

Chapter - 20

Road Safety Education

Objective :

This chapter explains about the chemistry of alcohol and its harmful effects. Drunken Driving is a major cause of road accidents.

Content :

Alcohol is a depressant that slows down the mental processes. It affects thinking and performance. It affects the brain's ability to control and coordinate the body's movements- It impairs the ability to judge speed and distances, restricts the view and makes accidents occur. It impairs reaction time, coordination and balance. You know the simple rule: Don't Drink and Drive



Impact of Drunken Driving



'Don't Drink and Drive'

The blood alcohol concentration (BAC) is critical. The legal limit is below 30 mg of alcohol in every 100ml of blood. It can be analyzed through a breath analyzer and if found more than the prescribed limit, it is punishable.

Some medicines may also affect the driver's concentration.



Medicines

Section 185 of Motor Vehicle Act can punish a driver who is under the influence of alcohol with a fine upto Rs. 2000 or imprisonment with a term which may extend upto 6 months. With a subsequent offence within 3 years, imprisonment increases to 2 years and a fine of Rs. 3000.

Exercise :

1. Can the level of alcohol in your blood be reduced by exercise, coffee, medicines etc?
2. Does alcohol build one's confidence in driving or only gives a deceptive feelings?

Activity :

Find out how many people have been prosecuted by Delhi Police for drunken driving in 2012.

Life Processes

Objective :

Importance of good eyesight has been brought out in safe driving

Content :

At night or in conditions of poor visibility, you cannot

see people and objects around you, as you can in day light. If eyesight is weak or a person suffers from night blindness, driving at night can be dangerous. Inconsiderate drivers, often blind us with dazzling headlights, making objects in front of us not visible. Drive slowly at night so as to gain reaction times. The four wheeler wind screen should be kept clean at night, because dirty wind screen may impair your vision and lead to accidents.



*Good Eye Sight
important for Drivers*

In conditions of low visibility, make use of lamp or dipper beams.

Similarly in dense fog, a driver cannot see beyond his own vehicle's limit. You can stick yellow cellophane paper to your vehicle headlights with cello-tape.

Vission while overtaking large vehicle and at sharp road bends is limited. The traffic authority carries out mandatory check of vision, along with colour and night blindness, before issuing a driving license. Eyes are the most sensitive part of the face and need to be protected.



*Dipper Beams Help
in driving in night*

*Headlight
of a car*



It is difficult to drive on the slopes of mountain roads

Exercise :

1. What type of bulb is used in fog lamps ?
2. How does yellow cellophane paper help to drive on a foggy day?



Driving in fog

Activity :

Prepare a list of students who are myopic. Find out the power of the lens they are wearing. Look for information that helps in the upkeep of our eyes.

Control and Coordination

Objective :

Importance of good eyesight has been brought out in safe driving.

Content :

All activities of daily life require a great deal of control and coordination like walking hearing, driving, playing swimming etc. Driving requires a great deal of

control and coordination of our body parts. Our reflexes will be greatly affected if one is not healthy and one's mind is not in control. Driving is affected by a variety of factors like fatigue, unwillingness to work, alcohol, drugs, state of mind, distractions of children and loud music in the vehicle etc.



Driver feeling tired and sleepy

Driving is a motor skill associated with information stored in the brain. It is a voluntary action requiring time to respond. Emotionally unstable people may engage themselves in undesirable behaviour on roads and this is called road rage. They may abuse, hurt others and themselves also. Certain incidents which are fresh in your memory also cause accidents.

The conditions may be different for drivers of two wheelers. Why are people chattered for not wearing helmets? Since authorities are concerned for their lives and the head may be saved from injuries. Injuries may be fatal for pillion riders also. You must follow the rules of the road for your own safety. Think of a situation in which a member of the family becomes permanently disabled in an accident. The whole family is affected because the treatment costs a lot of money.

It is always difficult to keep the morale of dis-



Driver can get distracted by Mobile or children in the Vehicle

abled persons high. It is an irony that for your own safety, the laws have to be framed and enforced.

Everybody must be aware of the emergency first aid situation. Ignorance is not a bliss in this case.

In case of a road accident the type of injuries may be.

