**CLASS:10TH**

### SPEAK UP

### ENGLISH

**Central Idea:** The poem ‘Speak up’ is a beautiful expression of the poet against the atrocities of the Britishers. The poet calls upon his countrymen to raise voice against the repressors. It is a poem of profound meaning and courage that intends to infuse a spark of bravery and give voice to the voiceless.

**Summary:** The poem ‘Speak up’ is an English translation of an Urdu poem ‘Bol’ written by an eminent Urdu poet and a Noble nominee, ‘Faiz Ahmad Faiz’ and translated from Urdu by Shiv K. Kumar. This poem has been taken from Faiz’s collection of poems ‘Naqsh-E- Faryadi’, published in 1941.

In this poem, the poet intends to give voice to the oppressed and voiceless people. He addresses to his countrymen that they should stand against the tyranny and brutality of the Britishers. Actually this poem is an evocation of the patriotic feelings in the countrymen of the poet. He wants to free his motherland from the clutches of the white oppressors and thus is using very emotional and zealous slogans to free themselves. So, the poet says to his countrymen to speak up because they have been bestowed with lips and the power of communication by Almighty God. He wants them to speak because they possess a well built body and a soul surviving in it, so they should utilize their energy to defy oppression.

In the next stanza, the poet uses metaphors i.e. he compares the national struggle with smithy of a blacksmith. This smithy or forge is bearing such a high temperature that it can melt any metal. He feels that the rebels of this struggle have already ignited the revolution like the fierce flames of smithy. It is because of this intense agitation and revolution of the rebels that chains and shackles of slavery are about to break or surrender before them. The only thing which is needed is the encouragement by joining the struggle. So, he requests his countrymen to join the struggle and raise their voice against the harassment because the time is limited. He wants them to be awakened before their death occurs. So he pleas to them to speak the truth before it is too late.

**Answer the following questions:**

**Q#1** The poet instigates the reader to speak up. Why does he do so?

*Ans.* The poet wants his countrymen to speak up the things which are suppressed in their hearts. He wants them to be bold and courageous and express their anguish against the tyrant English rule. He wants them to join the freedom struggle and free themselves from the chains of slavery and oppression.

**Q#2** The poet addresses the reader to come up with the truth. How does he do so?

*Ans.* The poet says that the truth is not yet dead. It is known to everyone what is just and what is unjust, what is right and what is wrong. Therefore, it should not be difficult for the reader to recognize this truth and speak for it.

**Q#3** How will the chains break?

*Ans.* The chains will break if we have the courage and zest to break them. They will break if we refuse to live in them. And they will break if we have a sense of patriotism and if we cooperate with others who have been kept chained. Our sincere and dedicated efforts can break the chains of slavery.

**Q#4** Why does the poet urge the speaker to speak up now?

*Ans.* “….Speak up now, for time’s running out…” The poet urges his countrymen to utilize the opportunity properly. The poet urges his countrymen to cooperate in the freedom struggle for this is the high time to get rid of the suppression because British reign is weakening down. Wind of change has already begun to blow. The struggle for freedom is at its peak. So he calls upon his natives to lend their voice for freedom.
Q#5 Do you think ‘Speak up’ is an effort of the poet to give voice to the voiceless? How?
Ans. Yes, the poem ‘Speak up’ is an invigorating poem. It speaks against the suppression. The poet finds that common man is too oppressed to speak up. She/He is dumb with fear. The poet wants these people to hear the voice of their soul and speak up. They should realize that God has bestowed them with lips to speak. They should come out of fear and speak up freely and liberally.

Q#6 What are the metaphors used in the poem?
Ans. Metaphor is a figure of speech in which comparison is made between unlike things indirectly, categorizing them as identical.
A metaphor is a word or phrase used in an imaginative way to describe something else. It is used to show how two different things have the same quality.
Various metaphors used in this poem are oven, the flames, the padlocks and the fetter.
These metaphors have been used to describe the struggle for India’s freedom in a symbolical manner and metaphors describe some aspects of our struggle for freedom in an imaginative manner.

Q#7 What images does the poet draw from the blacksmiths shop?
Ans. ‘The Blacksmith’s shop’ stands for the situation the freedom fighters have created for the liberty of their motherland.
‘The red oven’ and ‘fierce flames’ stand for their courage. ‘The chains’ and ‘fetters’ are the epitomes of slavery which are determined to break.

Snowdrop

Central Idea:- Life is full of struggles and hardships. The person who tackles these hindrances with determination and courage is said to be brave and successful. Nature also uses various processes to teach the humans the lesson of success by determination and positive approach.
Summary:- The poem entitled ‘Snowdrop’ has been authored by ‘Edward James Hughes’ or ‘Ted Hughes’ (pen-name). The poet presents the harsh and cruel image of nature unlike other poets who use nature to depict beauty and glamour. The poet pictures the life of different aerial and terrestrial animals which are affected by the severe winter. Finally, he talks about a flower called Snowdrop which blooms in harsh winter. He admires the flower, of Snowdrop for sprouting through the frosty earth’s surface.
In the commencing stanza, the poet says that the globe has shrunk because of the extreme cold. He says that cold has curtailed the movement of active and brisk creatures like mouse, which seem to be dull and inactive. Further, the poet says that the crows, which are free to fly anywhere, are also restricted by the cold weather and the weasels also remain dormant as if they are moulded into the statues of brass. Even if these creatures try to move out in order to find their prey, it appears as if days were converted into nights because everything seems to be dozing and lifeless. Moreover, they try to return to their places quickly due to the threat of death because of chilly winter and, thus, this seems to be worried and senseless.
In the next stanza, the poet turns his attention towards the little, gloomy flower, Snowdrop which blooms in such a harsh weather and cuts its way open through the frosty earth. It blooms in a beautiful way like the stars of winter season which shine without any consideration of cold and hot season. The snowdrop blooms with its drooping flowers which make a feel that its small, pale head is made of metal. Despite of its heavy flowers and severe winter, it achieves its goal and blooms.

Thinking About The Poem:-
Q#1 How has nature shrunk the globe?
Ans. The nature has shrunk the globe by enclosing it in a blanket of severe and harsh winter. It has restricted all the creatures to their dwelling places and they feel the earth to be small and limited for them.

Q#2 What has dulled the mouse’s heart?
Ans. The active mouse’s heart has been dulled and deactivated by the chilly, harsh winter.

Q#3 What sufferings do the animals undergo in the poem?
Ans. The animals suffer a lot due to the winter season. Their movements are curtailed; everything appears to be dull, gloomy and dark; even the days seem similar to nights and it becomes difficult for them to hunt for prey. Overall winter creates havoc in the life of all the creatures.

Q#4 Write a short note of 50 – 100 words on Hughes’ view of nature.
Ans. Ted Hughes is a nature lover undoubtedly because he captures the beauty of nature apparently in a negative way. He is pessimistic towards nature. He portrays the harsh winter and its impact on the life of aerial, arboreal and terrestrial animals. He feels that most of the creatures die or perish in this season and many animals decrease their daily activities and movements because of the threat of death due to chilly winter.
Finally, he describes a small flower, Snowdrop which depicts his loving feelings towards nature. He is highly impressed with the little drooping flower which withstands the terrible weather to bloom. The poet compares the flower to the heavenly stars which are also determined to shine regardless of the harsh winter conditions.

Q#5 “Her pale head heavy as metal” Explain.
Ans. The snowdrop is a small drooping flower which erupts out of the earth’s surface and bends down as if its dull head is made of hard metal.

**Last Lesson Of The Afternoon**

**Central Idea:**- Teacher – student relationship is a bond of love and respect. It is a give and take process in which a teacher tries his best to bestow knowledge to his students and in return, the students respect their teacher and enrich themselves with the treasures of knowledge. A teacher ought to be cool, sober and dedicated to his cause. Similarly, it is obligatory on the students that they love and respect their teacher and work hard to gain more and more knowledge.

**Summary:** - This poem entitled, ‘Last Lesson of the afternoon,’ has been authored by ‘D.H. Lawrence’. The poet depicts the desperation of a teacher who is fed up with his students and considers his teaching and their learning purposeless. The opening lines of the poem present a picture that a teacher is tired and thus feels weariness and boredom in his class. The teacher is tired of making useless efforts of teaching his students. The speaker of the poem i.e. the teacher compares his students to uncontrollable and lawless hounds who want to break apart the strap holding them. They want to be free from the burden of studies. So the teacher has given up the attempt to give them knowledge and feels that he cannot pull or drag them towards knowledge which is against their will.
Further, the poet says that the said teacher is unable to tolerate the checking of their untidy notebooks which are sixty in number. So the teacher concludes that teaching the disinterested students and checking the notebooks of these sixty chaps is terrifying for him.
In the third stanza, the poet depicts a changed tone of the teacher. He tries to build a hope to teach his students. He wishes to gather his energy and give them best knowledge which would end their laziness and boredom and divert their attention towards their studies. He compares this hope to a flame in which he wants to cast down the weariness of his students. He wants to punish his students for all the insults they had done to their teacher. But, later he quickly changes his mind and decides not to waste his energy and knowledge. He feels that he should be uncared about his undisciplined students and about their wrong doings. He feels his efforts of teaching them and their learning purposeless. He is totally fed up with his professional life and feels that it does not matter for him whether they are educated enough to write a simple description about a dog. He does not care about their education at all. But he is aware of the fact that despite his reluctance to stay in the class, he has to take care of them and control them.

The ending stanza reveals the utter disinterest and carelessness of the teacher. The teacher is well aware and determined not to waste his strength in teaching them because he knows that they won’t agree to listen to him. So he decides not to attempt impossible things and feels it better on his part to sit and wait for the bell.

Thinking about the poem
Q#1 What is the tone in the opening line of the poem?
Ans. The opening line of the poem depicts boredom and weariness.

Q#2 Who is the speaker of the poem?
Ans. The speaker of the poem is a teacher.

Q#3 What are the pupils regarded as? Why has the teacher failed to ‘haul them and urge them’ any more?
Ans. The pupils are regarded as ‘unruly hounds’.
The teacher has failed to ‘haul them and urge them’ because the students are not at all interested in studies and they want to break apart the shackles of school rules and studies.

