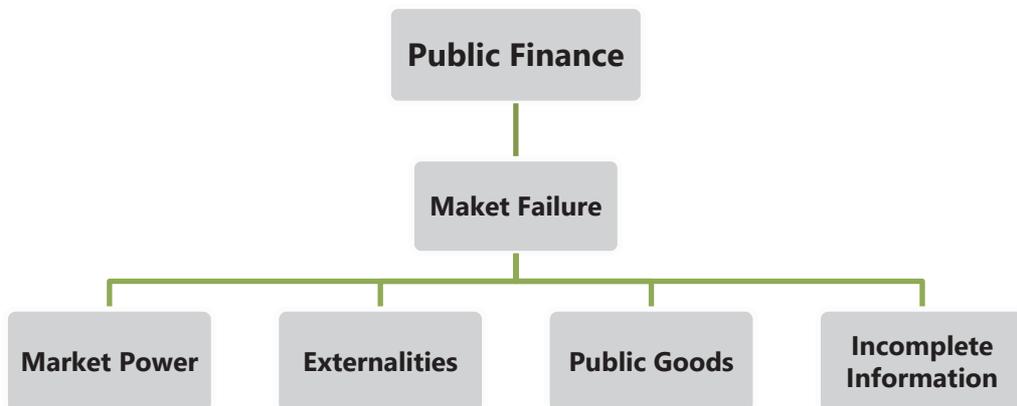
UNIT II: MARKET FAILURE

LEARNING OUTCOMES

At the end of this unit, you will be able to:

- ❑ Define the concept of market failure
- ❑ Describe the different sources of market failure
- ❑ Explain the role of externalities in welfare loss of markets
- ❑ Distinguish between different types of public goods and illustrate how they cause market failure
- ❑ Describe the free rider problem associated with public goods
- ❑ Appraise the role of incomplete information in generating market failure
- ❑ Evaluate government interventions for correcting market failure

UNIT OVERVIEW





2.1 INTRODUCTION

Before we go into the subject matter of market failure which is the focus of this unit, we shall examine two familiar events that are in some way connected with the phenomenon of market failure.

Case I

Sarva Shiksha Abhiyan (SSA) is a centrally sponsored scheme implemented by the Government of India in partnership with the state governments, for universalising good quality elementary education for all children in the 6-14 age groups in a time-bound manner. Through this programme, the government aims to provide opportunity for children to learn about and master their natural environment in order to develop their potential intellectually, spiritually as well as materially. The ultimate objective is to bring in social, regional and gender quantity.

Nearly everyone believes that providing basic education to all citizens is an important responsibility of the government. This is the reason why education is almost entirely administered and extensively financed by government.

Questions

- Why do you think governments should intervene to provide education?
- What do you think the outcome will be if it is left completely to private entrepreneurs?

Case II

The Ministry Women and Child Development is implementing two Centrally Sponsored Umbrella schemes across the country namely:

1. Integrated Child Development Services and
2. Mission for Protection and Empowerment of Women.

There are currently thirteen on-going schemes that target improvements in the condition of women and children. The union budget 2020-21 allocated a total of ₹ 28,600 Crores for women-specific schemes for the financial year 2020-21. These programmes mainly aim at promotion of greater nutrition security to women, increasing women's economic participation, women's empowerment and promotion of education of girl child.

The above case is an example of how government and specifically constituted bodies address different issues to protect the interests of women and children.

Question

Since people should ideally recognize women's rights and need to establish the same, why should governments interfere with the system?



2.2 THE CONCEPT OF MARKET FAILURE

The general belief is that markets are amazingly competent in organizing the activities of an economy as they are generally efficient and capable of achieving optimal allocation of resources. However, there are exceptions to this. Under certain circumstances, 'market failure' occurs, i.e. the market fails to allocate resources efficiently and therefore, market outcomes become inefficient.

Market failure is a situation in which the free market leads to misallocation of society's scarce resources in the sense that there is either overproduction or underproduction of particular goods and services leading to a less than optimal outcome. The reason for market failure lies in the fact that though perfectly competitive markets work efficiently, most often the prerequisites of competition are unlikely to be present in an economy. Market failures are situations in which a particular market, left to itself, is inefficient. We shall first try to understand why markets fail and later, in the subsequent unit, proceed to identify the role of government in dealing with market failure.

We need to appreciate the fact that there are two aspects of market failures namely, demand-side market failures and supply side market failures. Demand-side market failures are said to occur when the demand curves do not take into account the full willingness of consumers to pay for a product. For example, though we experience the benefit, none of us will be willing to pay to view a wayside fountain because we can view it without paying. Supply-side market failures happen when supply curves do not incorporate the full cost of producing the product. For example, a thermal power plant that uses coal may not have to include or pay completely for the costs to the society caused by fumes it discharges into the atmosphere as part of the cost of producing electricity.



2.3 WHY DO MARKETS FAIL?

The pertinent question here is why do markets fail? There are four major reasons for market failure. They are:

- Market power,
- Externalities,
- Public goods, and
- Incomplete information

We shall discuss each of the above in detail.

2.3.1 Market Power

Market power or monopoly power is the ability of a firm to profitably raise the market price of a good or service over its marginal cost. Firms that have market power are price makers and therefore, can charge a price that gives them positive economic profits. Excessive market power causes the single producer or a small number of producers to produce and sell less output than would be produced in a competitive market. Market power can cause markets to be inefficient because it keeps price higher and output lower than the outcome of equilibrium of supply and demand. In the extreme case, there is the problem of non-existence of markets or missing markets resulting in failure to produce various goods and services, despite the fact that such products and services are wanted by people. For example, the markets for pure public goods do not exist.

2.3.2 Externalities

We begin by describing externalities and then, proceed to discuss how they create market inefficiencies. As we are aware, anything that one individual does, may have, at the margin, some effect on others. For example, if individuals decide to switch from consumption of ordinary vegetables to consumption of organic vegetables, they would, other things equal, increase the price of organic vegetables and potentially reduce the welfare of existing consumers of organic vegetables. However, we should note that all these operate through price mechanism i.e. through changes in prices. The price system works efficiently because market prices convey information to both producers and consumers.

However, sometimes, the actions of either consumers or producers result in costs or benefits that do not reflect as part of the market price. Such costs or benefits which are not accounted for by the market price are called externalities because

they are “external” to the market. In other words, there is an externality when a consumption or production activity has an indirect effect on other’s consumption or production activities and such effects are not reflected directly in market prices. The unique feature of an externality is that it is initiated and experienced not through the operation of the price system, but outside the market. Since it occurs outside the price mechanism, it has not been compensated for, or in other words it is uninternalized or the cost (benefit) of it is not borne (paid) by the parties.

Externalities are also referred to as 'spillover effects', 'neighbourhood effects' 'third-party effects' or 'side-effects', as the originator of the externality imposes costs or benefits on others who are not responsible for initiating the effect.

Externalities may be unidirectional or reciprocal. Suppose a workshop creates ear-splitting noise and imposes an externality on a baker who produces smoke and disturbs the workers in the workshop, then this is a case of reciprocal externality. If an accountant who is disturbed by loud music but has not imposed any externality on the singers, then the externality is unidirectional.