- Head injury
- Spinal injury
- Chest injury
- Fractures, cuts, burns, amputation of limbs



Road rage



Man talking on phone while driving

Casualties can be prevented through proper administration of First-aid and breathing. Bleeding and other injuries should be taken care of. Excess loss of blood even from the limbs can prove fatal.

Control yourself and coordinate mentally with other drivers on the road by following the laws of the road. Traffic rules help us on the road by regulating warning and guiding the traffic.



Man injured in a road accident

Exercise :

1. Why is a cell phone prohibited by the law for a person driving ?
2. What is the punishment for using a cell phone during driving ?
3. How do we make children below the age of 10 travel in a vehicle?
4. Draw two other shapes which give mandatory signs.

Activity :

1. An accident happens in which three persons are fatally injured, drivers of two vehicles and a co-passenger. How will you respond in such a situation? Draw a schematic diagram of the actions taken by you as an ideal road user ?
2. Call a doctor and undergo a first aid training course.
3. Look up the 1989 judgment of the Supreme Court of India which made it clear that there can be no legal impediments to save human life. Discuss the role of citizens in saving life of a road accident victim. Also cite the importance of the Golden Hour.



Accident victim on a wheelchair



People helping accident victim

Do You Know ?

Anyone CAN HELP accident victims to reach

hospital

Police will NOT ask you any question

Doctors SHOULD attend the accident victims immediately

OBEY this Supreme Court Directive to SAVE LIVES

Light

Objective :

You have studied in this chapter that various type of mirrors are used in vehicles. These mirrors help the driver to drive safely on road.

Content :

In the previous classes you have learned that the image formed by a plane mirror is virtual and erect. This plane mirror fitted near the driver helps him to see an erect image of the near by objects.

A virtual and erect image is formed which helps the driver to react correctly.

What is this phenomenon called ?



Ambulance

The word
AMBULANCE
is written as

AMBULANCE



You have read in this lesson that concave mirrors are used in the headlights of vehicles to get parallel beam of light. This helps the driver to see objects at far and distant places.



Headlight of a car

However driving in busy traffic with powerful beam blinds the driver coming from the opposite side during the night. Drivers therefore should use low intensity beam on busy roads at night.

High beams are used on highway where the speed is more and the driver needs to see objects at far off distances, in advance. The street lights used to illuminate roads use concave mirrors. The use of convex mirrors for rear view is done by the driver of bigger vehicles like bus, truck trailer etc. The car driver should also use it for safe driving.

Exercise :

1. Which type of mirror is used in the headlight of vehicles?
2. Why is a convex mirror used as a rear view mirror?



Rear view mirror

Activity :

1. Find out the phone numbers of all emergency vehicles.
2. Discuss the various types of indicators available in a vehicle.



Indicator

Electricity

Objective :

Vehicle care is most important for safety. A battery is the most important component of a vehicle.

Content :

The source of electric current in an automobile is the battery, depending upon the size of the vehicle. The battery is used to draw current to start the motor, to use the horn, to light the various bulbs used in the vehicle. The current given by a battery is a D.C. current.



Car batteries



Maintenance of vehicle is important

Exercise :

1. A bulb used in car Headlamps is marked 12V/60W. Calculate the current flowing through it when lit?
2. One Horsepower is 746 Watt and a car is labeled 75Hp. How many joules of energy does it use in one second?
3. Why does the battery of a vehicle get discharged if not in use for a long period of time?



Bulb used in car

Activity :

Visit a near by work shop to see a battery used in a vehicle.