Q#4 Which words and phrases in stanza two convey the mood of the speaker?
Ans. The words which convey the mood of the speaker are:
1) endure
2) brunt
The phrases that convey the mood of the speaker are:
1) I am sick
2) What on Earth is the good of it all?
3) What good to them or me?

Q#5 Why does the speaker not want to consume his fuel anymore?
Ans. The speaker does not want to consume his fuel anymore because even after his utmost efforts, he has failed to motivate them to gain knowledge. So he decides to preserve his precious energy and is determined not to waste it on the disobedient students.

Q#6 What do you think, ‘take the toll of their insults in punishments’ mean?
Ans. The teacher is completely fed up with his students. He has tolerated many undisciplined activities and insults of his students. The teacher wants to melt their disinterest and wants to compensate all their insults with severe punishments.

Q#7 Why does the teacher feel that his teaching and pupils’ learning are both purposeless’. Pick out words and phrases which show that he shares his pupils’ indifference to their work.
Ans. The teacher feels that his teaching and pupils’ learning are both purposeless because his students are not interested in studies. As a result, the teacher has lost his interest in teaching them.

The words which depict the teacher’s indifference are:

i) Abyss  ii) Sit  iii) Wait for the bell

The phrases which show the teacher’s indifference are:

i) It all goes down the same abyss  ii) It is all my aunt
iii) Beat our heads against the wall  iv) I’m supposed to care.

Q#8 Do you find any connection between the beginning and the ending of the poem?

Ans. There is a connection between the beginning and the ending of the poem. The poem commences and ends with the boring feelings of a teacher. The start of the poem gives us an idea of reluctance of a teacher to stay in the class and teach his students. Same unwillingness is shown at the end of the poem. In the middle stanzas, the teacher tries his best to develop interest in teaching his students but towards the end of the poem, he decides against it.

Q#9 After reading the poem, write an account of your opinion/idea of 100-200 words about the poem.

Ans. The poem is an account of a teacher’s feelings when he is supposed to teach in-disciplined and disinterested students. It is the duty and obligation of a teacher to inspire his students and give them knowledge. He has to enlighten them with the power of knowledge. He has to provoke them to pursue knowledge and develop interest in studies. But this poem proves to be misleading one because the said teacher is determined to sit idle in his class and waste the precious time of his students rather than inspiring them to gain education. His uses rude words for his students like “unruly hounds” which is not a feature of a dedicated teacher. No doubt, the teacher thinks of using his efforts to teach them and cast away their indifference, but without applying any effort decides not to work on them. He believes that all his teaching and their learning purposeless. This again is a wrong perception because a teacher has to try his best to work on his students and it is obvious that hard work never goes waste. The teacher is totally uncared about the literacy of his students. He does not care whether his students are able to write any simple and easy composition. It depicts that he is not sincere to his cause and is degrading the status of a teacher. Finally, the teacher has developed his own theory that he does not and will not teach as his students do not and will not obey and listen to his teachings. This has totally degraded a teacher-student’s relation. When a teacher decides not to share or bestow his knowledge to his students and students decide not to grab the precious knowledge, then the earth is certain to revolve back to antique world when humans had no demarcation from beasts. The younger generation is certain to become arrogant, immoral, in-disciplined and inhuman by this kind of ideology of a teacher.

Learning About the Literary Devices:

Q What is the metaphor used by the poet in the stanza 1?
Ans. The metaphor used by the poet in stanza1 is ‘My pack of unruly hounds’. It is used to depict his in-disciplined and uncontrollable students.

Q Identify the metaphor in stanza 3.
Ans. The metaphor in stanza 3 is ‘My last dear fuel of life’. It is used to depict the energy or knowledge of a teacher.

The Tale Of Custard, The Dragon (Ogden Nash)
Central Idea: Everything created whether small or big has its specific importance. Usually, we underestimate talented persons but they prove themselves by their wits and right actions. We should never look down upon others. Moreover, right and timely actions are always beneficial. In other words a stitch in time saves nine, is also the nucleus of the poem.

Summary:- This poem ‘The Tale of Custard, the Dragon’ is a light verse ballad written by ‘Frederich Ogden Nash’. Various animals have been personified and are the main characters of the poem. The central figure of the poem as the title indicates is Custard, a pet dragon, which is looked down upon by his fellows because of his cowardice. In the further stanzas, Custard gets a chance to prove his bravery and saves his friends from danger. The characters in the poem are Belinda; Ink, a black kitten, Blink, little grey mouse, Mustard, little yellow dog and Custard, the dragon and they have a red wagon.

In the beginning stanza, the poet says that few animals live like humans in a little white house. The house is perhaps owned by Belinda who is accompanied by a little black kitten, Ink; a little grey mouse, Blink; a little yellow dog, Mustard; and a little real, true and pet dragon, Custard. Custard has big sharp teeth, spikes on his top and scales beneath. His mouth is like a fireplace, nose like a chimney and has knife like daggers on his toes. Belinda is depicted as brave as a large number of bears. Ink and Blink are so brave that they can chase lions. Mustard is also compared to an angry lion in terms of bravery. But Custard is very coward and looks for a safe place in case of danger.

The poet further says that Belinda tries to tickle Custard so that he becomes expressive and bold. His other friends tease him and call him innocent and coward. They all usually sit in the little red wagon and ridicule their friend Custard. Belinda and her friends laugh at him and ask him his age but Custard does not agitate and retreats to a safe place.

One day, they hear an unpleasant sound. All of them get startled and astonished. Finally, they see a pirate entering their house through a window. He has two pistols in his two hands and a bright, sharp knife in his teeth. He has a black beard and looks dreadful. All the members of the house understand his wrong intention and become nervous and terrified. They start yelping and move towards safer places. But Custard jumps like a thunderous engine and squirming, he engulfs the pirate like a worm swallowed by a bird. The pirate tries to defend himself by shooting at the dragon but all his efforts prove to be in vain and the dragon swallows him without sparing even a single bit. Now all the members of Belinda’s house start praising and encouraging him. All of them sing and dance for their victory and appreciate Custard. Soon, they start boasting about themselves that they could have done better than Custard if they had not been nervous and confused. Custard, being very calm and composed considers himself inferior to his companions in spite of his heroic efforts. In the last stanza, the poet again repeats the beginning stanza i.e. uses refrain and describes Custard coward again because he again prefers to be away from conflicts and fights.

Thinking About The Poem

Q#1 Who are the characters in the poem? List them with their pet names.

Ans. The characters in the poem are:-

i) Belinda
ii) Ink-a little black kitten.
iii) Blink-a little grey mouse.
iv) Mustard-a little yellow dog.
v) Custard-a little pet dragon.
Q#2  Why did Custard cry for a nice safe cage?
Ans. Custard cried for a nice safe cage because he was very coward and lazy. He preferred solitude and looked for a comfortable and safer place in case of any danger. Moreover, he was very calm and composed and did not boast about himself.

Q#3  Why is the dragon called cowardly dragon?
Ans. The dragon is called cowardly dragon because despite his dangerous and well built structure and features, he is very reserved, lazy and coward by nature.

Q#4  “Belinda tickled him, she tickled him unmerciful….” Why?
Ans. “Belinda tickled him, she tickled him unmerciful……” Belinda tickled him mercilessly so that the coward dragon would get irritated and would use his strength to defend himself.

Q#5  Do you find “The Tale of Custard the Dragon” a serious or funny poem? Give reasons for your answer.
Ans. We find “The Tale of Custard the Dragon” both serious and funny. It seems serious to us because poor dragon is criticized and teased by his companions. On the contrary, Custard, the dragon does not offend or resist them. Instead he retreats to a safer place. But later in the poem, he proves his metal by protecting his family members from the pirate.

The poem is funny as well because the members tease and criticize him. Moreover, the characters and their names are very funny. They boast about themselves when the dragon kills the pirate instead of appreciating him.

Learning About the Literary Devices:

Q#1  What is the rhyme scheme of the poem?
Ans. The rhyme scheme of the poem is ‘aabb, ccdd’.

Q#2  Pick out the lines from the poem that contain similes.
Ans. The lines which contain similes are:

i) And the little yellow dog was sharp as Mustard.
ii) Mouth like a fireplace.
iii) Mustard was as brave as a tiger in a rage.
iv) But up jumped Custard, snorting like an engine.
v) Clashed his tail like irons in a dungeon.
vi) He went at the pirate like a robin at a worm.
vii) Belinda is as brave as a barrel full of bears.

Q#3  What images does the poet use in the poem?
Ans. The poet uses the images like:- ‘fireplace’ ‘chimney’ ‘engine’ and ‘robin’.

Q#4  Which line or stanza is used as a refrain in the poem?
Ans. Stanza 13 and 14 are used as refrain i.e. they reoccur at the end of the poem.

An Evening Wet With Rain (Ved Pal Deep)
Central Idea:- This poem is poet’s reminiscence of an evening wet with rain. It is an atmosphere of complete silence. The poet draws numerous images from nature to heighten the effect of silence and solitude. The poet seems to be depressed, perhaps because of hopelessness that has darkened the evening of his life. The poet is reminded of his childhood when he stood alone in the courtyard listening to the sound of cymbal. He regrets that the days gone by do not return.

Summary:- The poem, “An evening wet with rain” has been conceived and composed by “Ved Pal Deep”, and eminent Dogri writer and translated from Dogri by ‘Shiv Nath’.

In this poem, the poet remembers an evening wet with rain. It is an atmosphere of complete silence. The poet is walking down the lane and everything is wet. The poet is very gloomy and alone. He wants the company of his beloved. He feels exhausted and depressed for he has lost all hopes in the evening of his life (evening symbolizes his old age). Due to his sadness and aloofness he cannot enjoy the beauty of nature. The rejuvenating fresh rain, cool breezes of wind, dance of Banyan leaves do not appeal him anymore now, which otherwise, used to enchant and enthrall him. The poet only observes silence everywhere. He is feeling heavy in his eyes. It could be due to sleep or fever.

He feels quite nostalgic about his childhood when he used to stand in the courtyard listening to mellifluous (smooth) sound of cymbals. But, at the same time he feels sad because this melody now has no charm to entertain him. He feels sad for it is beyond his control to call back good old times.