Externalities can be positive or negative. Negative externalities occur when the action of one party imposes costs on another party. Positive externalities occur when the action of one party confers benefits on another party. The four possible types of externalities are:

- Negative production externalities
- Positive production externalities
- Negative consumption externalities ,and
- Positive consumption externalities

Negative Production Externalities

A negative externality initiated in production which imposes an external cost on others may be received by another in consumption or in production. As an example, a negative production externality occurs when a factory which produces aluminium discharges untreated waste water into a nearby river and pollutes the water causing health hazards for people who use the water for drinking and bathing. Pollution of river also affects fish output as there will be less catch for fishermen due to loss of fish resources. The former is a case where a negative production externality is received in consumption and the latter presents a case of a negative production externality received in production. The firm, however,

has no incentive to account for the external costs that it imposes on consumers of river water or fishermen when making its production decision. Additionally, there is no market in which these external costs can be reflected in the price of aluminium.

Positive Production Externalities

A positive production externality initiated in production that confers external benefits on others may be received in production or in consumption. Compared to negative production externalities, positive production externalities are less common. As an example of positive production externality received in production, we can cite the case of a firm which offers training to its employees for increasing their skills. The firm generates positive benefits on other firms when they hire such workers as they change their jobs. Another example is the case of a beekeeper who locates beehives in an orange growing area enhancing the chances of greater production of oranges through increased pollination. A positive production externality is received in consumption when an individual raises an attractive garden and the persons walking by enjoy the garden. These external effects were not in fact taken into account when the production decisions were made.

Negative Consumption Externalities

Negative consumption externalities are extensively experienced by us in our day to day life. Such negative consumption externalities initiated in consumption which produce external costs on others may be received in consumption or in production. Examples to cite where they affect consumption of others are smoking cigarettes in public place causing passive smoking by others, creating litter and diminishing the aesthetic value of the room and playing the radio loudly obstructing one from enjoying a concert. The act of undisciplined students talking and creating disturbance in a class preventing teachers from making effective instruction and the case of excessive consumption of alcohol causing impairment in efficiency for work and production are instances of negative consumption externalities affecting production.

Positive Consumption Externalities

A positive consumption externality initiated in consumption that confers external benefits on others may be received in consumption or in production. For example, if people get immunized against contagious diseases, they would confer a social benefit to others as well by preventing others from getting infected. Consumption of the services of a health club by the employees of a firm would result in an

external benefit to the firm in the form of increased efficiency and productivity. When there are externalities and the costs or benefits are experienced by people outside a transaction, the actors in the transaction (consumers or producers) tend to ignore those external costs or benefits.

Having discussed the nature of externalities in production and consumption, we shall now examine how externalities cause inefficiency and market failure. Before we attempt this, we need to understand the difference between private costs and social costs. Private cost is the cost faced by the producer or consumer directly involved in a transaction. If we take the case of a producer, his private cost includes direct cost of labour, materials, energy and other indirect overheads. Social costs refer to the total costs to the society on account of a production or consumption activity. Social costs are private costs borne by individuals directly involved in a transaction together with the external costs borne by third parties not directly involved in the transaction. In other words, social costs are the total costs incurred by the society when a good is consumed or produced. It is thus private costs plus costs to third parties (i.e. private costs + total negative externalities).

Social Cost = Private Cost + External Cost

Social benefits are the total benefits accrued to the society from an economic activity. Social benefits can be defined as private benefits plus benefits to third parties (i.e. private benefits + total positive externalities).

Let us consider the case of social costs. The external costs are not included in firms' income statements or consumers' decisions. However, these external costs are real and important as far as the society is concerned. As we have mentioned above, firms do not have to pay for the damage resulting from the pollution which they generate. As a result, each firm's cost which is considered for determining output would be only private cost or direct cost of production which does not incorporate externalities.

The presence of externalities creates a divergence between private and social costs of production. When negative production externalities exist, social costs exceed private cost because the true social cost of production would be private cost plus the cost of the damage from externalities. Negative externalities impose costs on society that extend beyond the cost of production as originally intended and actually borne by the producer. If producers do not take into account the externalities, there will be over-production and market failure. Applying the same

logic, negative consumption externalities lead to a situation where the social benefit of consumption is less than the private benefit.

Externalities cause market inefficiencies because they hinder the ability of market prices to convey accurate information about how much to produce and how much to consume. Given that externalities are more often negative, we shall focus on them.

A market exchange assumes that the participants have total control over every aspect of their product and that the prices (or fees) they charge represent the full cost of production plus profit. As a matter of fact, the producers of products with extensive negative externalities are not fully accountable for the full cost of their production which includes private as well as social costs. Recall our earlier case of the aluminium factory which causes pollution of river water. As a matter of fact, the prices of aluminium tend to reflect only the private costs of the producer. Production remains efficient only when all benefits and costs are paid for. Since externalities are not reflected in market prices, they can be a source of inefficiency. Without government intervention, such a producer will have no reason to consider the social costs of pollution. When firms do not have to worry about the negative externalities associated with their production, the result is excess production and unnecessary social costs. The problem, though serious, does not usually float up much because:

- The society does not know precisely who are the producers of harmful externalities
- Even if the society knows it, the cause-effect linkages are so unclear that the negative externality cannot be unquestionably traced to its producer.

Before we look into the effect of externalities, we need to be clear about the terms used in the analysis

- Marginal private cost (MPC) is the change in the producer's total cost brought about by the production of an additional unit of a good or service. It is also known as marginal cost of production. (represented by the supply curve)
- Marginal external cost (MEC) is the change in the cost to parties other than the producer or buyer of a good or service due to an additional unit of the good or service.
- Marginal Social cost (MSC) is the change in society's total cost brought about by an additional unit of a good or service. ($=MPC+MEC$)

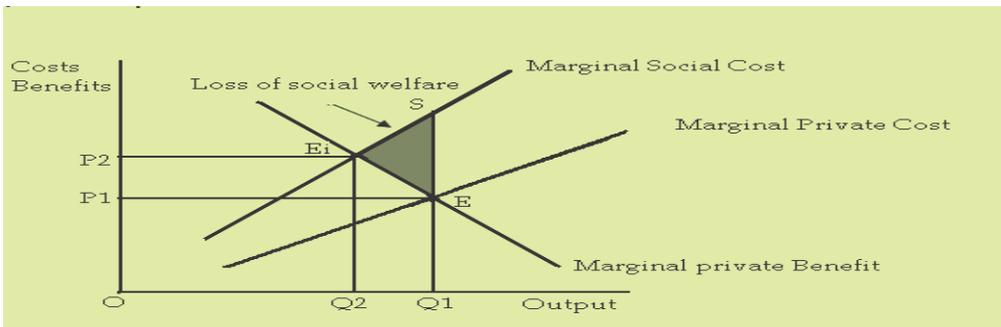
- Marginal private benefit (MPB) = marginal willingness to pay (represented by the demand curve)
- Marginal external benefit (MEB) is the change in the benefit to parties other than the producer or buyer of a good or service due to an additional unit of the good or service.
- Marginal Social benefit (MSB) is the change society's total benefits associated with an additional unit of a good or service. ($=MPB+MEB$)
- When no externality is present, there are no external costs and marginal social cost is the same as marginal private cost; and marginal social benefit is the same as marginal private benefit. Therefore, $MPC=MSC$ and $MPB=MSB$.
- If an externality is present, then either $MSC \neq MPC$ or $MSB \neq MPB$ (or both); and hence equilibrium (where $MPC=MPB$) is unlikely to be efficient.

