

QUESTIONS

- What has been assumed about the construction of roads in England?
 - ✓ It has been assumed that, unlike in Austria and Switzerland the construction of roads in England was or should have been, a comparatively easy matter.
 - What was the original site of the present Great Britain like?
 - ✓ The original site of present Great Britain was either a vast marsh or a dense forest.
 - What were the earliest roads like?
 - ✓ The earliest British roads were probably of the nature of tracks rather than of durable highways; and they may have been designed less for the purposes of defence against invasion than in the interests of the British trade which, even then was an established institution in the land.
 - What can you say about the Roman roads?
 - ✓ The Roman roads made a complete system of permanent inland roads to connect the continent with the military posts, London, York, Colchester, Silchester, Porchester and Brading, and chief trading towns with each other.
 - Why were the Roman roads remarkable?
 - ✓ The Roman roads were remarkable because they represented an art which was to disappear with the conquerors themselves and because they had been directly created, and controlled, by a central authority as the outcome of a State road policy itself fated in turn to disappear no less effectually.
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- What was neglected in Britain after the departure of the Romans?
 - ✓ Following the departure of the Romans, not only road-making but even road-repairing was for several centuries wholly neglected.
 - What were the successive rulers engaged in?
 - ✓ Successive rulers were engaged in maintaining their own position or in waging wars.
 - Where did the laymen learn the art of bridge-building?
 - ✓ The laymen learn the art of bridge-building in Continental countries of Europe.
 - What happens with the decline in religious fervour?
 - ✓ The clergy still accepted the benefactions, and they granted the indulgences, but they showed increasing laxity in carrying out their responsibilities.
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- What do transport and communications reflect?
 - ✓ Transport and communications reflect changes in economy and social organisation.
 - What do they involve today?
 - ✓ Today they need major investments by industry in both mechanical and civil engineering.
 - What was a destiny of an ordinary merchant?
 - ✓ Destiny of an ordinary merchant was shouldering the risks associated with maritime trading.
 - What is the transport dependent upon?
 - ✓ Transport is often dependent on infrastructures, implying land requirements and the possibility of expropriation.
 - What do different authors think of the transport?
 - ✓ Some consider that transport is too underdeveloped to become independent, and others think transport is part of the communication industry that is controlled at the highest level.
 - What does the transport have to cope with today?
 - ✓ Transport have to cope with demand for more frequent movements, usually in smaller shipment sizes, over greater geographical distances, with shorter lead times, and in which a very high premium is placed upon quality of service and reliability.
 - What were the key discoveries in the history?
 - ✓ The key discoveries in the history of transport have been the invention of the steam-engine, the internal combustion engine and the electric motor.
 - What has the transport become today?
 - ✓ It has become permeable to innovations of all kinds that Jules Vernes could scarcely have conceived of, fascinated as he was by the science of movement.
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- What has a recent development in transport and telecommunications had?
 - ✓ Recent revolution in telecommunications and transport has had a great impact on the ability of firms and countries to compete in global markets.
 - Why did mankind invent the city?
 - ✓ "to avoid transportation, mankind invented the city".
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- What is affecting transport and communications?
 - ✓ One of driving-forces affecting transport and communications are technological innovations.
 - What are radical innovations in transport and communication?
 - ✓ Radical innovations in transport and communication are associated with the application of informatics and telematics to the transport field.

- How can printed material be transmitted?
 - ✓ Printed material can be transmitted as facsimile images or digital records and printed simultaneously at remote locations.
 - What will increase in importance as national territorial systems dissolve?
 - ✓ Long-distance movements of people, freight and information seem likely to increase in importance as national territorial systems dissolve.
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- When were the first cars produced and how?
 - ✓ The first cars were produced in the 1880s and they were not invented by any one man but were the outcome of the work of many individuals, working independently or in collaboration with others.
 - Describe the first cars with the internal combustion engine!
 - ✓ The Benz of 1885, was a three-wheeled vehicle with a tubular steel chassis and an open wooden two-seater body. The single front wheel was steered by a tiller, and the two large wheels were driven by chains. The single-cylinder petrol engine operated on the four-stroke principle, with electric ignition and water cooling, and was mounted horizontally over the rear axle.
 - What important innovations were made by 1900?
 - ✓ Important innovations were: float-type carburettor by Maybach in 1892, the steering wheel in 1894, the Michelin brothers' pneumatic tyre etc.
 - What were the interests in automobile industry in the 1960s?
 - ✓ Interests in automobile industry in the 1960s were in safety and pollution control.
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- When did man's dream to discover some form of mechanised transport become reality?
 - ✓ Man's dream became reality in the industrial revolution that brought some breakthroughs in engineering techniques.
- What is the heart of any motor car?
 - ✓ The heart of any motor car is engine - the high precision machine which converts the latent energy of petrol into mechanical energy or movement.
- What is the function of the carburettor?
 - ✓ The function of the carburettor is vaporising the fuel and providing a highly combustible mixture of fuel and air.
- What happens in the combustion chamber?
 - ✓ The potentially explosive vapour is compressed in the combustion chamber by the rising piston and fired by a high voltage spark from the spark plug in the top of the chamber.