Glossary

Abiotic	- अजैविक	Astronomer	- खगोलविद्
Absorption	- अवशोषण	Astrophysics	- खगोल भौतिकी
Acceleration	- त्वरण	Atmosphere	- वायुमण्डल
Acid Rain	- अम्लीय वर्षा	Atomic theory	- परमाणु सिद्धान्त
Acquired	- उपार्जित प्रतिरक्षा	Atomic weight	- परमाणु भार
Activity	- गतिविधि	Atomicity	- परमाणुकता
Adaptation	- अनुकूलन	Atrium	- अलिंद
Adolescent	- किशोर	Attractive	- आकर्षक
Adsorption	- अधिशोषण	Aunicle	- आलिन्द
Aerobic	- ऑक्सीश्वसन	Autologous blood-	समजीवी आधान
Air resistance	- वायु प्रतिरोध	Autotrophs	- स्वपोषी
Airsac or alveoli	- वायुकोश	Average velocity-	औसत वेग
Algal blooming	- शैवाल प्रस्फुटन	Axon	- तंत्रिकाक्ष
Alimentary	- आहारनाल	Back cross	- संकरपूर्णज संकरण
Allele	- युग्म विकल्पी	Bacteria	- जीवाणु
Alveoli	- कूपिका	Balance diet	- संतुलित आहार
Amphibia	- उभयचर	Binary fission	- द्विविखण्डन
Amplitude	- आयाम	Bio Medical	- जैव चिकित्सकीय अपशिष्ट
Anabolic	- उपचयी या संश्लेषी	Biodegradable	- जैव निम्नीकरणीय
Anaerobic	- अवायवीय श्वसन	Biodiversity	- जैवविविधता
Anemia	- रक्त क्षीणता	Biological	- जैविक आवर्धन
Angiosperm	- आवृतबीजी	Biosphere	- जीव मण्डल
Angle of	- परावर्तन कोण	Biosphere	- जीवाश्म
Anti clockwise	- वामावर्त	Biotic	- जैविक
Antibody	- प्रतिरक्षी	Blood	- रक्ताधान
Antigen	- प्रतिजन	Blood pressure	- रुधिर दाब
Antigenic	- एण्टीजनी निर्धारक	Blue green	- नीले, हरे शैवाल
Anus	- मलद्वार	Boiling point	- क्वथनांक
Arteries	- धमनियाँ	Bolide	- उल्काश्म
Arteries	- धमनी	Bone marrow	- अस्थि मज्जा
Artificial satellite	- कृत्रिम उपग्रह	Brittle	- भंगुर
Asexual	- अलैंगिक जनन	Bronchi	- वसनी
Ash	- राख	Bronchioles	- वसनीकारें
Asteroids	- क्षुद्र ग्रह	Bronchitis	- अस्थमा

Buccal cavity	- मुखगुहा	Controversial	- विवादास्पद
Buoyancy	- उत्प्लावकता	Covalent radius	- सहसंयोजक त्रिज्या
Canines	- रदनक	Crossing over	- जीन विनिमय
Cannula	- प्रवेशनी	Cryophyte	- शीतोद्भिद
Carbohydrate	- कार्बोहाइड्रेट	Curse	- अभिशाप
Catabolic	- अपघटनी या अपचयी	Dam	- बाँध
Cecum	- अधान्त्र	Deaf	- बहरा
Centrifugal force	- अभिकेन्द्र बल	Decomposer	- अपघटक
Cerebellum	- अनुमस्तिष्क	Defomity	- विकृति
Cerebrum	- प्रमस्तिष्क	Degree	- अंश
Characteristics	- अभिलक्षण	Dendrite	- द्रुमारय
Chemical	- रासायनिक संयोग	Dendrone	- द्रुमाक्ष्य
Chemoautotrophs	- रसायन-संश्लेषी	Density	- घनत्व
Chlorosis	- हरिमाहीनता	Dependent	- आश्रित
Chordata	- पृष्ठवंशी	Desertification	- मरुस्थलीकरण
Chromoplast	- वर्णीलवक	Detergent	- अपमार्जक
Chromosomes	- गुणसूत्र	Developing	- विकासशील
Cilia	- पक्ष्माभ	Diabetes	- मधुमेह
Circular motion	- वृत्ताकार गति	Dicot	- द्विबीजपत्री
Circulation	- परिसंचरण	Digestion	- पाचन
Cleavage	- विदलन	Diphyodont	- द्विद्वारदंती
Clock wise	- दक्षिणावर्त	Direct current	- दिष्ट धारा
Colon	- बृहदान्त्र	Disease	- रोग
Combustible	- देहनशील	Displacement	- विस्थापन
Comets	- धूमकेतु	Disposal	- विसर्जन
Component	- अवयव	Distance	- दूरी
Compressibility	- सम्पीड्यता	Distillation	- आसवन
Concentration	- एकाग्रता	Dominant	- प्रभावी
Concentration	- सान्द्रता	Double	- दोहरा परिसंचरण तंत्र
Conductivity	- चालकता	Drought	- सूखा
Conductor	- चालक	Duodenum	- ग्रहनी
Conservation	- प्रकृति का संरक्षण	Echo	- प्रतिध्वनि
Constellations	- तारामण्डल	Ecology	- परिस्थितिकी
Constipation	- कब्ज	Economic cycle	- आर्थिक चक्र
Consumer	- उपभोक्ता	Ecosystem	- पारिस्थितिक तंत्र
Contraction	- संकुचन	Ectoparasite	- बाह्य परजीवी
Controversial	- विवादास्पद	Electric	- विद्युत विसर्जन नलिका