Now, the pertinent question is: what is 'socially optimal output'? It is that amount of output which takes into account all benefits (private as well as external) and all costs (private as well as external). When we want to find out whether social efficiency is achieved or not (i.e. highest possible social benefits, given the constraint of costs), we need to compare marginal social benefits to marginal social costs. The condition for efficiency and optimum output is $MSB=MSC$ i.e., marginal social benefit = marginal social cost. It means 'the last unit produced should yield benefits to society that exactly equals the costs to society for producing the last unit'.

The problem of externalities can be explained with the help of the figure below:

Figure 2.2.1

Negative Production Externalities and Loss of Social welfare



The equilibrium level of output that would be produced by a free market is Q_1 at which marginal private benefit (MPB) is equal to marginal private cost (MPC). Marginal social cost (MSC) represents the full or true cost to the society of producing another unit of a good. It includes marginal private cost (MPC) and marginal external cost (MEC). Assuming that there are no externalities arising from consumption (so that $MPB = MSB$), we can see that marginal social cost (Q_1S) is higher than marginal private cost (Q_1E). Social efficiency occurs at Q_2 level of output where MSC is equal to MSB. Output Q_1 is socially inefficient because at Q_1 , the MSC is greater than the MSB and represents over production. The shaded triangle represents the area of dead weight welfare loss. It indicates the area of overconsumption. Thus, we conclude that when there is negative externality, a competitive market will produce too much output relative to the social optimum. This is a clear case of market failure where prices are lower than optimum and fail to provide the correct signals.

2.4 PUBLIC GOODS

Paul A. Samuelson who introduced the concept of 'collective consumption good' in his path-breaking 1954 paper 'The Pure Theory of Public Expenditure' is usually recognized as the first economist to develop the theory of public goods. A public good (also referred to as collective consumption good or social good) is defined as one which all enjoy in common in the sense that each individual's consumption of such a good leads to no subtraction from any other individuals' consumption of that good.

Before we go on to discuss the distinguishing features of public goods and how they differ from private goods, it is pertinent to first understand the characteristics of private goods.

2.4.1 Characteristics of Private Goods

- Private goods refer to those goods that yield utility to people. Since they are scarce anyone who wants to consume them must purchase them.
- Owners of private goods can exercise private property rights and can prevent others from using the good or consuming their benefits.
- Consumption of private goods is 'rivalrous' that is the purchase and consumption of a private good by one individual prevents another individual from consuming it. In other words, simultaneous consumption of a rivalrous good by more than one person is impossible.

- Private goods are 'excludable' i.e. it is possible to exclude or prevent consumers who have not paid for them from consuming them or having access to them. In other words, those who want to consume private goods must buy them at a price from its sellers. Excludability necessitates that consumers of private goods send the right signals in the market. A buyer of a private good is forced in a transaction to reveal what he or she is willing to pay for a good or a service.
- Private goods do not have the free-rider problem. This means that private goods will be available to only those persons who are willing to pay for them.
- Private goods can be parcelled out among different individuals and therefore, it is possible to refer to total consumption as the sum of each individual's consumption. Therefore, the market demand curve for a private good is obtained by horizontal summation of individual demand curves.
- All private goods and services can be rejected by the consumers if their needs, preferences or budgets change.
- Additional resource costs are involved for producing and supplying additional quantities of private goods.
- Since buyers can be excluded from enjoying the good if they are not willing and able to pay for it, consumers will get different amounts of goods and services based on their desires and ability and willingness to pay. Therefore, whenever there is inequality in income distribution in an economy, issues of fairness and justice tend to arise with respect to private goods.
- Normally, the market will efficiently allocate resources for the production of private goods.

Most of the goods produced and consumed in an economy are private goods. A few examples are: food items, clothing, movie ticket, television, cars, houses etc.

You can make a list of ten such goods and check whether each of them satisfies all the above mentioned characteristics.

Having understood the features of private goods, we shall now proceed to consider the distinguishing characteristics of public goods.

2.4.2 Characteristics of Public Goods

- Public goods yield utility to people and are products (goods or services) whose consumption is essentially collective in nature. No direct payment by the consumer is involved in the case of pure public goods.
- Public good is non-rival in consumption. It means that consumption of a public good by one individual does not reduce the quality or quantity available for all other individuals. When consumed by one person, it can be consumed in equal amounts by the rest of the persons in the society. That is, your consumption of a public good in no way interferes with its consumption by other people. For example, if, you eat your apple, another person too cannot eat it. But, if you walk in street light, other persons too can walk without any reduced benefit from the street light.
- Public goods are non-excludable. Consumers cannot (at least at less than prohibitive cost) be excluded from consumption benefits. If the good is provided, one individual cannot deny other individuals' consumption. Provision of a public good by government means provision for all. For example, national defence once provided, it is impossible to exclude anyone within the country from consuming and benefiting from it.
- Public goods are characterized by indivisibility. For example, you can buy chocolates or ice cream as separate units, but a lighthouse, a highway, an airport, defence, clean air etc cannot be consumed in separate units. In the case of public goods, each individual may consume all of the good i.e. the total amount consumed is the same for each individual.
- Public goods are generally more vulnerable to issues such as externalities, inadequate property rights, and free rider problems.

Once a public good is provided, the additional resource cost of another person consuming the goods is 'zero'. A good example is a lighthouse near a sea shore to guide the ships. Once the beacon is lit, an additional ship can use it without any additional cost of provision.

Public goods are generally divided into two categories namely, public consumption goods and public factors of production. A few examples of public goods are: national defence, highways, public education, scientific research which benefits everyone, law enforcement, lighthouses, fire protection, disease prevention and public sanitation.

A unique feature of public goods is that they do not conform to the settings of market exchange. The property rights of public goods with extensive indivisibility and nonexclusive properties cannot be determined with certainty. Therefore, the owners of such products cannot exercise sufficient control over their assets. For example, if you maintain a beautiful garden, you cannot exercise full control over it so as to charge your neighbours for the enjoyment which they get from your garden. As a consequence of their peculiar characteristics, public goods do not provide incentives that will generate optimal market reaction. Producers are not motivated to produce a socially-optimal amount of products if they cannot charge a positive price for them or make profits from them. As such, though public goods are extremely valuable for the well-being of the society, left to the market, they will not be produced at all or will be grossly under-produced.

Now that we have understood the difference between private goods and public goods, we shall examine the implications of these characteristics on the production, supply and use of these goods. As mentioned above, ideally competitive markets have sufficient incentives to produce and supply private goods. Because of the peculiar characteristics of public goods such as indivisibility, non-excludability and nonrivalry, competitive private markets will fail to generate economically efficient outputs of public goods. That is why public goods are often (though not always) under-provided in a free market economy.

2.4.3 Classification of Public Goods

One approach to classify goods so as to establish taxonomy of different types of goods is to concentrate on the non-rival and non-excludable characteristics of public goods. The following table presenting the taxonomy of goods will help us understand the classification of goods.

	Excludable	Non-excludable
Rivalrous	A Private goods food, clothing, cars	B Common resources such as fish stocks, forest resources, coal
Non-rivalrous	C Club goods, cinemas, private parks, satellite television	D Pure public goods such as national defence

- Goods in category A are rival in consumption and are excludable. These are also known as pure private goods.

