- a) Explain the need for government intervention in the cases of public goods and merit goods [10m]
- b) To deal with the problem of pollution from factories, some countries have chosen to use tradable permits while others have used legislation. Discuss the use of the above policies by the different countries to tackle the pollution problem.[15]

#### Suggested answer to part a):

### Introduction

Government intervention is needed as the above markets (for public goods and merit goods) fail. Market failure occurs whenever the price mechanism fails to allocate resources *efficiently* and *equitably. Therefore,* the government needs to take actions and provide a non-market mechanism to allocate scarce resources to bring about improved outcomes.

## Efficiency

Efficiency in resource allocation can only be achieved if there is **allocative and productive efficiency** at the society level.

Equity

Equity has to do with "fairness". Fairness in the allocation of resources occurs when income & wealth are evenly distributed

Assuming a perfect market, the price mechanism alone will be able to allocate resources efficiently such that the right amount of the right good is produced using the least cost, thereby maximizing society's welfare

## Public Goods #

Public goods are goods that exhibit characteristics of non-excludability and non-rivalry in consumption.

The feature of non-excludability of public good means those non-paying consumers can benefit without having to pay for it.

The feature of non-rivalry means that the consumption of the good by one user will not diminish the benefits available to other users.

Public goods tend to be provided by the govt as no firms will undertake the production.

Free market without government intervention, will not allocate resources for the provision of public goods which are essential for the economic welfare of society as no private firms will be willing to supply these goods at zero price. Thus, the government has to intervene to undertake the provision. Merit Goods#

Merit goods are goods that the government believes consumers will buy too few units if provided by the market because of information failure (under-estimation of the private benefits in consumption) and positive externalities in consumption (benefits on third parties not considered).

Examples of merit goods include education and healthcare.

This **lack of information** leads people to **underestimate the private benefits** of education and leads to underdemand and under-consumption of education.

Without intervention by the government, external costs/benefits will not be factored into the consumers'/firms' decision and overproduction/underproduction results. Government intervention through taxes/subsidies is likely to improve the resource allocation and thus improve society's welfare.

#### Conclusion:

While government intervention in the 2 scenarios above is justifiable on the premise that society welfare can be enhanced, in reality, government intervention may not necessarily lead to optimal resource allocation i.e. economically efficient outcome. Effectiveness of the government depends on the government's ability to rightly estimate the extent of the externalities or the demand for the public good.

## Suggested answer to part b):

#### Introduction:

- 1. Explain briefly what is meant by tradable permits & legislation
- 2. Identify source of market failure in the signpost- negative externality in production
- 3. Define negative externality in production

## Development 1: Explain & elaborate on the source of market failure—negative externalities in production

Consider a manufacturing firm involved in production activities.

- Private costs  $\rightarrow$  raw material costs, labour cost and energy costs involved.
- External costs on 3<sup>rd</sup> parties → the harmful pollutants or greenhouse gases released into the environment through the industrial waste produced → causes ill health to people who live near the factory and greenhouse gas emissions will contribute to global warming which leads to adverse weather conditions and disrupting people's life.
- MSC is higher than MPC
- Socially optimal level occurs at Q2- MSC = MSB. Market Equilibrium firms maxmise profits at the level Q1 where MPC = MPB. The society suffers from an overproduction of Q2Q1 of manufacturing activities → allocative inefficiency → the welfare loss →
- Government intervention is required. Government can intervene by implementing the system of trading permits or legislation to reduce pollution generated and correct market failure.



**How it works:** Tradable permits aim to solve pollution by getting firms to internalize the external cost. Firms that wish to pollute above a certain limit may do so by buying permits. Firms who pollute less than their allocated portion may sell their excess to other firms for extra profits. The gap between MSC and MPC is narrowed as those who are polluting more are paying more. Overall pollution may fall if low polluting firms gain a competitive advantage and drive some of the high polluting firms out of business.