The poet has reached to the evening of his life i.e. his old age and is full of despair with no desire for life. The poet hopes to sleep in the lap of night (which symbolizes death). He is unaware of his destiny and leaves himself to his fate.

Q#1 What are the memories that the poet talks about in the poem?
Ans. The poet talks about his childhood memories. He remembers the time when he used to stand alone in the courtyard and would listen to the melodious sound of cymbals, brought to his ears by floating cool breezes.

Q#2 What kind of atmosphere is created in the poem?
Ans. The poem reproduces the atmosphere of an evening which is wet with rain. The dark wet evening creates a gloomy and serious atmosphere. The evening symbolizes the decline of poet’s life. He has become old and is in despair. The poet is comparing his life to a flickering earthen lamp, which can go out any time. Thus, the atmosphere throughout the poem is very depressing.

Q#3 What makes the poet tired?
Ans. Hopelessness makes the poet tired. It is only hope that keeps one going in one’s life. If there is no hope, there is no desire to live. A depressive person obviously feels exhausted and tiresome. The poet is in his old age and there is no hope left for him. That is why, he feels tired.

Q#4 What has darkened the evening of poet’s life?
Ans. Hope is the guiding principle of life. Life is based on hope; it guides us the way we should follow. If there is no hope, life becomes dull and full of darkness. Poet’s life is also without hope and that is what has darkened the evening of poet’s life.

Q#5 Discuss the poet’s regret in the poem.
Ans. The poet feels nostalgic and reminds his good old times. He remembers the days when his life was full of joy and happiness. In contrast, the present life of poet is full of despair.
The poet also feels bad for he can’t call back the times that are past and gone.

Q#6  **Comment on the imagery used by the poet in the poem.**

Ans.  Imagery refers to the use of words, especially in poetry, to describe ideas or situations. Imagery is of different kinds such as auditory, visual, tactile, olfactory, gustatory and kinesthetic. The poet uses visual imagery in the poem. He creates a clear picture of an evening wet with rain. Wet windows, door and awnings, wet collar of the coat, water seeping through the poet’s shoes, fluttering of Banyan leaves with cold breezes etc. are all the imageries used by the poet in the poem which leaves a lasting expression on our minds. All these are examples of use of rich images in his

**From “I Explain A Few Things”(Pablo Neruda)**

**Central Idea:** War and peace are two phases which determine the fate of a particular country. War leaves a prosperous nation, destructed and devastated. On the contrary, peace increases the prosperity of the country. War ruins the beauty of a nation and affects the talented personalities of the nation. The aftermaths of war are depression, devastation and misery.

**Summary:** The poem “I Explain a few things” is composed by ‘Pablo Neruda’. The poem is a lamentation on Spanish Civil War in which the noted poets and eminent personalities were killed. The poet describes his journey from happiness to agony. He portrays the pre-war and post-war conditions of his motherland. The poet describes despair, devastation, tyranny and damages through the symbols of jackals, bandits, stones, vipers, fire, blood and bullets. The poem is an emotional account of the transference of a prosperous and beautiful nation into a ruined and destructed place through the words of a patriotic poet. He describes all these conditions to his friends, Federico Garcia Lorca and Rafael Albert who were the martyrs of the civil war.

In the beginning stanza, the poet describes his motherland in a very elegant way. He says that he lived in a small house (i.e. country) in the capital of Spain, i.e. Madrid. His native place was full of church bells for priests and worshippers; clock towers which kept them updated about their business and office works. It also had lush green trees and herbage to refresh the air all around. From his house, he could see the beautiful place of Castille surrounded by the ocean full of enormous aquatic life which decided their economy. His house and his country was called “The house of flowers” because it was full of beautiful Geraniums. The people were very jubilant with their families and they kept dogs for recreation. The poet asks his friends to corroborate the fact that his country was very beautiful and peaceful. He wants his dead friends to recapitulate the beautiful month of June which inspired them to write beautiful poetry. He makes his buried friends remember the cold weather when the slow winds moved the weather vanes. He tells them about the enormous production of various crops like potatoes and tomatoes. Thus he gives a beautiful picture of prosperous and marvelous Spain.

In the next half of the poem, the poet describes the advent of the Spanish Civil War and the situation after the war. The poet says that one morning everything changed. The civil war burnt everything like important buildings and constructions. It appeared as if various dazzling fires leapt out of the earth and engulfed the beauty and prosperity of Spain. The poet says that every creature became a victim of this war. Even the engaged ladies and duchesses were not spared by the war. Even the generous and humble priests became the sufferers of the civil war. The fire of destruction came from the earth and sky and massacred and slaughtered youth. The streets and the soil of Spain became full of the blood of children instead of flowers.

In the next stanza, the poet uses symbolism to depict the traitors and bureaucrats of Spain, who took an active part in igniting the war. The poet describes various disgusting images to describe these people. He describes them as jackals which would be hated by the cunning jackals. He says that even the determined and patriotic people who were very firm joined the war on the motivation of trivial and mischievous people. He describes them as vipers.
which would be condemned by poisonous vipers. They spread the venom of slaughter and hatred among the people.

The poet tells his friends that they were lucky to die before seeing the heart rending conditions of Spain. The poet says that unlike his friends, he has been a witness to the damage of Spain. He says that he has seen the blood of youth rising like a wave and thus killing many patriots. The poet says that this wave of prestige, power and brutal killings initiated by the army Generals, traitors and treacherous people engulfed the children, youngsters and talented people of Spain.

The poet further asks his friends to think about his dead house i.e. Spain full of killings and moaning. He says that every house now presents a picture of grief and laments instead of flowers and beauty. The poet then gives a hope of glorification of Spain. He addresses the black sheep community of Spain and warns them that the Spanish youth would take revenge of these atrocities and oppressions. He tells them that in response of their atrocities and tyrannies, they would face the rebellions of future generation. The poet then tells his friends that they would ask about the images of Spanish beauties in his poetry. He says that his poetry is without the concept of beautiful Spain because he can see blood through the streets. He says that he has seen enormous bloodshed and war as a result; his poetry is full of lamentations and emotions instead of the beauty of Spain.

THINKING ABOUT THE TEXT:

Q#1 Why does the poet use the little, ‘I Explain A few things’…?
Ans: The poet uses the title ‘I Explain A few things’ because the destruction of Spain is unlimited and he is unable to cover it all in his poetry. So he tries to explain few things only so that his friends and other people come to know about the situation faced by Spain.

Q#2 What are the memories that the poet talks about in the poem?
Ans: The memories that the poet talks about in the poem are both pleasant and agonized. The poet talks about the pleasant memories when his motherland used to be prosperous and charming. Every nook and corner of the country was covered with flowers. Happiness and relaxation prevailed on every face. It used to be economically sound and people cultivated crops and harvested them in abundance. The poet also talks about emotional and painful memories after witnessing the devastation of his nation because of the civil war. He remembers the merciless and barbaric slaughter of the youngsters and the blood gushing out from every family. He remembers the ruin and rout of his beloved nation which make his heart ache.

Q#3 What happened later and why?
Ans: The beautiful nation was converted into a demolished graveyard because of the outbreak of the Spanish Civil War. The war was initiated by disloyal and treacherous people of the country who wanted to gain power, prestige and wealth at the stake of innocent citizens.

Q#4 Why doesn’t the poet write the poetry of sweet dreams?
Ans: The poet is handicapped to write the poetry of sweet dreams because his heart and brain are filled with lamentation and agony for his dead countrymen. He can see the bloodshed and heart rending scenes of death and disaster all around himself. These incidents have concealed the concept of dreams and beauty in his poems and emotional verses of martyrdom and tolerance have taken their place.

Q#5 Explain the lines”
My house was named
The house of flowers……….. moment blood.
In these verses of the poem, the poet is making the readers develop a contrast between the pre-war and post-war conditions of Spain. ‘The house’ can be a symbolism for his beloved country. He considers his nation before the war as ‘the house of flowers’. The poet says that his country was full of heart-throbbing and splendid sights. Through every crack, a flower would bloom signifying the peaceful and beautiful atmosphere of his country. He says that every house used to be jubilant and kept pets for their amusement. He then addresses to his dead friends who had been the victims of the war. He talks to them about the beautiful months of June and winter when they would be inspired to write beautiful poetry. He describes the surplus production of crops which his country had before the war. Then, one day everything started to be destroyed. The poet says that everything was engulfed by the fire which appeared to evolve out of the earth and the sky. The fire of killings affected everyone and triggered a continuous series of merciless bloodshed.

Q#6 How has the civil war affected Spain?
Ans: Spain has been adversely affected by the civil war. It has been filled with cries, moans and lamentations instead of happiness and laughter. The streets of the country have been filled with the fresh and innocent blood of the youngsters. Every prosperous household of Spain has been converted into a deserted graveyard.

Q#7 Explain the journeys of the poet from happiness to agony?
Ans: The poet has come through a struggling phase from happiness to agony. Initially the poet has dwelled in a peaceful country with picturesque scenes and prosperous economy. He has seen every beautiful aspect of his beloved nation. As the time sprints by, everything changes. He sustains in the civil war when all his friends die in the same. He becomes the unlucky fellow to observe the breakdown of his country’s social, political and economical machinery. He sees the scenes of tyrannical killings and atrocities done to his fellow countrymen. He witnesses the agonized scenes of his motherland being covered with innocent blood of youth rather than beautiful cover of greenery and flowers.

Q#8 What is the mood of poet in the poem? How do you feel after reading the poem?
Ans: The poet is deeply touched, agonized and depressed because of the fate of his motherland brought about by the civil war.

We feel that wars are a curse for humanity. War leaves a prosperous nation devastated and ruined. Wars hinder the prosperity of the nation and make the youth their prior target. Humans should pledge to resolve the disputes by mutual conversation and negotiations rather than terrible wars.

LEARNING ABOUT THE LITERARY DEVICES:

Q Pick out at least two symbols used by the poet in the poem. What do they symbolize?
Ans: The symbols used by the poet in the poem are:
- Jackals
- Stones
- Vipers

Jackals symbolize the cunning and disloyal people of the country who are responsible for the killing of youngsters for their personal benefits.
Vipers symbolize the traitors and treacherous people who appear to be humans but are filled with poison against their fellow citizens.