- Goods in category D which are characterized by both non-excludability and non-rivalry properties are called pure public goods. A pure public good is non-rival as well as non-excludable. The benefit that an individual gets from a pure public good does not depend on the number of users. The clarity of your radio reception, for example, is generally independent of the number of other listeners. Knowledge is another non-rivalrous good. Once something has been discovered, one person's use of that knowledge does not preclude others from applying the same knowledge. But, this is not the case with most private goods.
- Consumption goods that fall in category B are rival but not excludable. Common resources would come under this (explained in section 2.4.6 below). Let us take another example. Bees from the hives of different bee keepers collect nectar from the nearby orange garden. The blossom is rival as the nectar collected for one hive is unavailable to another. Even so, it may be inconceivable to try to deny any particular honey bee access i.e. the situation is non-excludable. The examples include public parks, public roads in a city etc.
- Goods in category C are non-rival in consumption but are excludable. A toll booth may exclude vehicles unless payment is made. Yet, if the road is not congested, one car may utilize it with no loss of benefit even though the other cars are also consuming the road service. Similarly, admission to a cinema, swimming pool, music concert etc. has potential for exclusion, but if there is no congestion, each individual admitted may consume the services without subtracting from the benefit of others. A good example of this is DTH cable TV service or Digital goods. The consumption of these is non-rival in nature but exclusion of households who do not pay is feasible.

2.4.4 Pure and Impure Public Goods

The concept of pure public good is often criticized by many who point out that such goods are not in fact observable in the real world. They argue that goods which perfectly satisfy nonrivalness and non-excludability are not easy to come across. For example, if the government provides law and order or medical care, the use of law courts or medical care by some individuals subtracts the consumption of others if they need to wait. As another example, we may take defence. If armies are mostly deployed in the northern borders, it may not result in the same amount of protection to people in the south.

There are many hybrid goods that possess some features of both public and private goods. These goods are called impure public goods and are partially rivalrous or congestible. Because of the possibility of congestion, the benefit that an individual gets from an impure public good depends on the number of users. Consumption of these goods by another person reduces, but does not eliminate, the benefits that other people receive from their consumption of the same good. For example, open-access Wi-Fi networks become crowded when more people access it. Impure public goods also differ from pure public goods in that they are often excludable.

An example of an impure public good would be cable television. It is non-rivalrous because the use of cable television by other individuals will in no way reduce your enjoyment of it. The good is excludable since the cable TV service providers can refuse connection if you do not pay for set top box and recharge it regularly..

We have seen above that impure public goods only partially satisfy the two public good characteristics of non-rivalry in consumption and non-excludability. The possibility of exclusion from the use of an impure public good has two implications.

1. Since free riding can be eliminated, the impure public good may be provided either by the market or by the government at a price or fee. If the consumption of a good can be excluded, then, the market would provide a price mechanism for it.
2. The provider of an impure public good may be able to control the degree of congestion either by regulating the number of people who may use it , or the frequency with which it may be used or both.

Two broad classes of goods have been included in the studies related to impure public goods.

1. Club goods; first studied by Buchanan
2. Variable use public goods; first analyzed by Oakland and Sandmo

Examples of club goods are: facilities such as swimming pools, fitness centres etc. These goods are replicable and, therefore, individuals who are excluded from one facility may get similar services from an equivalent provider.

Variable use public goods include facilities such as roads, bridges etc. Once they are provided, everybody can use it. They can be excludable or non excludable. If

they are excludable, some people can be discouraged from using it frequently by making them pay for its consumption. In doing so, the frequency of usage of the public good can be controlled. Since they are not replicable, the facility should be accessible to all potential users. Why should we exclude the enjoyment of roads, bridges etc of some people? The reason is the possibility of congestion due to large number of vehicles and the potential reduction of benefit to the users.

2.4.5. Quasi-Public Goods (Mixed Goods)

This second approach to classification of impure public goods focuses on the mix of services that arise from the provision of the good. For example, if one gets inoculated against measles, it confers not only a private benefit to the individual, but also an external benefit because it reduces the chances getting infected of other persons who are in contact with him. You can observe here that the external effect associated with the consumption of a private good may have the characteristics of a public good.

Similarly, education will improve the individual's earning potential and at the same time, it may facilitate basic research creating non-rival, non-excludable knowledge and information which are public goods. Other examples of benefits to the society through education are improvement in decision making behaviour, provision of a screening device for the labour market to determine the quality of labour and better cultural environment and heritage for future generations. For example, other things remaining the same, the students pursuing the chartered accountancy programme will have a demand curve for the programme at various prices. This reflects the private benefits which the students believe they would enjoy as a result of this education. These may be viewed as 'private return' on education and they depend in part on the income differential that students expect during their working life as a result of chartered accountancy education. However, there are likely other benefits such as, the possible addition which you may make to accounting knowledge and practices, the consultancy services you give to others, the policy recommendations that you may be able to put forth for a better tax or budgeting system etc. to mention a few. These have the characteristics of public good as everyone in the society can consume them without reducing the amount available for consumption by others. Obviously, your demand curve for the CA programme did not incorporate all these external effects.

The quasi-public goods or services, also called a near public good (for e.g. education, health services) possess nearly all of the qualities of the private goods

and some of the benefits of public good. It is easy to keep people away from them by charging a price or fee. However, it is undesirable to keep people away from such goods because the society would be better off if more people consume them. This particular characteristic namely, the combination of virtually infinite benefits and the ability to charge a price results in some quasi-public goods being sold through markets and others being provided by government. As such, people argue that these should not be left to the market alone.

Markets for the quasi-public goods are considered to be incomplete markets and their lack of provision by free markets would be considered as inefficiency and market failure.

2.4.6 Common Access Resources

Common access resources or common pool resources are a special class of impure public goods which are non-excludable as people cannot be excluded from using them. These are rival in nature and their consumption lessens the benefits available for others. This rival nature of common resources is what distinguishes them from pure public goods, which exhibit both non-excludability and non-rivalry in consumption. They are generally available free of charge. Some important natural resources fall into this category.

Examples of common access resources are fisheries, forests, backwaters, common pastures, rivers, sea, backwaters biodiversity etc. The earth's atmosphere is perhaps the best example. Emissions of carbon dioxide and other greenhouse gases have led to the depletion of the ozone layer endangering environmental sustainability. Although nations are aware of the fact that reduced global warming would benefit everyone, they have an incentive to free ride, with the result that nothing positive is likely to be done to correct the problem.

Since price mechanism does not apply to common resources, producers and consumers do not pay for these resources and therefore, they overuse them and cause their depletion and degradation. This creates threat to the sustainability of these resources and, therefore, the availability of common access resources for future generations.

2.4.7. Tragedy of the Commons

The problem of the 'tragedy of the commons' was first described and analysed by Garrett Hardin in his article 'The Tragedy of the Commons' (1968). Economists use the term to describe the problem which occurs when rivalrous but non-excludable goods are overused to the disadvantage of the entire world. The term "commons"

is derived from the traditional English legal term of “common land” where farmers/peasants would graze their livestock, hunt and collect wild plants and other produce. Everyone has access to a commonly held pasture; there are no rules about sustainable numbers for grazing. The outcome of the individual rational economic decisions of cattle owners was market failure, because these actions resulted in degradation, depletion or even destruction of the resource leading to welfare loss for the entire society.

2.4.8. Global Public Goods

Global public goods are those public goods with benefits /costs that potentially extend to everyone in the world. These goods have widespread impact on different countries and regions, population groups and generations throughout the entire globe. Global Public goods may be:

- final public goods which are ‘outcomes’ such as ozone layer preservation or climate change prevention, or
- intermediate public goods, which contribute to the provision of final public goods. e.g. International health regulations

The World Bank identifies five areas of global public goods which it seeks to address: namely,

- the environmental commons (including the prevention of climate change and biodiversity),
- communicable diseases (including HIV/AIDS, tuberculosis, malaria, and avian influenza),
- international trade,
- international financial architecture, and
- global knowledge for development.