Electric current	- विद्युत धारा	Generator	- जनित्र
Electrolysis	- वैद्युत अपघटन	Genetic diversity-	आनुवांशिक विविधता
Electromagnet	- विद्युत चुम्बक	Genetics	- आनुवांशिकी
Emasculation	- विपुसन	Genotype	- जीनप्रारूप
Endangered	- संकटग्रस्त	Geography	- भूगोल
Endemic	- स्थानबद्ध	Gill	- ग्लोम
Endocrine glands-	अन्तःस्त्रावी ग्रंथियों	Global warming-	वैश्विक ऊष्मीकरण
Endocrine system-	अन्तःस्त्रावी तंत्र	Goitre	- गलगंड
Endoparasite	- अंतःपरजीवी	Gonads	- जनद
Environment	- पर्यावरण	Gravitational	- गुरुत्वीय बल
Epiglottis	- घाटी ढक्कन	Gravity	- गुरुत्व
Eugenics	- सुजननिकी	Grazing land	- चरागाह
Eutrophic	- सुपोषी	Habitat	- आवास विखण्डन
Evolution	- जीव-विकास	Haemolysis	- रुधिरलयनता
Exhalation	- उच्छ्वास	Halophyte	- लवणोद्भिद
Ex-situ	- बहिस्थाने-संरक्षण	Health	- स्वास्थ्य
Extinct	- विलुप्त	Heart disease	- हृदय रोग
Faint	- मूछों	Heart	- हृदय
Fallopian tubes	- अंड वाहिनी	Herbicide	- शाकनाशी
Fat	- वसा	Hereditary	- आनुवांशिक
Fat	- वसा	Heredity	- वंशागति
Fermentation	- खमीरीकरण	Heterotrophs	- परपोषी
Fertilizer	- उर्वरक	Heterozygous	- विषमयुग्मजी
Flood	- बाढ	Holozoic	- प्राणीसमभोजी जीव
Food chain	- खासब शृंखला	Homozygous	- समयुग्मजी
Force	- बल	Hot spot	- तप्त स्थल
Forest products-	वनोपज	Humidity	- आर्द्रता
Fossil fuel	- जीवाश्म ईंधन	Hybridization	- संकरण
Free fall	- मुक्त पतन	Hydrophyte	- जलोद्भिद
Frequency	- आवृत्ति	Hydrosphere	- जैविक
Full moon day	- पूर्णिमा	Hydrosphere	- जलमण्डल
Fund	- कोष	Ileum	- क्षुदांत्र
Fungicide	- कवकनाशी	Immunity	- प्रतिरक्षा
Galaxy	- आकाश गंगा	Incisors	- कृतंक
Gamete	- युग्मक	Incompatibility	- अनिशेच्यता या असंगतता
Gastric juice	- जठर रस	Indicator	- सूचक