For firms that face high costs in decreasing pollution, they may find it cheaper to buy permits from the market. This forces them to internalise the negative externality. The cost of the permits adds on to the costs of production for the firm. The MPC curve will shift leftwards towards the MSC. Firms will reduce their production towards the socially optimal level of production at Q2, and this reduces the extent of the market failure due to the overproduction of manufactured goods

## **Evaluation:**

An **advantage of** tradable permits is that it gives firms an incentive to cut back on pollution levels if they desire to sell their allocated share. In addition, if cuts to pollution are made where they are cheapest, those firms who find it easy to reduce their pollution emission will gladly do it for greater profits. In general, tradable permits which are market based solutions are good because their prices are determined by their demand and supply in the market. Requirements on government monitoring is minimal. For example, pollution permits are allocated to those who are willing and able to pay for it and price of the permits is determined by the forces of demand and supply which ensures efficiency

## Other advantages:

- 1. Includes the advantage of a command and control type of intervention where the maximum pollution can be dictated directly by the number of permits issued.
- 2. Superiority to taxes: Tradable permits direct government intervention directly on those firms that are polluting, unlike taxes which may be imposed across entire industries which punishes the less polluting firms. Thus the former is seen as a more effective and fair instrument. Furthermore, imposing taxes may permanently increase costs of production for firms, thereby either reducing export competitiveness to domestic firms producing for the exports market, or reducing the country's international competitiveness to foreign firms.
- 3. Cost efficient Allows firms to choose the cheapest option to reduce pollution with clear market signals.
- 4. Allow firms the flexibility of choosing their own method of reducing pollution.

Legislation: This is a process of controlling business activities through licences, setting standards, laws and administrative rules. The government may lay down the maximum pollution levels. Firms have to adhere to the standards otherwise they will be punished, e.g. fined or licence revoked. This requires firms to install pollution abatement equipment (such as filters or scrubbers that remove harmful materials from the emissions) or use energy saving technologies to reduce pollution.

**Evaluation:** Legislation is a more straightforward method for emissions control by the small and medium enterprises as they are relatively easy to understand. On the other hand, acquiring emission permits imposes additional transaction costs on firms <u>while maintaining</u> a requirement for the authorities' to monitor and supervise. Thus in comparison, legislation is a more cost-effective pollution control method

Anti-thesis (part 1): Tradable permits and legislation may not be the best way to correct market failure resulting from negative externalities

Limitations of using tradable permits - There are disadvantages associated with the system.

(a) Economists argue that tradable permits may not reduce pollution but merely change its source. In addition, if there is a dominant firm, it may buy up all the available permits and refuse to sell them, leading to a barrier to entry for new firms.

## Subsidies—what it is:

The government could provide subsidies to firms to carry out R&D to develop more environmentally friendly methods of production. Successful R&D measures carried out by the firms would help reduce the amount of pollution produced in the long run

How well it works: This measure address the root of the problem, and its effects would be longer lasting as compared to tradable permits and legislation. However, it is costly, and might have to be funded by increases in taxation, which would have disincentive effects on work and investment.

# 5. Conclusion→Synthesis & Judgement

- → Limits of tradable permits also lie in its application to pollution control on air pollution emitted by the industries. It neglects negative externalities from household and traffic emissions and is also unable to regulate the negative externalities sourcing from noise and light pollution (other limitations of tradable permits)
- → Furthermore, the overall effectiveness of tradable permits in reducing industrial air pollution seems to be lower when compared to government subsidies. Thus, pollution permits and legislation might not be the best policies available to the government to deal with the problem of negative externalities due to pollution (alternative policies are more effective and reasoned judgment)
- → To alleviate pollution in the long term and by its root, governments need to go beyond punitive policies such as pollution permits and legislation. Citizens and businesses need to be educated on the harmful effects of negative externalities and thus make it their own duties to reduce emissions. (longer term view and solving problem at its root)