The distinctive characteristic of global public goods is that there is no mechanism (either market or government) to ensure an efficient outcome.

2.4.9 The Free-Rider Problem

A free rider is a person who benefits from something without expending effort or paying for it. In other words, free riders are those who utilize goods without paying for their use. Example is Wikipedia, a free encyclopaedia which faces a free rider problem. Hundreds of millions of people use Wikipedia every month but

only a small part of users pay to use it. A large majority of Wikipedia users do not pay to use the site but are able to benefit from the information provided by the website. The free-rider problem occurs when everyone enjoys the benefits of a good without paying for it. Since private goods are excludable, free-riding mostly occurs in the case of public goods. The free-rider problem leads to under-provision of a good or service and thus causes market failure.

As seen above, public goods provide a very important example of market failure in which the self-interested behaviour of individuals does not produce efficient results. The absence of excludability in the case of public goods and the tendency of people to act in their own self-interest will lead to the problem of free-riding. If individuals cannot be excluded from the benefit of a public good, then they are not likely to express the value of the benefits which they receive as an offer to pay. In other words, they will not express to buy a particular quantity at a price. Briefly put, there is no incentive for people to pay for the good because they can consume it without paying for it.

The problem occurs because of the failure of individuals to reveal their real or true preferences for the public good through their willingness to pay. On account of the free-rider problem, there is no meaningful demand curve for public goods. If individuals make no offer to pay for public goods, there is a market failure in the case of these goods and the profit-maximizing firms will not produce them.

There is an important implication for the behaviour of free-riding. If every individual plays the same strategy of free-riding, the strategy will fail because nobody is willing to pay and therefore, nothing will be provided by the market. Then, a free ride for any one becomes impossible.

In fact, the public goods are valuable for people. If there is no free-rider problem, people would be willing to pay for them and they will be produced by the market. As such, if the free-rider problem cannot be solved, the following two outcomes are possible:

1. No public good will be provided in private markets
2. Private markets will seriously under produce public goods even though these goods provide valuable service to the society.



2.5 INCOMPLETE INFORMATION

Complete information is an important element of competitive market. Perfect information implies that both buyers and sellers have complete information about anything that may influence their decision making. However, this assumption is not fully satisfied in real markets due to the following reasons.

- Often, the nature of products and services tends to be highly complex e.g. cardiac surgery, financial products (such as pension products, mutual funds etc).
- In many cases consumers are unable to quickly / cheaply find sufficient information on the best prices as well as quality for different products. Sometimes they misunderstand the true costs or benefits of a product or are uncertain about the true costs and benefits.
- People are ignorant or not aware of many matters in the market. Generally they have inaccurate or incomplete data and consequently make potentially 'wrong' choices / decisions.

Information failure is widespread in numerous market exchanges. When this happens misallocation of scarce resources takes place and equilibrium price and quantity is not established through price mechanism. This results in market failure.

2.5.1 Asymmetric Information

Asymmetric information occurs when there is an imbalance in information between the buyer and the seller i.e. when the buyer knows more than the seller or the seller knows more than the buyer. This can distort choices. For example, the landlords know more about their properties than tenants, a borrower knows more about their ability to repay a loan than the lender, a used-car seller knows more about vehicle quality than a buyer, health insurance buyers know more about the state of health than the insurance companies and some traders may possess insider information in financial markets. These are situations in which one party to a transaction knows a material fact that the other party does not. This phenomenon, which is sometimes referred to as the 'lemons problem', is an important source of market failure.

2.5.2 Adverse Selection

Asymmetric information generates adverse selection which results from hidden attributes that can distort the usual market process and affect a transaction

before it occurs. Adverse selection generally refers to any situation in which one party to a contract or negotiation, such as a seller, possesses information relevant to the contract or negotiation that the corresponding party, such as a buyer, does not have; this asymmetric information leads the party lacking relevant knowledge to make suboptimal decisions and suffer adverse effects. In such a situation, asymmetric information about quality eliminates high-quality goods from a market. Economic agents end up either selecting a sub-standard product or leaving the market altogether. It can also lead to missing markets.

For example, in the insurance market, if the health insurance companies could costlessly identify the health risks of buyers, then there is no asymmetric information and therefore, insurers could offer low premiums to the low-risk buyers and high premiums to the high-risk buyers. As a matter of fact, compared to insurance buyers, insurers know less about the health conditions of buyers and are therefore unable to differentiate between high-risk and low-risk persons. Due to the tendency of people with higher health risks to obtain insurance coverage to a greater extent than persons with lesser risk, the proportion of unhealthy people in the pool of insured people increases. In such situations, an insurance company extends insurance coverage to an applicant whose actual risk is substantially higher than the risk known by the insurance company. By not revealing the actual state of health, an applicant is leading the insurance company to make decisions on coverage or premium costs that are adverse to the insurance company's management of financial risk. This forces the price of insurance to rise, so that more healthy people, aware of their low risks, choose not to be insured. This further increases the proportion of unhealthy people among the insured, thus raising the price of insurance up more. The process continues until most people who want to buy insurance are unhealthy. At that point, insurance becomes very expensive, or—in the extreme—insurance companies stop selling the insurance leading to missing markets. If the sellers wish to do business profitably, they may have to incur considerable costs in terms of time and money for identifying the extent of risk for different buyers which in turn would increase insurance premium.

When dealing with problems of asymmetric information, the most frequently cited and studied example in Economics is the one developed by George Akerlof in relation to the used car market, which distinguishes cars classified as good from those defined as "lemons" (poor quality vehicles). The owner of a car knows much more about its quality than anyone else. While placing it for sale, he may not disclose all that he knows about the mechanical defects of the vehicle. Based

on the probability that the car on sale is a 'lemon', the buyers' willingness to pay for any particular car will be based on the 'average quality' of used cars. Not knowing the honesty of the seller means, the price offered for the vehicle is likely to be less than that of a good car, to account for this risk. However, anyone who sells a 'lemon' (an unusually poor car) stands to gain. If buyers were aware as to which car is good, they would pay the price they feel reasonable for a good car. Since the price offered in the market is lower than the acceptable one, good car sellers will not be inclined to sell. The market becomes flooded with 'lemons' and eventually the market may offer nothing but 'lemons'. The good-quality cars disappear because they are kept by their owners or sold only to friends. The result is market distortion with lower prices and lower average quality of cars. With asymmetric information, just as low quality high risk buyers drive out high quality low risk buyers of insurance, low-quality cars can drive high-quality cars out of the market.

2.5.3 Moral Hazard

Moral hazard arises whenever there is an externality (i.e., whenever an economic agent can shift some of its costs to others). It is about actions, made after making a market exchange, which may have adverse impact on the less-informed person. In other words, it is about the opportunism characterized by an informed person's taking advantage of a less-informed person through an unobserved action. It arises from lack of information about someone's future behaviour. It occurs when one party to an agreement knows that he need not bear the consequences of his bad behaviour or poor decision making and that the consequence, if any, would be borne by the other party. Therefore, he engages in risky behaviour or fails to act in good faith or acts in a different way than if he had to bear those consequences himself.