Induced	- प्रेरित	Mars	- मंगल ग्रह
Industrial products-	औद्योगिक उत्पाद	Marshy,	- दलदली
Inertia	- जड़त्व	Mass	- द्रव्यमान
Infection	- संक्रमण	Matrix	- आधात्री
Infra	- अपश्रव्य	Mechanical	- यांत्रिक ऊतक
Infra-red	- अवरक्त	Medicines	- औषधियाँ
Innate immunity-	स्वभाविक प्रतिरक्षा	Meditation	- ध्यान
Insecticide	- कीटनाशक	Memory	- स्मृति
In-situ	- स्व: स्थाने संरक्षण	Mercury	- बुध ग्रह
Inter auricular	- अर्न्तआलिन्दीय पट	Mesosphere	- मध्यमंडल
Inter ventricular-	अर्न्तर्निलयी पट	Metabolic	- उपापचयी
Intersity	- तीव्रता	Metallic radius	- धात्विक त्रिज्या
Invertibrate	- अकशेरुकी	Metallurgy	- धातु कर्म
Irrigation	- सिंचाई	Meteorites	- उल्कापिण्ड
Iso bar	- समभारिक	Meteors	- उल्का
Isotope	- समस्थानिक	Microorganism	- सूक्ष्मजीव
Jaundice	- पीलिया	Milky ways	- आकाशगंगाएँ
Jejunum	- अग्रक्षुदांत्र	Mineral	- खनिज
Judicial	- न्यायिक	Mineral	- खनिज लवण
Kidney	- वृक्क	Mines	- खानों
Land fill	- भूमिभराव	Mining	- खनन
Landslide	- भूस्खलन	Modulator	- माड्युलेटर
Larynx	- स्वरयंत्र	Molecular	- आणुविक
Launching	- प्रक्षेपण	Momentum	- संवेग
Law of motion	- गति के नियम	Monocot	- एक बीज पत्री
Lead	- सीसा	Motion	- गति
Life cycle	- जीवन चक्र	Multi cellular	- बहुकोशिक जीव
Light year	- प्रकाश वर्ष	Muscles	- पेशियाँ
Line of force	- बल रेखा	Mutation	- उत्परिवर्तन
Lithosphere	- स्थल मण्डल	Nasal chamber	- नासागुहा
Liver	- यकृत	Nasal passage	- नासामार्ग
Loudness	- प्रबलता	Natural satellite	- प्राकृतिक उपग्रह
Lubricant	- स्नेहक	Natural science	- प्राकृतिक विज्ञान
Lungs	- फेफड़े	Natural	- प्राकृतिक
Lymph node	- लसीका पर्व	Nervous system-	तंत्रिका तंत्र
Mammal	- स्तनधारी	Nervous tissue	- तंत्रिका ऊतक
Mantle	- आवरण		

Nervous	- तंत्रिकीय	Possible	- संभाव्य
Non renewable	- अनवीकरणीय	Potential	- विभव
Non-Biodegradable-	अजैव निम्नीकरणीय	Power	- शक्ति
Decompost	- अपघटन	Pregnant	- गर्भवती
Nostril	- नासाछिद्र	Premolars	- अग्र चवर्णक
Nuclear	- नाभिकीय	Pressure	- दाब
Nutrition	- पोषण	Producer	- उत्पादक
Oesophagus	- ग्रासनली	Propagation	- प्रवर्धन
Omnivorous	- सर्वाहारी	Puberty	- यौवनारंभ
Orbit	- कक्षा	Radar	- राडार
Oscillator	- दोलित्र	Radiation	- विकिरण
Paleobotanist	- पुरावनस्पति शास्त्री	Rare	- दुर्लभ
Pancreas	- आश्रित	Reaction	- प्रतिक्रिया
Parasites	- परजीवी	Reading	- पाठ्यांक
Paratope	- पैराटोप	Recessive	- अप्रभावी
Parenchyma	- मृदूतक	Rectum	- मलाशय
Parotid gland	- कर्णपूर्वी ग्रन्थि	Recycling	- पुनचक्रण
Partial	- आंशिक परजीवी	Recycling	- पुनर्चक्रण
Particulate	- कणिकीय	Red blood	- लाल रूधिर कणिका
Pathogen	- रोगजनक	Radioactive	- रेडियोधर्मी
Peristalsis	- क्रमांकुचन	Reflected rays	- परावर्तित किरण
Permanant	- स्थायी परजीवी	Reflection	- परावर्तन
Pharynx	- ग्रसनी	Reflex action	- प्रतिवर्ती क्रिया
Phases of	- चन्द्रमा की कलाएँ	Reflex arch	- प्रतिवर्ती चाप
Phenotype	- लक्षणप्रारूप	Refraction	- अपवर्तन
Planets	- ग्रह	Regeneration	- पुनरुद्भवन
Plant cell	- पादप कोशिका	Regulation	- नियमन
Plantation	- वृक्षारोपण	Relative	- आपेक्षिक
Plastid	- लवक	Relativity	- सापेक्षतावाद
Platelets	- बिंबाणु	Rendering	- दारण
Pole Star	- ध्रुवतारा	Renewable	- नवीकरणीय
Poles	- ध्रुव	Reproduction	- जनन
Pollen grain	- परागकण	Reproductive	- प्रजनन अंग
Pollination	- परागण	Reptile	- सरीसर्प
Pollutant	- प्रदूषक	Research	- अनुसंधान
Pollution	- प्रदूषण	Resistance	- प्रतिरोध