Q Pick out the images used by the poet to describe peace and war in the poem.
Ans: The images used by the poet to describe peace and war in the poem are:
- Images used for the peace:
  1. With bells, with clocks, with trees
  2. The house of flowers,
3. Geraniums exploded,
4. A beautiful house with dogs and little children,
5. The light of June drowned flowers in your mouth,
6. The fine, frenzied ivory of potatoes,
7. Tomatoes multiplied down to the sea.

**Images used for war:**
1. Bonfires leapt from the earth devouring human beings.
2. Gunpowder from that moment and from that moment blood.
3. Thugs with signet rings, planes, Moors and duchesses.
4. Blood of Spain rise up.
5. A single wave of pride and knives.
6. Blood through the street.

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**My Mother At Sixty Six**

**Central Idea:**
Aging is an important phase of human life. A person enters his childhood, experiences youth when he is full of energy and dreams to have luxury of life. Finally, he approaches his old age and encounters death. Relationship between people becomes stronger at every aspect of life and they can’t bear separation due to aging.

**Summary:**
The poem entitled “My Mother at sixty six” has been authored by “Kamala Das”. The poetess portrays a sensational separation of a mother and a daughter. She has been able to capture almost all the emotions which a daughter is filled with, on bidding farewell to her beloved mother. In the commencing verses, the poetess says that one Friday while traveling to Cochin Airport from her parent’s home, she suddenly has a look at her mother sitting beside her in the car. The look of her mother’s face makes her dumbfounded and she painfully concludes that her mother has attained a ripe age of sixty six, and is thus approaching her death. She finds her mother gloomy, worn out and aged. She is often dozing and remains unconscious about herself like a dead body because of the increasing age. This thought haunts her and she tries to put it off by looking out of the car window. There she finds young, blossoming trees passing by the fast moving car and merry children playing gaily and energetically. The poetess uses a device of contrast to depict that human being experiences childhood when he is carefree and blithe; then youth, when he is full of dreams and wishes and ultimately old age when he becomes gloomy, inactive and dozing. The poetess further says that she enters the airport and passes through the security check up for frisking and again gazes at her mother. Her mother seems pale and charm-less to her like the dull moon in the late winter season. At that time, she feels a pain which is usually felt by a child due to the fear of separation from his mother. She seems to be bound to leave her mother in order to earn her livelihood or some other reason. Ultimately, she bids good bye to her mother with a hope to see her again. She keeps on smiling continuously in order to conceal her emotions and to give her mother hope to see her daughter again.

**Thinking About The Poem:**

**Q#1 How does the poet describe her mother in the poem?**

**Ans.** The poet describes her mother as an aged lady who has become gloomy, inactive and worn out. She is often dozing and remains unconscious about herself like a dead body.

**Q#2 Why does the poet look outside? What activities does the poet see outside the car window?**

**Ans.** The poet concludes and believes that her mother is nearing death. The thought of the numbered days of her mother’s life makes her anxious and in order to divert her attention from her mother she looks outside.
The poet sees young trees in full bloom while traveling in a car. She also finds little children coming out of their homes in a very active, energetic and lively way.

Q#3 Why are young trees described as sprinting?
Ans. Young trees are described as sprinting with respect to the car. In deeper meaning, by sprinting young trees, the poet means that the youth passes out of life of humans quickly and a person enters his old age where he nears his death.

Q#4 Why is the mother compared to the late winter’s moon?
Ans. The mother is compared to the late winter’s moon because like the moon of winter season the poet’s mother is also dull, grayish, pale and her strength is diminishing and waning.

Q#5 What childhood fears do you think the poet is referring to in the poem ‘My Mother at Sixty Six’?
Ans. The childhood fears that the poet is referring to are the anxious feelings of losing one’s mother. The poet feels uneasy and unprotected with the thought of losing her mother. She does not expect to see her mother again on her return. So she shows a childish unwillingness to leave her mother.

Q#6 What does Kamala Das do after the security check up? What does she notice?
Ans. After the security check up, the poet stands a few yards away from her mother and gazes at her mother. She notices the declining age and finds her pale and worn out than ever before.

Q#7 “but all I said was see you Amma; all I did was smile and smile and smile…..”
a) What does the poet actually feel at this moment?
Ans. The poet actually feels very depressed and disheartened at the sight of her aging mother.
b) Why did the poet say “see you soon Amma”? What does the poet actually mean by ‘smile and smile and smile….’? What kind of smile is it?
Ans. The poet said, ‘see you soon Amma’ in order to give her mother moral support and encouragement. She said so to give her mother hope to see her daughter again. By ‘smile and smile and smile…..’ she means to make herself and her mother hopeful to see each other again. It is actually a painful smile. The poet tries to conceal the swelling emotions by smiling. By using this poetic device of repetition, the poet has made the poetic language rich by depicting many hidden emotions through ‘smile’.

Q#8 ‘Driving from my parent’s home to Cochin last Friday morning. I saw my mother, beside me, doze, open mouthed, her face ashen like that of a corpse and realize with pain that she was as old as she looked
a) Where was the poet driving to? Who was sitting beside her?
Ans. The poet was driving to Cochin. The poet’s mother was sitting beside her.

b) What did the poet notice about the mother?
Ans. She noticed that her mother was weak, pale and unconscious like a dead body.

c) Why did the mother’s face look like that of a corpse?
Ans. The mother’s face looked like a corpse because it had turned pale, grey and was open mouthed due to old age.

Q#9 Discuss mother- daughter relationship as described in the poem.
Ans. Mother- daughter relationship as described in the poem is very sensitive and full of love, care and emotions. Mother has a deep emotional link to her children and does not want them to be away. In particular, when the mother approaches her old age, she becomes more concerned and worried about her children. Daughter also tends to bear a specific kind of emotional link to her mother. She tries to remain close to her mother and feels very bad and worried when separated from her. In this poem, the mother
does not want her daughter to leave her; similarly the daughter gives a mysterious and indefinable smile which is to show unwillingness and anxiety of leaving her mother.

Q#10 ‘My Mother at sixty six’ is an emotional account of the poet towards the numbered days of her mother. Discuss.

Ans. ‘My Mother at sixty six’ is an emotional account of the poet towards the limited days of her mother. She feels very sad and depressed on seeing her old, grey, wrinkled and dull face. She tries her best to divert her thought but remains unsuccessful and this thought haunts her mind every now and then. Till the end of the poem, she feels very sad and disappointed about the declining age of her mother. She is unable to express her fears and emotions to her mother with the thought of disheartening her. She bids goodbye to her mother by just smiling in order to hide her hurt feelings and encourage her mother.

Learning About The Literacy Devices:

Q#1 The poet compares her mother to many things. Pick out two similes which reinforce this comparison.

Ans. The two similes are: - “Her face ashen like that of a corpse.”
“Her wan, pale as a late winter’s moon”

Q#1 What image does the poet use to describe death in the poem?

Ans. The poet uses the image “corpse” to describe death in the poem.

Q#3 Cite an example of one device of contrast that the poet uses in the poem.

Ans. The device of contrast that the poet uses in the poem is old age of her mother and the young trees and children playing merrily. The poet compares the energy, vitality and jubilance of childhood and youth to old age.

Q#4 Smile and smile and smile…..is a poetic device, what is it called?

Ans. ‘Smile and smile and smile…..’ is a poetic device called repetition. It is used to make a poem impressive using less words. A particular word is repeated to make the poem thought provoking.
Magnetic Effects Of Electric Current

**INTRODUCTION:-** In 1820, for the first time a Danish physicist Hans Christian Oersted showed that the electric current produce magnetic field i.e. magnetic field is associated with the current carrying conductor. The Oersted’s experimental arrangement consisted of a magnetic compass needle, a length of wire, a battery, and a key as shown in figure, when the key is inserted the magnetic compass needle gets deflected from its actual north-south direction and when the key is removed the magnetic compass needle comes back to its original position. Further, when the direction of the current is reversed the direction of the deflection of compass needle also gets reversed. Since a magnetic compass needle is a tiny magnet and gets affected by the magnetic field. Hence, a current carrying conductor produces a magnetic field. Hence, a current carrying conductor produces a magnetic field in its surroundings. The branch of physical science which deals with the study of magnetic field produced due to electric currents is known as electromagnetism. The importance of magnetic effect of current lies in the fact that it forms a basic principle on which electric motor, generator, radio telephone work and hence affecting our modern day life.

**MAGNET:** - A magnet is a substance which passes the properties of magnetite which is a black colored ore of iron and oxygen having the formula \((\text{Fe}_3\text{O}_4)\) first found on the tow of magnesia in Greece. It I also called as lodestone as it has a directional property of always pointing towards north-south direction. When freely suspended. Natural magnets are irregular in shape and have weak directional and attractive properties. To produce stronger magnetic fields artificial magnets made of steel or some alloys are prepared in regular hapes. These are generally in the shapes of bar or horse shoe and are respectively known as bar magnet or horse hoe magnet. A bar magnet attracts magnetic materials like iron fillings, steel, cobalt, nickels, etc. every magnet has two poles; the poles are the ends of a magnet where magnetic field is maximum. A bar magnet when freely suspended by a thread always points in north-south direction. The end which points towards the geographic north is known as North Pole of magnet and the end which points towards the geographic south is known as South Pole of magnet like poles repel and unlike poles attract.

**Plotting magnetic lines of force by using a compass**

The bar magnet whose magnetic field pattern is to be traced is placed on a sheet of paper and its boundary is marked with a pencil. A compass needle is placed near to the North Pole (N) of the magnet. The North Pole of the compass needle stays away from the North Pole of the magnet. Mark the position of the North Pole of the compass needle on the paper with a pencil. Shift the compass needle so that it’s South Pole coincides with the dot marked on the paper. Again mark the position of the North Pole of the compass needle and repeat the process until the compass needle reaches the South Pole of the magnet. Then join all these pencil dots. The curve so obtained is called the magnetic line of force.
Plotting Magnetic lines of force by using iron fillings
Place a thick white paper (card) over a strong bar magnet. Sprinkle some iron fillings over the card and then tap the card gently. The iron fillings arrange themselves in a regular pattern as shown in figure. The force of magnetic field of the bar magnet makes the iron fillings to arrange themselves in a regular pattern as shown in figure. The force of magnetic field of the bar magnet makes the iron fillings to arrange themselves in a particular pattern. Thus, the lines along which the iron fillings align themselves represent magnetic field lines.