In the insurance market, moral hazard refers to a situation that increases the probability of occurrence of a loss or a larger than normal loss because of a change in the insurance policy holders' behaviour after the issuance of policy. For example, a driver who has a comprehensive insurance tends to exhibit greater taste for risk-taking in getting to his destination quickly and hence his interests contradict with those of the insurer. The more of one's costs that are covered by the insurance company, the less he cares whether the doctor charges excessive fees or uses inefficient and costly procedures as part of his health care. This causes insurance premiums to rise for everyone, driving many potential customers out of the market. In short, when someone is protected from paying the full costs

of their harmful actions, they tend to act irresponsibly, making the harmful consequences more likely.

If the company could costlessly monitor the behaviour of the insured, it can charge higher fees for those who make more claims. The problem lies in the fact that the insurance company cannot observe people's actions post-sale and therefore cannot judge without costly monitoring whether occurrence of an event is genuine or the outcome of lack of effort on the part of the insured. Therefore the expected outflow is higher and the insurance companies may be forced to increase premiums for everyone or may even refuse to sell insurance at all in which case it is a case of missing markets.

Asymmetric information, adverse selection and moral hazard affect the ability of markets to efficiently allocate resources and therefore lead to market failure because the party with better information has a competitive advantage.

2.6 CONCLUSION

Markets, do not always lead to efficiency. When there is a market failure, the market outcomes may be inefficient and government intervention can improve society's welfare. Government can ensure economic efficiency by providing the necessary legal and regulatory system that facilitates efficiency and /or it can intervene to correct specific market failures. The role of the government in combating market failures will be discussed in the next unit.

SUMMARY

- Market failure is a situation in which the free market fails to allocate resources efficiently in the sense that there is either overproduction or underproduction of particular goods and services leading to less than optimal market outcomes.
- The demand-side market failures are said to occur when demand curves do not take into account the full willingness of consumers to pay for a product. The supply-side market failures happen when supply curves do not incorporate the full cost of producing the product.
- The price system and markets work efficiently only if market prices convey information to both producers and consumers.
- There are four major reasons for market failure. They are: market power, externalities, public goods, and incomplete information.

- Excessive market power causes the single producer or small number of producers to produce and sell less output than would be produced and charge a higher price in a competitive market.
- Externalities also referred to as 'spillover effects', 'neighbourhood effects' 'third-party effects', or 'side-effects', occur when the actions of either consumers or producers result in costs or benefits that do not reflect as part of the market price.
- Externalities cause market inefficiencies because they hinder the ability of market prices to convey accurate information about how much to produce and how much to buy. Since externalities are not reflected in market prices, they can be a source of economic inefficiency.
- Externalities are initiated and experienced, not through the operation of the price system, but outside the market and therefore, are external to the market.
- Externalities may be unidirectional or reciprocal. Externalities can be positive or negative. Negative externalities occur when the action of one party imposes costs on another party. Positive externalities occur when the action of one party confers benefits on another party.
- The four possible types of externalities are: Negative externality initiated in production which imposes an external cost on others. Positive production externality, less commonly seen, initiated in production that confers external benefits on others. Negative consumption externalities initiated in consumption which produce external costs on others. Positive consumption externality initiated in consumption that confers external benefits on others. Each of the above may be received by another in consumption or in production. The firm or the consumer as the case may be, however, has no incentive to account for the external costs that it imposes on consumers
- Private cost is the cost faced by the producer or consumer directly involved in a transaction and includes direct cost of labour, materials, energy and other indirect overheads and does not incorporate externalities.
- Social cost is the entire cost which the society bears. $\text{Social Cost} = \text{Private Cost} + \text{External Cost}$.
- When negative production externalities exist, social costs exceed private cost. If producers do not take into account the externalities, there will be over-production and market failure and unwarranted social consequences.

- When firms do not have to worry about negative externalities associated with their production, the result is excess production and unnecessary social costs
- A public good (also referred to as a collective consumption good or a social good) is defined as one which all individuals enjoy in common in the sense that each individual's consumption of such a good leads to no subtraction from any other individual's consumption of that good.
- Private goods are 'rivalrous' and 'excludable' and less likely to have the free rider problem. Additional resource costs are involved for providing to another individual.
- Public goods consumption is indivisible, collective, nonrival, non-excludable and vulnerable to externalities and free rider problems.
- Public goods do not conform to the settings of market exchange and left to the market, they will not be produced at all or will be underproduced. This is because the price becomes zero.
- A pure public good is non-rivalrous and non-excludable. Impure public goods are partially rivalrous or congestible. Because of the possibility of congestion, the benefit that an individual gets from an impure public good depends on the number of users.
- The provider of an impure public good may be able to control the degree of congestion either by regulating the number of people who may use it, or the frequency with which it may be used or both.
- The quasi-public goods or services, also called a near public good (for e.g. education, health services) possess nearly all of the qualities of the private goods and some of the benefits of public good. They exhibit market failure as incomplete markets.
- Common access resources or common pool resources are a special class of impure public goods which are non-excludable as people cannot be excluded from using them. These are rival in nature and their consumption lessens the benefits available for others.
- Since price mechanism does not apply to 'common resources', producers and consumers do not pay for these resources and therefore, they overuse them and cause their depletion and degradation.

- Economists use the term 'tragedy of the commons' to describe the problem which occurs when rivalrous but non excludable goods are overused to the disadvantage of the entire universe.
- The incentive to let other people pay for a good or service, the benefits of which are enjoyed by an individual is known as the free rider problem.
- If every individual plays the same strategy of free riding, the strategy will fail because nobody is willing to pay and therefore nothing will be provided by the market.
- Complete information is an essential element of competitive market. But it is not fully satisfied in real world markets for goods or services due to highly complex nature of products.
- Asymmetric information occurs when there is an imbalance in information between buyer and seller i.e. when the buyer knows more than the seller or the seller knows more than the buyer. This can distort choices. With asymmetric information, low-quality goods can drive high-quality goods out of the market.
- Adverse selection is a situation in which asymmetric information about quality eliminates high-quality goods from a market. Buyers expect hidden problems in items offered for sale, leading to low prices and the best items being kept off the market.
- Moral hazard is opportunism characterized by an informed person's taking advantage of a less-informed person through an unobserved action.
- Asymmetric information, adverse selection and moral hazard affect the ability of markets to efficiently allocate resources and therefore, lead to market failure because the party with better information has a competitive advantage. Due to this the market collapses as transactions do not take place or very few transactions occur.

TEST YOUR KNOWLEDGE

I Multiple Choice Type Question

1. 'Market failure' occurs
 - (a) when public goods are not sufficiently provided by public sector
 - (b) the market fails to allocate resources efficiently and therefore market outcomes become inefficient
 - (c) people are not willing to pay and want to free ride
 - (d) (a) and (b) above
2. Markets fail because
 - (a) externalities are not accounted for in pricing and quantity decisions of firms
 - (b) most often the prerequisites of competition are unlikely to be present in an economy
 - (c) prices fail to reflect the true costs and benefits to the society
 - (d) all the above
3. Market power
 - (a) makes price equal marginal cost and produce a positive external benefit on others
 - (b) can cause markets to be inefficient because it keeps price and output away from equilibrium of supply and demand
 - (c) makes the firms price makers and restrict output so as to make allocation inefficient
 - (d) (b) and(c) above
4. Markets do not exist
 - (a) for pure public goods
 - (b) for goods which have positive externalities
 - (c) for goods which have negative externalities
 - (d) none of the above