Resistant	- प्रतिरोधक	Stone	- पथरी
Resistivity	- प्रतिरोधकता	Stratosphere	- समतापमंडल
Resource	- संसाधन	Sublingual	- अधोजिह्वा
Respiration	- श्वसन	Submandibular	- अधोजंभ
Respiratory organ	- श्वसन अंग	Super conductor	- अति चालक
Reverberation	- अनुरणन	Survival	- उत्तरजीविता
Revolution path	- क्रांति पथ	Symbiosis	- सहजीविता
Rh (Rhesus factor)	- आर एच	Synchronisation	- तुल्यकालन
Rheostat	- धारा नियंत्रक	Synthetic	- कृत्रिम
Rolling	- लोटनी	Technology	- प्रौद्योगिकी
Roughage	- रुक्षांश	Tension	- तनाव
Scalar	- अदिश	Test cross	- परीक्षण संकरण
Science	- विज्ञान	Test tube baby	- परखनली शिशु
Scientific	- वैज्ञानिक विधि	The global line	- विषुवत रेखा
Sewage	- वाहित मल	Theory of	- जीव जननवाद
Sex	- मैथुन	Thermodynamics	- ऊष्मागतिकी
Sexual	- लैंगिक जनन	Thrust	- प्रणोद
Shell	- कोश	Tides	- ज्वारभाटा
Sign of zodiac	- राशि	Time period	- आवर्तकाल
Skin diseases	- चर्मरोग	Tissue damage	- उत्तकक्षय
Smoking	- धूम्रपान	Tissue	- ऊतक
Soil erosion	- मृदा अपरदन	Toxic	- विषाक्त
Solar system	- सौर परिवार	Trachea	- श्वासनली
Solenoid	- परिनालिका	Transparent	- पारदर्शी
Sonic boom	- ध्वनि बूम	Transportation	- परिवहन
Sound	- ध्वनि	Trophic level	- पोष स्तर
Species	- जाति विविधता	Tropical	- कटिबंधीय
Specific	- विशिष्ट प्रतिरोध	Troposphere	- क्षोभमंडल
Spectrum	- वर्णक्रम	Turgid	- स्फीत
Sphincter	- सवरणी पेशियाँ	Ultrafiltration	- परानिस्यंदन
Spleen	- प्लीहा	Ultrasonic	- पराश्रव्य
Spontaneous	- स्वतः जनन वाद	Ultraviolet	- पराबैंगनी
Squamous	- शल्की उपकला	Unicellular	- एककोशिक जीव
Starch	- मण्ड	Unit	- मात्रक
Stars	- तारे	Universal law	- सार्वत्रिक नियम
Stomach	- आमाशय	Universal	- सर्वव्यापक

Universe	- ब्रह्माण्ड	Ventricle	- निलय
Unused land	- अवक्रमित भूमि	Venus	- शुक्र ग्रह
Unwanted	- अवाञ्छित	Virus	- विषाणु
Unwise	- अविवेकपूर्ण	Vitamin	- विटामिन
Ureter	- मूत्रवाहिनियों	Vivipary	- जरायुज
Uriferous tubules-	मूत्र नलिकाएँ	Volcano	- ज्वालामुखी
Urinary bladder-	मूत्राशय	Vulnerable	- अतिसंवेदनशील
Ursa major	- सप्तर्षि	Water	- जल
Vaccum	- निर्वात	Wavelength	- तरंगदैर्घ्य
Valency	- संयोजकता	Weed	- खरपतवार
Variation	- विभिन्नता	Weight lessness-	भारहीनता
Vas difference	- शुक्रवाहिनी	Weight	- भार
Vascular tissue	- संवहन ऊतक	White blood	- श्वेत रक्त
Vector	- सदिश	Yoga	- योग
Veins	- शिराएँ	Zodiac	- राशिचक्र
Velocity	- वेग	Zygote	- युग्मनज
Vena cava	- महाशिरा		