Magnetic field of the earth: A freely suspended magnet near the earth’s surface always comes to rest in the North South direction. This is because the earth acts like a big magnet. The North Pole of the earth’s magnet is towards the earth’s geographic South, and South Pole of the earth’s magnet towards the earth’s Geographic North.
The geographic axis and the magnetic axis of the earth are inclined to each other at an angle of about 15°. The earth’s magnetic field is believed to be due to the flow of electric currents through the molten iron- rich outer core of the earth.

MAGNETIC FIELD AND MAGNETIC FIELD LINES:-
Magnetic field is the region or the space around a magnet in which magnetic force can be experienced. Magnetic filed is a vector quantity and has both magnitude and direction. The direction of magnetic field at a point is the direction of the resultant force acting on a hypothetical north pole placed at that point. Magnetic field is depicted by magnetic field line. A magnetic field line is a imaginary path along which a hypothetical north pole would move if free to do so. The tangent drawn to the magnetic field line at any point gives the direction of magnetic filed at that point. The sketch of the magnetic field lines due to a bar magnet is shown below.
These can be plotted by using a magnetic compass needle box, some of the properties of magnetic field lines are:

- They form closed loops which is due to the fact that isolated magnetic poles do not exist.
- They start from North Pole towards the South Pole outside. The magnet and from South Pole to North Pole inside the magnet.
- In the regions of stronger magnetic field the magnetic field lines are crowded and in the regions of weaker magnetic field they are far apart.
- Two or more magnetic field lines cannot intersect each other if they did there will two directions of resultant magnetic field which is not possible.
- They prefer to pass through iron rather than air.

**MAGNETIC FIELD OF EARTH:** Earth is a dynamic system inside which continuous physical and chemical changes are taking place and is believed to possess magnetism i.e., it behaves as a magnet due to the fact that a freely suspended bar magnet always points in the north-south direction. The North pole of the freely suspended magnet points to the geographic north and its South Pole points to the geographic south. The magnetic field of earth resembles to that of a bar magnet whose length is equal to one fifth of the diameter of earth. Several attempts have been made to explain the magnetism of earth. One such attempt assumes that a huge bar magnet I embedded deep inside the earth the north pole of the bar magnet being in the geographic south pole. Actually, due to rotation of earth the magnetic axis does not coincide with the geographic N-S axis. (Axis of rotation of earth) but makes an angle of $15^\circ$ with it. However, not evidence of such a bar magnet has been found and several attempts like this have been made to explain the magnetism due to earth. It is now believed that the liquid core composed of ions which is in motion gives arise to electric currents which result in the magnetism of the earth.

A current carrying straight wire produces magnetic field in its surroundings. The magnetic field produced by current carrying straight conductor consists of concentric circular magnetic field lines with the conductor as their
centre. The magnetic field lines are crowded near the conductor showing that the magnetic field is stronger in that region while as magnetic field lines get far apart as we move away from the conductor show that the magnetic field is weaker in that region. The magnitude of magnetic field produced by a straight current carrying conductor is directly proportional to the current flowing through the wire and is inversely proportional to the distance of that point from the wire. Hence, greater the current flowing through the conductor stronger will be the magnetic field produced by such a conductor. The magnetic field lines around a straight conductor are shown below:

Q Magnetic effect of Current or electromagnetism of action of current in magnet.

Ans. Earlier it was thought that there is no connection between electricity and magnetism. However, in the year 1820, Danish Physicist Hans Christian Oersted Professor at Copenhagen in Sweden showed that the electric current through the wire deflects the magnetic needle held below wire. The direction of deflection of the magnetic needle is reversed if the direction of the current in the wire is reversed. This shows that the magnetic field is associated with a current carrying wire. This relationship between electricity and magnetism is called electromagnetism.

Oersted’s Experiment: - Take a magnetic needle S-N, which can rotate freely about a vertical axis in a horizontal plane. Hold a conducting wire AB over the magnetic needle NS parallel to it. Complete the circuit by closing the key, such that the current flows from B to A.

It will be found that N-pole of the magnetic needle gets deflected towards west (fig.i). If the direction of the current is reversed, the N-pole of magnetic needle deflected towards east (fig.ii). On increasing the current, the deflection of the needle increases. This experiment shows that the magnetic field is only due to electric current. If a strong current is passed through a conductor then magnetic field produced around the conductor is also very strong and the earth’s magnetic field may be neglected in its comparison. In such a case, magnetic lines of force around a conductor are circular. The direction of magnetic field is given by the following two rules.

1. **Amperes swimming rule**: - If we imagine a man swimming along the wire in the direction of the current with his arms out stretched and facing the needle, the N-pole of the needle will be deflected towards his left hand.

2. **Snow rule**: - Snow rule illustrates that when current flows from S to N, the N-pole deflects towards west. If the direction of the current is reversed the N-Pole will deflect towards east.

3. **Maxwell’s cork rule**: - Imagine a right handed cork screw being driven along the wire in the direction of the current. The direction in which the thumb rotates gives the direction of the N-pole of the needle.
Conclusions from Oersted’s experiment: -
1. Whenever the current is passed through a straight conductor, it behaves like a magnet.
2. The magnitude of the magnetic effect increases with the strength of the current.
3. The magnetic field set up by the conductor is at right angles to the direction of the flow of the current.
4. The direction in which the N-pole of the magnetic needle will move depends upon:
   i) direction of the current in the conductor
   ii) the relative position of the conductor i.e., whether the conductor is above the needle or below the needle.

Q Show by the diagram magnetic field around a straight conductor.
Ans. The presence of the magnetic field around a straight wire carrying the current can be shown by the following experiment:
When a vertical copper wire AB carrying current passes centrally through a horizontal cardboard sheet C over which some iron fillings are sprinkled, it is found that on gentle tapping the cardboard, iron fillings are arranged along the concentric circles whose centers lie on the wire. A small magnetic compass needle M placed on the cardboard indicates the direction of the magnetic field.

Properties of Magnetic lines of forces around the straight conductor: -
1. The magnetic lines of forces are in the form of concentric circles near the conductor.
2. On changing the direction of the current, the direction of the magnitude lines also reverses.
3. On increasing the magnitude of the current, the magnetic lines of forces increase.
4. The plane magnetic lines of force is at right angles to the plane of the conductor carrying conductor.

Factors on which the field depend
The strength of the magnetic field produced by a straight current carrying conductor depends on the following factors:-

i) Current passing through the conductor:- The strength of the magnetic field (B) is directly proportional to the current (I) passing through the conductor. 
Mathematically $B \propto I$ ................ (i)

ii) Distance from the conductor:- The strength of the magnetic field (B) is inversely proportional to the distance (r) from the conductor.
Mathematically, \( B \alpha \frac{I}{r} \) ..........................(ii)

Combining (i) and (ii), we get

\[ B \alpha \frac{\mu_0 I}{r} \]

or \( B = \frac{\mu_0 I}{2\pi r} \), where \( \mu_0 \) is the permeability of vacuum.

The direction of the magnetic lines of force can be given by the Right Hand thumb rule or Maxwell’s Cork Screw rule.

**Right hand thumb rule or Grip rule:** according to this rule, if we imagine the linear conductor to be held in the grip of the right hand so that the thumb points in the direction of the current, then the curvature of the fingers around the conductor will represent the direction of the magnetic lines of force.

**Maxwell’s Cork Screw Rule:** If we imagine a right handed screw placed along the current carrying conductor be rotated such that the screw moves in the direction of the current, the direction of the rotation of the thumb gives the direction of the magnetic lines of force.

**Q** Show by the diagram magnetic field due to a circular conductor.

**Ans.** When a circular copper wire carrying current passes through a horizontal cardboard C, over which some iron fillings are sprinkled, it is found that on gentle tapping the cardboard, the iron fillings get magnetized and arrange themselves along the lines of force which are circular near the wire and practically straight near the centre of the wire loop. The direction of the magnitude field at the points where the conductor passes through the cardboard is given by right hand grip rule.

The polarity of the force of the coil can be determined by a simple rule known as clock rule. If the current rounds any face of the coil flows in an anti-clockwise, it behaves like a north pole and if the current is in clockwise direction, the face acts as the South Pole.

**Factors on which the magnetic field produced by a current carrying circular coil depends:** The strength of the magnetic field produced by a current carrying circular coil depends on the following factors:

i) **Current flowing through the coil:** The strength of the magnetic field \( B \) is proportional to the current \( I \) flowing through the coil.

Mathematically, \( B \propto I \)

ii) **Radius of the coil:** The strength of the magnetic field \( B \) is inversely proportional to the radius \( r \) of the circular coil.

Mathematically,

\[ B \propto \frac{1}{R} \]
iii) **Number of turns of wire in the circular coil:** - The strength of the magnetic field (B) is proportional to the number of turns of wire (n) in the circular coil.

   Mathematically, \( B \alpha n \)

**Properties of magnetic lines of force around circular coil:** -

1. Magnetic lines of forces are circular around the points where the current enters or leaves the circular coil.
2. Within the space enclosed by the coil, the magnetic lines of forces are in the same direction.
3. Near the centre of the coil, the magnetic lines of forces are parallel. When the magnetic lines of forces are parallel, the magnetic field is said to be uniform.
4. The magnetic lines of forces are at right angles to the plane of the coil.
5. The strength of the magnetic field is directly proportional to the current.

**MAGNETIC FIELD DUE TO SOLENOID:** A solenoid is a long wire wound in the form of a helix where the neighboring turns are closely spaced. Each turn acts as a circular loop producing its own magnetic field and total magnetic field produced by the solenoid is equal to the vector sum of all these individual magnetic fields produced by each loop. The magnetic field line inside the solenoid is in the form of parallel straight lines producing a uniform magnetic field inside the solenoid behaves as a north pole and the other end behaves as a south pole. The magnetic field produced due to bar solenoid depend on the number of turns in the solenoid, strength of current flowing in the solenoid, and the nature of the core material on which coil is wound. More number of turns in the solenoid, stronger will be the magnetic field produced by such a solenoid. Also, larger the current flowing in the solenoid, stronger will be the magnetic field produced. Using the soft iron as the core material increases the magnetic field produced by a solenoid.