5. The unique feature of an externality is that it is
 - (a) initiated and experienced, not through the operation of the price system but affects an external agent
 - (b) initiated and experienced, not through the operation of the price system, but outside the market
 - (c) initiated and experienced by the same entity, but causes decrease in social welfare
 - (d) causes decreases in social welfare through the system of prices prevailing in the market
6. If a textile mill produces large amounts of negative externality, then which one of the following is possible?
 - (a) The output of textile is too little when compared to the socially optimal quantity
 - (b) The output of textile is too large when compared to the socially optimal quantity
 - (c) The output of textile is not socially optimal as it is likely to be a regulated one
 - (d) Any of the above
7. All but one of the following statements is incorrect. Identify the correct statement.
 - (a) When there is a negative externality, the social marginal cost will exceed private marginal cost
 - (b) When there is a positive externality the social marginal cost will exceed private marginal cost
 - (c) Common property resources are non-rival and non-excludable public goods so that the problem of sustainability becomes grave
 - (d) Goods that are rival in consumption and are non-excludable are known as private goods
8. In case of a positive externality
 - (a) the social marginal cost will exceed private marginal cost
 - (b) the social marginal cost will be equal to private marginal cost

- (c) the social marginal cost will be less than private marginal cost
(d) the social marginal cost has no relation to private marginal cost
9. Which of the following statement is correct in respect of externalities?
- (a) When social marginal costs are equal to private marginal costs, the level of output will be equal to the socially optimal level
(b) When social marginal costs are less than private marginal costs, the level of output will be lower than the socially optimal level
(c) When social marginal costs are greater than private marginal costs, the level of output will be higher than the socially optimal level
(d) All of the above.
10. Match the following
- | | |
|-----------------------|-----------------------------------|
| (a) Pure public goods | i) Excludable and rival |
| (b) Club goods | ii) Non excludable and rival |
| (c) Common resources | iii) Non excludable and non rival |
| (d) Private good | iv) Non rival and excludable |
- (a) {a) i}); {b) ii}); {c) iv}); {d) iii}
(b) {a) ii}); {b) i}); {c) iii}); {d) iv}
(c) {a) iii}); {b) i}); {c) ii}); {d) iv}
(d) {a) iii}); {b) iv}); {c) ii}); {d) i}
11. Pollution is an instance of market failure
- (a) because the equilibrium price is higher than the efficient price
(b) because the equilibrium price is less than the efficient price
(c) because property rights are poorly distributed
(d) because the market does not produce enough of the good
12. An adequate amount of a pure public good will not be provided by the private market because of
- (a) the existence of negative externalities
(b) governments would anyway produce them

- (c) There are restrictions as well as taxes on the private market
 - (d) The possibility of free riding
13. The free rider problem arises because of
- (a) ability of participants to produce goods at zero marginal cost
 - (b) marginal benefit cannot be calculated due to externalities present
 - (c) the good or service is non excludable
 - (d) general poverty and unemployment of people
14. Which of the following is an example of an impure public good?
- (a) a lighthouse provided by government
 - (b) a congested highway during peak hours
 - (c) a polio vaccination program sponsored by the government
 - (d) national defence and the security offered by it
15. A situation where a pharmaceutical company has full information regarding the risks of a product, but continues to sell it is a case of
- (a) asymmetric information
 - (b) moral hazard
 - (c) free riding
 - (d) (a) and (c) above
16. If an individual tends to drive his car in a dangerously high speed because he has a comprehensive insurance cover, it is a case of
- (a) free riding
 - (b) moral hazard
 - (c) negative externality
 - (d) efficiency
17. Read the following statements
- I. Common resources are pure public goods which are non rival
 - II. Since price mechanism does not apply to common resources, producers and consumers do not pay for these resources

- III. Self-interest makes them overuse the common resources and cause their depletion and degradation
 - IV. The common resources are impure public goods which are excludable but nonrival
- (a) Statement I alone is correct
 - (b) Statements I and IV are correct
 - (c) Statements II and III are correct
 - (d) Statements ,II and III are correct
18. Market failure will never occur in a
- (a) Socialist economy which is developed
 - (b) Unplanned economy which is underdeveloped
 - (c) Capitalist economy which is developed
 - (d) None of the above

II Short Answer Type Questions

1. Explain the term market failure.
2. Explain, with the aid of examples, the main characteristics of private goods.
3. Identify a pure public good using the criteria for identification
4. Explain the free rider problem. Give examples
5. Public goods do not use up extra resources as additional people consume them. Why?
6. Why do economists use the word external to describe third-party effects that are harmful or beneficial?
7. Explain why environmental pollution is regarded as a source of market failure.
8. Define externalities. Why are they considered as a source of market failure?
9. Distinguish between positive and negative externalities.
10. Appraise the role of incomplete information in generating market failure.
11. What do you understand by externalities in consumption?

12. What criteria are used to distinguish between pure and impure public goods?
13. Explain the term quasi public goods.
14. How can social costs be differentiated from private cost?
15. What is the consequence of a negative externality on price and output?
16. How does the presence of positive externality influence price and output?
17. Describe the term 'Tragedy of Commons'.
18. Define common resources. Why are they overused?
19. Discuss the importance of the distinction between private costs and social costs.
20. Describe, using examples, common access resources
21. Why are health and education not pure public goods?

III Long Answer Type Questions

1. Define the concept of market failure. Describe the different sources of market failure.
2. Explain the different types of externalities. Illustrate how externalities lead to welfare loss of markets.
3. Describe why markets have incentives to produce private goods.
4. Why do markets fail to produce public goods? Illustrate your answer.
5. Distinguish between different types of public goods. How do public goods cause market failure?
6. Explain using diagram and examples, the concepts of negative externalities of production and consumption, and the welfare loss associated with the production or consumption of a good or service.
7. Explain, with the aid of examples, the main characteristics of merit goods.
8. Describe the free rider problem associated with public goods. What would be the outcome of this problem? Give examples.
9. 'The existence of poverty in economically less developed countries creates negative externalities through over-exploitation of land for agriculture, and this poses a threat to sustainability'. Elucidate

IV Application Oriented Questions

1. Identify the market outcomes for each of the following situations
 - (a) A few youngsters play loud music at night. Neighbours may not be able to sleep.
 - (b) Ram buys a large SUV which is very heavy
 - (c) X smokes in a public place
 - (d) Rural school students are given vaccination against measles
 - (e) Traffic congestion making travel very uncomfortable
 - (f) Piracy of computer programs
 - (g) Some species of fish are now getting extinct because they have been caught indiscriminately.
 - (h) The municipality provides sirens four times a day
 - (i) Burglar alarms are installed by many in your locality
 - (j) Global warming increases due to emissions of fossil fuels

ANSWERS/HINTS

I Multiple Choice Type Questions

- | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 1. | (b) | 2. | (d) | 3. | (d) | 4. | (a) | 5. | (b) | 6. | (b) |
| 7. | (a) | 8. | (c) | 9. | (c) | 10. | (d) | 11. | (b) | 12. | (d) |
| 13. | (c) | 14. | (b) | 15. | (a) | 16. | (b) | 17. | (c) | 18. | (d) |

II Hints to Short Answer Type Questions

1. Market failure is a situation in which the free market fails to allocate resources efficiently in the sense that there is either overproduction or underproduction of particular goods and services leading to less than optimal market outcomes.
2. Private goods like car, food are 'rivalrous' and 'excludable' and less likely to have the free rider problem which means that simultaneous consumption of these goods by more than one person is impossible and it is possible to exclude or prevent consumers who have not paid for them from consuming.

them or having access to them. Additional resource costs are involved for providing to another consumer.