- What is done by the ignition system?
 - ✓ In the same way that the valves must open and close at the correct moment, the spark at the spark plug must also be accurately timed. This is done by the ignition system.
 - How are most engine cooled?
 - ✓ Most engines are cooled by water and through the radiator that can efficiently dispose of unwanted heat.
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- What was made possible by the earlier development of the steam engine?
 - ✓ The development of the internal combustion engine was made possible by the earlier development of the steam engine.
 - Why is the steam engine an external combustion engine?
 - ✓ The steam engine is an external combustion engine because the fuel is burned in a separate part of the engine from the cylinder containing the piston.
 - What is the difference between the two-stroke and the four-stroke engine?
 - ✓ The two-stroke engine delivers twice as many power impulses as the four-stroke engine to the crankshaft, but the four-stroke engine is more efficient at scavenging, if all other things are equal.
 - What is the Otto «silent» engine?
 - ✓ It was the first modern internal combustion engine, a four-stroke design that compressed the fuel mixture before combustion.
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- What was gained from the production of engines for submarines during World War I?
 - ✓ A great deal of experience was gained from the production of engines for submarines during World War I.
- Describe in detail the difference between the diesel engine and the petrol engine?
 - ✓ In a petrol engine, fuel and air are mixed in the carburettor, and the mixture is drawn into the combustion chamber at the top of the cylinder during the downward stroke of the piston. The next upward stroke of the piston compresses the mixture to between a sixth and a tenth of its original volume, and as the piston reaches its upper limit of travel the mixture is ignited by an electric spark created by the spark plug. The resulting expansion of the burning mixture forces the piston back down the cylinder (the power stroke). In a diesel engine, however, as the piston moves down, only pure air is drawn into the cylinder and compressed as it moves up again, but it is compressed to a much higher degree than in a petrol engine (with compression ratios of between 12:1 and 25:1) with the

result that its temperature is raised considerably, to well over 1000°F (358°C). As the piston nears the top of its travel a fine spray of fuel is injected into the cylinder by an injector nozzle near the top. The fuel mixes with the air, which has become so hot due to compression that the fuel/air mixture ignites spontaneously without the need for a spark.

- Why are diesel engines more efficient?
 - ✓ Many diesel engines work on the two-stroke principle, and as they need to draw in only pure air instead of the usual air-fuel-oil mixture needed by the two-stroke petrol engine they are more efficient.
 - What is «scavenging»?
 - ✓ Scavenging is the intake of fresh air and the expulsion of exhaust gases.
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- Why was it in the USA that the automobile was improved most rapidly?
 - ✓ Because, as a large and growing country, USA needed cars and trucks to provide transportation in places not served by trains.
 - Who was responsible for the mass production of cars?
 - ✓ Two brilliant ideas made possible the mass productions of automobiles: standardization of parts and assembly line.
 - What is standardization of parts?
 - ✓ Standardization of parts is process in which every part of car is made by machine. Machines were developed that could produce hundreds of identical parts that would fit into place easily and quickly.
 - Why is the automobile a mixed blessing?
 - ✓ The automobile is a mixed blessing because it on one hand brings easier transportation but on other hand brings some problems like traffic accidents, traffic jams, air pollution etc.
 - Why do we say that progress has more than one face?
 - ✓ Because, while wheels have brought better and more convenient transportation they have also brought new and unforeseen problems.
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- What are the three elements that are essential to successful traffic engineering?
 - ✓ Three elements essential to successful traffic engineering are political approval, media support and public acceptance.
- Why do we say that traffic problems and their engineering solutions become entangled with emotion?
 - ✓ Because engineers don't only prescribe improvements leading to safer conditions and more efficient movement, they also dare to interfere with people's freedom to move when and where they choose.

- What happens as communities grow?
 - ✓ Traffic problems will certainly continue to become more intricate as communities grow.
 - Why have professional engineers of traffic been lulled into a false sense of security?
 - ✓ Professional engineers have been lulled into a false sense of security by the technological advances made in the past 40 years.
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- When would an accident seem inevitable?
 - ✓ All may be well but in the emergency with tightly packed vehicles braking violently an accident would seem inevitable.
 - What does the direction in which the car slows depend on?
 - ✓ The direction in which the car slows will depend on many external factors such as camber of the road, local road variations, cross winds or even having one toe with poor tread.
 - What do anti-locking devices have on braking distances?
 - ✓ Cars with anti-locking devices will stop much quicker so their braking distance will be much shorter.
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- What is BART?
 - ✓ BART is short from Bay Area Rapid Transit and it is the first all-new transit system to be built in the United States in sixty years.
- What is BART composed of?
 - ✓ BART is composed of one-third subway, one-third elevated, and one-third ground-level track, the network will serve 2.5 million people.
- What is the advantage of travelling by BART?
 - ✓ BART is not only quicker, it is also cheaper.
- How does BART operate?
 - ✓ BART is operated completely by computers.
- What is an important side effect of BART?
 - ✓ An important side effect of BART is the role it will play in downtown rejuvenation.
- What need will BART drastically reduce?
 - ✓ BART will drastically reduce the need for new superhighways, which cost more to build, and require more than 4 times as much land.
- What were the problems in the operation of BART?
 - ✓ There have been managerial and financial problems, and also problems with the automated control system.
- What was the alarming discovery?
 - ✓ Alarming was discovery that the detection system fail to detect the trains that were not in motion.