As is clear from the figure that the magnetic field produced by a solenoid resembles to that of a bar magnet.

![Magnetic field due to a current-carrying solenoid](image)

**FORCE ON A CURRENT CARRYING CONDUCTOR PLACED IN MAGNETIC FIELD:** Just like an electric current flowing through a conductor exerts force on a magnetic compass needle similarly a magnet exerts force on a current carrying conductor or in other words a current carrying conductor experience a force on it when placed in an external magnetic field. This was first discovered by Michael Faraday in 1821. Since a current carrying conductor produces magnetic field around it. When this conductor is placed in an external magnetic field this external magnetic field interacts with the magnetic field produced by the conductor due to
which the conductor experience a mechanical force due to which the conductor move if free to do so. The
force experienced by the current carrying conductor when placed in external magnetic field depends on

- **Current flowing through the conductor**: Increasing the strength of current flowing through the
  conductor increases the magnitude of force acting on it.
- **Length of the conductor**: More the length of the conductor more will be the force acting on it.

- **Strength of magnetic field**: Larger the intensity or strength of the external magnetic field more will be
  the force on the conductor,
  
  Besides, the above factors it also depends on the angle at which the conductor is placed with the
  magnetic field. The direction of the force experienced by the current carrying conductor placed in
  magnetic field is given by Fleming’s left hand rule.

  According to Fleming’s left hand rule, if we stretch our thumb, fore finger and middle finger such that
  they are mutually perpendicular to the each other and if fore finger represents direction of magnetic field,
  middle finger represents direction of current flow then thumb gives the direction of force experienced by
  the conductor due to external magnetic field.

Further a conductor placed parallel to the magnetic field experiences no force due to magnetic field
and a conductor placed perpendicular to the direction of magnetic field experiences maximum force. Also,
the direction of force due to magnetic field depends on direction of flow of current through the conductor
and gets reversed with the change in the direction of flow of current.

Q **Describe the construction and working of an electromagnet. Give its uses.**

Ans. An electric current can be used for making temporary magnet known as electromagnet. An electromagnet
consists of a long coil of insulated copper wire wound on a soft iron core in which
electric current is passed through the coil. This type of magnet loses its magnetism as soon as the current
in the coil is switched off.

However, if instead of soft iron a bar of steel is placed in solenoid, it changes to a permanent magnet.
However, the magnetic strength induced in steel is not as high as in soft iron.

Materials such as carbon, steel, chromium steel, cobalt and tungsten steel, and the alloys such as Nipermag
and Alnico are used for making permanent magnets. Permanent magnets are used in microphones
loudspeakers, electric clocks and in many scientific instruments such as Ammeters, Voltmeters etc.

**Factors on which the strength of an electromagnet depend**: The strength of an electromagnet depends
upon the following factors:-
a) The number of turns in the coil.
b) The strength of the current.
c) The nature of the core material.
d) The air gap between its poles.

**Uses of electromagnet:**
1. They are used in electrical appliances such as electric bell, electric fan, electric motors etc.
2. They are used in electric generators where very strong magnetic field is required.
3. They are used in T.V for deflecting electron beam of the picture tube.
4. They are used in magnetic separation of iron ores from earthly substances.
5. They are used for preparing strong permanent magnets.
6. They are used by doctors to cure certain diseases and to remove splinters of iron or steel from the injured eyes.

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**Q** What is the difference between an electromagnet and a permanent magnet?

<table>
<thead>
<tr>
<th>Bar magnet or permanent magnet</th>
<th>Electromagnet</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The bar magnet is a permanent.</td>
<td>1. An electromagnet is a temporary magnet.</td>
</tr>
<tr>
<td>2. It produces comparatively weak force of attraction.</td>
<td>2. It can produce very strong magnetic force.</td>
</tr>
<tr>
<td>3. Its strength cannot be changed.</td>
<td>3. Its strength can be changed.</td>
</tr>
<tr>
<td>4. The polarity is fixed and cannot be changed.</td>
<td>4. The polarity can be changed by changing the direction of the current in the coil.</td>
</tr>
</tbody>
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**Q** Describe an experiment to show that a current carrying conductor experiences a force in a magnetic field and that the direction of the force depends on the direction of (a) the magnetic field (b) the current.

**Ans.** When a current carrying conductor is placed in a magnetic field, a mechanical force is exerted on the conductor which can make the conductor move. This is known as the motor principle and forms the basis of a large number of electrical devices like electric motor and moving coil galvanometer. This was found by Andre Marie Ampere in 1820.

Take an aluminium rod AB (1MM diameter, 4-5 cm length) and hang it between the poles of strong horse shoe magnet within the help of two insulated springs as shown in fig. Connect the two ends of rod AB to a battery through a key K. When the key K is switched on, it is found that the rod AB is pulled down and the spring is stretched. This shows that the current carrying conductor placed in a magnetic field experiences a force. Repeat the experiment by reversing the direction of the current, it will be seen that the aluminium wire moves up, and the spring gets compressed. The direction of the motion of the conductor can be found out by Fleming’s left-hand rule.

**Fleming’s left-hand rule**
Stretch the forefinger, second finger and the thumb of the left hand mutually at right angles. If the forefinger points in the direction of the field (N-S) and the second finger in the direction of the current, the thumb will point in the direction of the force or the motion of the conductor. It is also known as motor rule.

**Conclusions of the experiment**

From the experiment the following conclusions can be drawn:-

i) When a current carrying conductor is placed in a magnetic field, a mechanical force acts on a conductor which makes it to move.

ii) The direction of the motion of the conductor depends upon the direction of the current and the magnetic field.

iii) The current carrying conductor when placed in a magnetic field moves in a direction perpendicular to the direction of the current as well as perpendicular to the direction of the magnetic field.

Q. What do you understand by the term electromagnetic induction? Explain it with the help of a diagram.

Ans. In 1820, Oersted discovered that when an electric current is passed through a conductor, a magnetic field is produced around it. In 1831, Michael Faraday in U.K. and Joseph Henry in U.S.A. observed that the electric field is produced across the ends of a conductor by using magnets. Faraday discovered that the currents are produced in a loop of wire if its moved up and in the magnetic field between the two poles of a magnet. This phenomenon is called electro-magnetic induction. The current so produced is called an induced current by e.m.f.

**Experiment:**

Take a piece of copper wire and hold it between the N and S poles of a magnet. Connect the two ends of the coil to a Galvanometer G. Now, if the coil moves downwards rapidly, a current is produced on the coil and the Galvanometer shows a certain deflection in one direction. Now if the wire moves upwards, Galvanometer again shows a deflection, but in the opposite direction. This shows that when the direction of the motion wire is reversed in the magnetic field, the direction of
induced current is also reversed. Repeat similar experiments by keeping the magnet in a fixed position and moving the coil towards and away from magnet. It would be seen that the galvanometer shows deflection as long as the coil is moving. From the above experiment we can say that induced current is produced in the coil as long as there is relative motion between the coil and the magnet. The direction of the induced current in the conductor moving in a magnetic field is given by Fleming’s right hand rule.

**Q What are the conclusions drawn from Faraday’s experiment?**

Ans.
1. Whenever the magnet is moved with respect to coil, on induction e.m.f is produced in the coil.
2. The direction of the induced e.m.f produced in the coil changes with the increase or decrease of the magnetic field.
3. The direction of the induced e.m.f produced in the coil changes with the increase or decrease of the magnetic field.
4. The inducing current within the coil is alternating in nature.
5. The induced current produced is instantaneous in nature. It means it lasts for very short duration.
6. Magnitude of induced e.m.f depends upon:
   i) Strength of induced magnet
   ii) Number of turns in the coil
   iii) The rate at which magnetic lines of forces change within the coil.

**ELECTRIC MOTOR:** Electric motor is a device which changes electrical energy into mechanical energy. It is used in homes as well as in industries for doing mechanical work.

**PRINCIPLE:** It works on the principle that when a current carrying conductor is placed in an external magnetic field it experiences a mechanical force. Due to which it moves. If free to do so and if the conductor I of a closes geometry like rectangle or acute mechanical force exerted by external magnetic field.

**CONSTRUCTION:** An electric motor consists of following parts:

- **Armature:** The armature coil ABCD consist of a large number of turn of insulated copper wire wound over a soft iron core.
- **Field Magnet:** The magnetic field is produced by a strong permanent magnet (NS)
- **Split Rings Or Commutator:** These are the two half of the same ring. The ends of the armature coil is connected to these halves which also rotate with the armature
- **Brushes:** These are two flexible metal plate or carbon rods B₁ and B₂ which are o fixed that they constantly touch the revolving rings.
- **Battery**: The battery acts as a source of direct current and is connected across the brushes which pass on it to the Armature coil through rings.

**WORKING**: The battery sends current through the armature coil in the direction as shown in figure. On applying Fleming’s left hand rule side BC experience force which is directed outwards and side AD experiences force which I directed inwards and these two forces are perpendicular to the plane of coil. These two forces constitute couple which rotates the coil through 150° in anticlockwise direction. After the coil has rotated through 180° the direction of current in arm AD and BC is reversed as a result AD experience outward force and BC experiences an inward force and again these forces constitute couple and rotate the coil in the anticlockwise direction and in this manner the armature coil continues rotating as long as electric current is passed through PT. thus in this way electrical energy get converted into mechanical energy.

**Electromagnet**
- It is an artificial source of magnetism
- It is a temporary magnet and retains magnetic It magnetic property as long as current is flowing Through its coil
- The strength of magnetic field produced can be Changed.
- The polarity i.e, N & S poles are fixed

**Permanent Magnet**
- It is a natural source of magnetism
- It is a permanent magnet and does not lose its property.
- The strength of magnetic field produced is fixed
- The polarity can be changed by reversing the direction of current flow.

**ELECTROMAGNET**: The magnet which retains the magnetic property so long as electric current is passed through it and loses its magnetic property when electric current is switched off is termed as an electromagnet. The strength of the magnetic field produced by an electromagnet depends upon the strength of current flowing through it and also on the nature of its core and number of turns of the coil. It is constructed by winding an insulated copper wire over soft iron core and the free ends of the coil are connected to a source of current.