3. The criteria for identifying the nature of the good, whether private or public are rivalry and excludability in consumption. Pure public goods are perfectly non-rival in consumption and are non-excludable. Knowledge is a pure public good: once something is known, that knowledge can be used by anyone, and its use by any one person does not preclude its use by others.
4. The incentive to let other people pay for a good or service, the benefits of which are enjoyed by an individual is known as the free rider problem. In other words, free riding is 'benefiting from the actions of others without paying'. Example is national defence. The government provides defence for all its citizens regardless of much they contribute in taxes. Another example is Wikipedia- few people contribute (financially or otherwise), but everyone gets to use it.
5. Public goods do not use up extra resources as additional people consume them. In other words, once a public good like a light house is provided, it is commonly consumed and the additional resource cost of another person consuming the goods is 'zero'.
6. Economists use the word 'external' to describe third-party effects that are harmful or beneficial because sometimes, the actions of either consumers or producers result in costs or benefits that do not reflect as part of the market price. Such costs or benefits which are not accounted for by the market price are called externalities because they are "external" to the market. Or in other words, externality is costs or benefits that result from an activity or transaction and affects a third party who did not choose to incur the cost or benefit. Externalities are either positive or negative depending on the nature of the impact on the third party.
7. Environmental pollution is regarded as a source of market failure because third parties experience negative effects from this activity in which they did not choose to be involved. The social cost exceeds private cost and if producers do not take into account the externalities, there will be overproduction and market failure.
8. Externality refers to costs or benefits that result from an activity or transaction and affects a third party who did not choose to incur the cost or benefit. They are considered as a source of market failure because prices fail

to reflect the true costs and benefits to the society and externalities are not accounted for in pricing and quantity decisions of the firms.

9. Externalities can be positive or negative. Positive externalities occur when the action of one party confers benefits on another party. For example, providing good public education mainly benefits the students, but the benefits of this public good will spill over to the whole society. On the other hand, negative externalities occur when the action of one party imposes costs on another party. For example, even though cigarette smoking is primarily harmful to a smoker; it also causes a negative health impact on people around the smoker.
10. Incomplete information is manifest in asymmetric information which occurs when there is an imbalance in information between the buyer and the seller i.e. when the buyer knows more than the seller or the seller knows more than the buyer. This can distort choices. Asymmetric information generates adverse selection and moral hazard. Adverse selection is a situation in which asymmetric information about quality eliminates high-quality goods from a market. Economic agents end up either selecting a sub-standard product or leaving the market altogether. It can also lead to missing markets.

Moral hazard arises whenever there is an externality (i.e., whenever an economic agent can shift some of its costs to others). It occurs when one party to an agreement knows that he need not bear the consequences of his bad behaviour or poor decision making and that the consequence, if any, would be borne by the other party. In the insurance market, moral hazard refers to a situation that increases the probability of occurrence of a loss or a larger than normal loss because of a change in the insurance policy holders' behaviour after the issuance of policy.

11. Externality in consumption occurs when consuming a good cause either a positive or negative externality to a third party. Positive consumption externality initiated in consumption confers external benefits on others. Negative consumption externalities initiated in consumption produce external costs on others.
12. A pure public good is non-rivalrous and non-excludable whereas impure public goods are partially rivalrous or congestible. Because of the possibility of congestion, the benefit that an individual gets from an impure public good depends on the number of users.

13. Quasi-public goods or services, also called a near public good (for e.g. education, health services) possess nearly all of the qualities of the private goods and some of the benefits of public good. Markets for the quasi-public goods are considered to be incomplete markets and their lack of provision by free markets reflects inefficiency and market failure.
14. Social Cost = Private Cost + External Cost
The presence of externalities creates a divergence between private and social costs of production. When negative production externalities exist, social costs exceed private cost because the true social cost of production would be private cost plus the cost of the damage from externalities. If producers do not take into account the externalities, there will be over-production and market failure. Applying the same logic, negative consumption externalities lead to a situation where the social benefit of consumption is less than the private benefit.
15. When there is negative externality, a competitive market will produce too much output relative to the social optimum. This is a clear case of market failure where prices fail to provide the correct signals.
16. The presence of positive externalities influence price and output since marginal social benefits is greater than marginal private benefits and hence equilibrium (where $MPC=MPB$) is unlikely to be efficient. If a positive production externality is present, then ceteris paribus, MSC is less than MPC and the market output is less than optimal. Similarly, when there is a positive consumption externality ceteris paribus, MSB is greater than MPB and output will be less than optimal.
17. Economists use the term 'tragedy of the commons' to describe the problem which occurs when rivalrous but non-excludable goods are overused to the disadvantage of the entire universe. For example, everyone has access to a commonly held pasture; there are no rules about sustainable numbers for grazing. The outcome of the individual rational economic decisions of cattle owners would be market failure, because these actions result in the degradation, depletion or even destruction of the resource leading to welfare loss for the entire society.
18. Common access resources or common pool resources are a special class of impure public goods which are non-excludable as people cannot be excluded from using them. These are rival in nature and their consumption lessens the benefits available for others. Since price mechanism does not

apply to 'common resources', producers and consumers do not pay for these resources and therefore, they overuse them and cause their depletion and degradation.

19. Private cost is the cost faced by the producer or consumer directly involved in a transaction. Social costs refer to the total costs to the society on account of a production or consumption activity and include external costs as well. The actors in the transaction (consumers or producers) tend to ignore those external costs and these are not included in firms' income statements or consumers' decisions. However, these external costs are real and important as far as the society is concerned. If producers do not take into account the externalities, there will be over-production and market failure. Applying the same logic, negative consumption externalities lead to a situation where the social benefit of consumption is less than the private benefit. Therefore, it is important that a distinction be made between private costs and social costs.
20. Common access resources or common pool resources are a special class of impure public goods which are non-excludable as people cannot be excluded from using them. These are rival in nature and their consumption lessens the benefits available for others. This rival nature of common resources is what distinguishes them from pure public goods, which exhibit both non-excludability and non-rivalry in consumption. They are generally available free of charge. Examples of common access resources are fisheries, common pastures, rivers, sea, backwaters, biodiversity etc.
21. A pure public good is non-rivalrous and non-excludable in nature. Education and health services are not pure public goods; rather they are quasi-public goods that possess nearly all of the qualities of the private goods and some of the benefits of public good. It is clearly possible to exclude people who do not pay from availing these services

III Hints to Long Answer Type Questions

- I. The length of the answer should relate to the marks allotted.
- II. The answer should be structured in three parts in the following style.
 - (a) Explain the economic fundamentals underlying the action/issue by integrating the course material in innovative ways; not necessarily confined to one unit. This part provides an opportunity for students to explain their understanding of the underlying theory. The examiner

may easily discern the level of cognition of the student. This should be a compulsory component with a reasonably high proportion of marks earmarked.

- (b) Analyse the issue at hand (given the framework and tools) and explain the policy position by applying the fundamentals as explained in (a) above.
- (c) Substantiate with illustrations from current economic scenario

IV Application Oriented Questions

- (a) Negative externality, overproduction
- (b) Negative externality, environmental externality, wear and tear of roads, increased fuel consumption, added insecurity imposed on others
- (c) Negative externality, overproduction
- (d) Public good, positive externality
- (e) Negative externality
- (f) Unpatented computer programs have characteristics very much like a public good and therefore market failure.
- (g) The problem of the commons –The tragedy of commons
- (h) Sirens have all characteristics of public goods. People will free ride – market failure.
- (i) Positive externality, free riding.
- (j) Negative externality.