**MAGNETISM IN HUMAN BEINGS**: Control and coordination in human beings takes place with the help of chemicals called hormones and nervous system composed of brain, spinal cord and nerves. The nervous system receives and sends messages in the form of electric pulses or signals which give rise to magnetism for a short period of time. Since small electric signals are produced therefore, magnetism produced by such currents is very weak in comparison to earth’s magnetism. But the intensity of magnetic field produced by these electrochemical signals varies from one part of the body to the other. The significant intensity of magnetic field produced in our body is the heart and the brain. The magnetism produced inside the human body forms the basis of a technique called magnetic resonance imagining (MRI) which is employed to get the images of the internal part of our body.
Our Environment

Environment:- The physical and biological world where we live is called environment. The environment includes our physical surroundings like air (or atmosphere), water bodies, soil (land) and all the organisms such as plants, animals, human beings and micro-organisms like bacteria and fungi (called decomposers). All these constituents of the environment are dependent on one another.

Biodegradable and no-biodegradable wastes:- all the waste materials produced by the various activities of man and animals are poisonous to some extent and can be divided into two main groups:

1. Biodegradable wastes, and
2. Non-biodegradable wastes.

1. Biodegradable Wastes:- Those waste materials which can be broken down to non-poisonous substances in nature in due course of time by the action of micro-organisms like certain bacteria, are called biodegradable wastes. A biodegradable waste decays (decomposes) naturally and becomes harmless after some time. Cattle dung and compost are common examples of biodegradable wastes.

2. Non-Biodegradable Wastes:- The waste materials which cannot be broken down into non-poisonous or harmless substances in nature are called non-biodegradable wastes. The examples of non-biodegradable wastes are: DDT (Dichloro Diphenyl Trichloroethane); plastics; polythene bags; ball point pen refill; synthetic fibres; glass objects; metal articles like aluminum cans; iron nails; silver foil and radioactive wastes.

Ecosystem:- The various communities of living organisms (plants and animals) interact among themselves as well as with their physical environment like soil, air and water. the living organisms interact with one another through their food chains in which one organism consumes another organism. The living organisms like plants interact with soil to get essential nutrients like nitrogen, phosphorus, etc. with air to get carbon dioxide and also with water bodies, for carrying out the process of photosynthesis. Thus, the various communities of living organisms (called biotic communities) like plants and animals along with soil, air and water of that region form a self-sustaining or functional unit of the living world. This ‘functional unit’ or ‘system’ made up of living an non-living components which is capable if independent existence is called an ecosystem.

An ecosystem is a self contained unit of living things (plants, animals and decomposers), and their non-living environment (soil, air and water). an ecosystem needs only the input of sunlight energy for its functioning . The examples of ecosystems are: a grassland (meadow); a forest; a desert; a mountain; a pond ;a lake; a river; and sea.

Components of an Ecosystem

All the ecosystems are made up of two main components: abiotic components, and biotic components. Abiotic components mean non living components and biotic components mean living components.

i. Abiotic components of an Ecosystem:- The abiotic components of an ecosystem (or the non-living components of an ecosystem) include the physical environment like soil, water and air along with the inorganic substances like carbon dioxide, nitrogen, oxygen, water, phosphorus, sulphur, sodium, potassium, calcium and other elements present in them. The physical factors or climatic factors like light, temperature, pressure and humidity are also considered abiotic components of the ecosystem.

ii. Biotic components of an Ecosystem:- The biotic components of an ecosystem (or the living component of an ecosystem) is a community of organisms (like plants and animals) which is made up of many different inter-dependent populations. The biotic community (or living community) of an ecosystem includes three types of organisms:

a) Producer organisms (or autotrophs) which synthesize their own food. all the green plants are producers.

b) Consumer organisms (or heterotrophs) which are dependent on others for food. All the animals are consumers.
c) Decomposer organisms (or saprotrophs) which consume the dead remains of other organisms. Certain bacteria and fungi are decomposers.

1. **Producers:** - Those organisms which produce food are called producers. Producers are the organisms which can prepare their own food from simple inorganic substances like carbon dioxide and water by using sunlight energy in the presence of chlorophyll. The examples of producers are green plants and certain blue-green algae. The green plants synthesize their food during photosynthesis by taking raw materials from the earth and energy from the sun. The green plants produce carbohydrates by photosynthesis and also synthesize proteins and fats. Thus, the green plants are called producers in the living world.

2. **Consumers:** - Those organisms which consume food (eat food) prepared by producers are called consumers. The consumers depend on producers for food, directly or indirectly. The consumers get their food by eating other organisms or their products. In most simple words, consumers are the organisms that eat other organisms. All the animals are consumers. If an animal eats grass or other green plants or their products itself we say that it gets the food from producers directly. On the other hand, if an animal eats the meat of another animal (which eats grass), then we say that it gets the food from producer indirectly. Consumer organisms are also called heterotrophs. Consumers can be further divided into three groups herivores, carnivores and omnivores.
   i. **Herbivores:** - Those animals which eat only plants are called herbivores. The herbivores may eat grasses, leaves, grains, fruits or the bark of trees. Some of the examples of herbivores are: cow, buffalo, goat, sheep, horse, deer, camel, ass, ox, elephant, monkey, squirrel, rabbit and hippopotamus. Since herbivores obtain their food directly from plants (or producers), therefore, herbivores (like cattle, deer, goat, etc.) are primary consumers.
   
   ii. **Carnivores:** - Some animals eat only other animals. They do not eat plant food at all. Those animals which eat only other animals as food are called carnivores. The carnivores eat the meat (or flesh) of other animals. So, we can also say that those animals which eat only the meat (or flesh) of other animals are called carnivores. Some of the examples of the carnivores are: lion, tiger, frog, vulture, kingfisher, lizard, wolf, snake and hawk.

   iii. **Omnivores:** - Some animals eat both, plants as well as other animals. Those animals which eat both, plants and animals are called omnivores. In other words, the omnivores eat plant food as well as the meat (or flesh) of other animals. Some of the examples of omnivores are: man (human beings), dog, crow, sparrow, bear, mynah and ant. Man is called an omnivore because he eats both, plant food (such as grains, pulses, fruits and vegetables) as well as meat of animals (such as goat, chicken and fish). Omnivores are also called omnivorous animals.

3. **Decomposers:** - The non-green micro organisms like some bacteria and fungi, which are incapable of producing their food, live on the dead and decaying(rotting) plants and anima bodies and are consumers of a special type called decomposers. We can now say that: the micro-organisms which break down the complex organic compounds present in dead organisms like dead plants and animals and their products like faeces, urine, etc. into simpler substances are called decomposers.

**Food Chains:** - Anything which we eat to live is called food. Food contains energy. The food (or energy) can be transferred from one organism to the other through food chains. The starting point of a food chain is a category of organisms called producers. Producers are, in fact, plants. So, we can say that all the food chains begin with a green plant (or grass) which is the original source of all food. The sequence of living organisms in a community, in which one organism consumes another organism to transfer food energy, is called a food chain. In simple words, a list of organisms (living beings) showing “who eats whom “is called a food chain.

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Grass    --->    Deer    --->    Lion
(Producer)    (Herbivore)    (Carnivore)
```
A food chain represents a single directional (or unidirectional) transfer of energy. For example, the above food chain tells us that the transfer of energy takes place from grass to deer and then to lion. It cannot take place in the reverse direction from lion to deer to grass. The study of food chains in an area or habitat helps us in knowing various interactions among the different organisms and also their interdependence.

**Food Web:** A large number of food chains exist in a community of living organisms in an ecosystem such as a grassland, a forest, a pond or a crop-field. Many of these food chains are inter-connected by species (organisms) which occur in more than one food chain. The inter-connected food chains operating in an ecosystem which establish a network of relationships between various species, is called a food web. In ecosystem which establish a network of relationships between various species, is called a food web. In simple words, the network of a large number of food chains existing in an ecosystem is called a food web. The food web has many intercrosses and linkages among the various species (producers and consumer present in it.

This is a food web. A food web consists of many inter-connected food chains.

Plants → Rabbit → Hawk
Plants → Mice → Hawk
Plants → Mice → Snake → Hawk
Plants → Seed Eating Bird → Hawk

**Trophic Levels:** A food chain represents the flow of food (or energy) in a given set of organisms or living beings. The various steps in a food chain at which the transfer of food (or energy) takes place are called trophic levels. In fact, in a food chain, each step representing an organism forms a trophic level. In most simple terms, ‘trophic level’ means ‘feeding level’ of the organism.
i. The plants are **producers** (or autotrophs) and constitute the first trophic level. They fix up the sun’s energy and make it available for consumer (or heterotrophs).

ii. **Herbivores** (which feed upon plants) constitute the second trophic level.

iii. **Carnivores** (that feed upon herbivores) constitute the third trophic level.

iv. **Large carnivores** or **top carnivores** (which feed upon small carnivores), constitute the **fourth trophic level**.

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**Transfer Of Energy In Food Chains:** - The food chain in a community actually represents a stepwise transfer of food and the energy contained in food. The food and energy enter the living components of the ecosystem through the process of photosynthesis. This is because photosynthesis is a process which combines the substances like carbon dioxide, water and sunlight energy to form food like carbohydrates and converts light energy of the sun into chemical energy of carbohydrates. This food and energy is then transferred from the producer organisms to herbivores and from herbivores to carnivores, through the food chain.

**Ten per cent law:** - During the transfer of energy through successive trophic levels in an ecosystem, there is a loss of energy all along the path. No transfer of energy is 100 per cent. The studies of transfer of energy in different food chains in a large number of ecosystems has revealed a uniform pattern of transfer of energy, which is given by 10 per cent law. The 10 per cent law which was given by Lindeman in the year 1942 is one of the most useful generalizations about the magnitude of loss of energy in food chains. According to ten per cent law, only 10 per cent of the energy entering a particular trophic level of organisms is available for transfer to the next higher trophic level. All the energy transfers in food chains follow the 10% law which in simple terms means that the energy available as we go from producer level to the higher trophic levels of organisms.

**Depletion of Ozone Layer:** - We know that oxygen is O₂. Oxygen molecule is made up of 2 atoms of oxygen combined together. Oxygen gas is essential for life because it is needed in respiration. Ozone is also a gas but it is poisonous in nature. At a height between 15 kilometres and 60 kilometres, there is a layer of ozone gas (O₃) in the upper atmosphere. This ozone layer is very important for the existence of life on earth because it absorbs most of the harmful ultraviolet radiations coming from the sun and prevents them from reaching the earth.

It has now been found that the amount of ozone is getting depleted (or reduced) due to which the ozone layer in the upper atmosphere is becoming thinner and thinner day by day. The depletion of ozone layer is due to the use of chemicals called chlorofluorocarbons. This happens as follows: chlorofluorocarbons (CFC) are the chemicals which are widely used in refrigeration (refrigerators and air conditioners) as a coolant; in fire extinguishers and in aerosol sprayers. Chlorofluorocarbons released into the air react with ozone gas present in the
ozone layer and destroy it gradually. Due to this, the ozone layer in the upper atmosphere has become thinner, allowing more ultraviolet rays to pass through it to the earth.

Managing The Garbage We Produce:- The household wastes (or rubblish) is called garbage. Every household produces a lot of garbage (or wastes) daily. This garbage includes left–over food, fruit and vegetable peels, fallen leaves of potted plants, waste paper, unwanted plastic objects (such as plastic bottles, polythene bags, toys, etc) glass articles (like glass bottles, broken window panes, etc) metal objects (like aluminum foils, rusted iron grills, etc) old wooden objects, rags (old, torn clothes), discarded shoes, and sewage. Some of the important modes of waste disposal are

i. **Recycling**

   - The solid wastes like paper, plastics and metals, etc. are recycled. For example, waste paper is sent to paper mills where it is reprocessed to form new paper once again. The broken plastic articles like plastic bags, buckets, bowls, cups, plates, etc. are sent to plastic processing factories where they are melted and remoulded to make new articles.

ii. **Preparation of compost**:

   - Biodegradable domestic wastes such as left over food, fruit and vegetable peels, and leaves of potted plants, etc. can be converted into compost by burying in a pit dug into ground, and used as manure.

iii. **Incineration**:

   - Incineration means reducing to ashes. The burning of a substance at high temperature (of more than and 1000°C) to form ash is called incineration. Incineration is used to destroy household waste, chemical waste and biological waste (like that from hospitals). Incineration greatly reduces the volume of the waste. This is because when the large volume of waste material is burned, then only a small amount of ash is left behind which can be disposed of by landfill.

iv. **Landfill**:

   - The disposal of wastes by putting it in low lying areas of ground and covering it with earth is called landfill. Most of the solid waste in urban areas (which cannot be disposed of by other methods) is dumped in low lying areas of ground and covered with earth to level the uneven ground.

v. **Sewage treatment**:

   - The dirty drain water containing urine and faeces which is carried from our homes by the underground pipes (called sewers) is called sewage. If untreated sewage is dumped into a river, it can pollute the river water. Thus, sewage is disposed of by treating it at the sewage treatment plant (or sewage works). The treatment of sewage produces clean water which is discharged into the river. The organic matter present in sewage is ‘digested’ in the digesters of sewage treatment plant to produce ‘sewage gas’ (which is a kind of biogas), and ‘manure’.
GEOGRAPHY

CLASS-10TH DISASTER PROFILE OF INDIA

Textual Questions
Short answers:

Q#1 Define a disaster.
Ans: A disaster is a natural, man-made or technological event that causes significant damage or destruction, widespread loss of life or drastic change to the environment. Disasters can destroy the economic, social and cultural life of people.

Q#2 What is meant by hazard? Name some man-made and natural hazards.
Ans: A hazard is a situation that poses a level of threat to life, health, property and environment. Most hazards are dormant with a less risk of harm. However, once a hazard becomes active, it can create a very dangerous situation. When a hazard meets the vulnerable situation, it causes a disaster. Some natural hazards are flood, tornado, volcanic eruption, earthquake, landslides, etc. Some examples of man-made hazards are vehicular accidents, industrial accidents, chemical leakage and explosions, terrorism activities, etc.

Q#3 Write a brief note on the earthquake zones in India.
Ans: An earthquake is a sudden shaking of earth’s surface due to release of energy in the earth’s crust. Almost 57% of the Indian land is vulnerable to earthquake out of which, 12% is prone to very severe earthquakes, 18% to severe earthquakes and 25% to damageable earthquakes. The North-Eastern states, island groups and Himalayan regions of India are the most vulnerable areas to earthquakes and they fall in Seismic Zone V. The last two major earthquakes shook Gujarat in January 2001 and J&K in October 2005. Many smaller earthquakes keep occurring in other parts of India.

Q#4 Mention some worst cyclone affected areas in India.
Ans: A cyclone is a rotating and organized system of clouds and thunderstorms that originates over tropical and sub-tropical waters and has a closed low-level circulation. They are very destructive weather systems accompanied by torrential rain, high speed winds, storm surges and coastal flooding. About 8% of Indian landmass is vulnerable to cyclones. The coastal areas experience two to three cyclones each year. Cyclones typically strike the areas like East Coast of India, along the Bay of Bengal, West Bengal, Orissa, Andhra Pradesh, Tamil Nadu and parts of Maharashtra and Gujarat.

Q#5 Mention some worst affected landslide areas in North-India.
Ans: Landslides are mostly observed to affect the hilly areas and occur in almost all parts of India from Kerala to Himalayas. Areas prone to landslides include the Eastern and Western Ghats, the Nilgiris, the Vindhyans, mountains of northern and north-eastern states throughout the Himalayan range covering about 15% of total Indian landmass. The incidence of landslides occurs mostly during and after the spells of heavy rains.

Q#6 What is meant by tsunami? Name some vulnerable areas in India.
Ans: Tsunami is the large wave on the ocean, usually caused by an undersea earthquake, a volcanic eruption or a coastal landslide. Tsunami is a Japanese term which is translated as harbor wave. A tsunami can travel hundreds of meters over an open sea and cause extensive damage when it encounters land. Indian peninsula is very much vulnerable to the tsunami related disasters. Out of approximately 7500 km coastline, 5700 km are vulnerable to tsunami. The areas include west coast of India, Kerala, Chennai, Andaman-Nicobar Islands, Tamil Nadu, Andhra Pradesh and Orissa.

Q#7 Define a cloudburst and its implication in India.
The cloudburst is a disastrous weather event in which the heavy rainfall occurs over a localized area at a faster rate. The rate of rainfall may be of the order of 100 mm per hour. It is sometimes associated with hail and thunder and is capable of creating flood conditions. The cloudbursts in India occur during monsoon season in Himalayan region, North-Eastern states and the Western Ghats. Cloudbursts lead to flooding, landsliding, ponding of rivers due to huge landslides and mudflows. They also cause huge damage to buildings, infrastructure, communication links, etc.

**LONG ANSWER TYPE QUESTIONS**

**Q#1** Give a detailed account of flood prone regions of India. Highlight main causes of flooding in India.

**Ans:** Floods are temporary inundation of large regions caused as a result of rivers overflowing their banks because of heavy rains, high winds, storm surges, cyclones, tsunamis, melting of snow and cloudbursts. About 40 million hectares or 12% of total land area of India is prone to floods. The floods in India affect about 30 million people annually. Floods mainly occur in 5 states of India every year which are Assam, Bihar, Orissa, Uttar Pradesh and West Bengal. In 2006, even the drought prone regions of Rajasthan experienced heavy floods due to climatic variations. In 2013, Uttarakhand experienced a devastating flood due to multi-day cloudbursts. Some more examples of heavy and damaging floods are Kosi floods of 2008 with a death toll of 527, South Indian floods of 2009 with over 300 causalities, Leh cloudburst and flash floods of August 2010 and J&K flood of 6 September, 2014 with property damage worth millions of dollars. Floods in Northern India are primarily caused by the concentrated monsoon rainfall from July-September. This is the period when rapid melting of glaciers also elevates the water level in various rivers of India. Also, inadequate drainage and encroachments of river courses also aggravates the flood scenario in various parts of India.

**Q#2** Discuss in detail disaster profile of India.

**Ans:** The Indian subcontinent is among the world’s most disaster prone areas. As per the statistics of National Disaster Management Authority (NDMA), almost 85% area of India is vulnerable to one or multiple hazards. Of the 28 states and 7 Union Territories, 22 are disaster prone. These disasters include the storms spawned in the bay of Bengal and the Arabian Sea, earthquakes caused by the active crustal movements in the Himalayan Mountains, floods brought by monsoons and droughts in the country’s arid and semi-arid areas. Almost 57% of the land in India is vulnerable to earthquakes (high seismic zones III-V). The biggest quakes occur in Andaman and Nicobar Islands, Kutch, Himachal and North-East. About 68% is prone to drought which includes the areas like Rajasthan, Gujarat, Uttar Pradesh, Madhya Pradesh, Orissa, Andhra Pradesh, Maharashtra, Northern Karnataka, etc. About 8% is prone to cyclones. Cyclones typically strike the areas like East Coast of India, along the Bay of Bengal, West Bengal, Orissa, Andhra Pradesh, Tamil Nadu and parts of Maharashtra and Gujarat. About 12% are prone to floods which include the areas like Assam, Bihar, Orissa, Uttar Pradesh, West-Bengal, etc. India has also become much more vulnerable to tsunamis since 2004. Of the 7516 km coastline, almost 5700 km is prone to cyclones and tsunamis. Disaster risks in India are increased due to negative demographic changes and socio economic conditions, unplanned urbanization within high risk zones, environmental degradation, climate change, geological hazards, epidemics, etc. India is also vulnerable to Chemical, Biological, Radiological and Nuclear (CBRN) emergencies and other man-made disasters.

**Q#3** Jammu & Kashmir is a multi-hazard prone state. Discuss.

**Ans:** The state of Jammu & Kashmir is a multi-hazard prone state due to its rugged topography, difficult terrain, extreme weather conditions and under developed economy. Hazards like earthquakes, floods, fires, droughts, avalanches and landslides convert into disasters leading to loss of human lives and damage to public and private property. The vulnerability of the state to various hazards has been enhanced due certain unplanned human activities that disturb the natural ecological balance and directly lead to disastrous conditions. The lack of geo-hydrological assessments before sanctioning the projects has lead
to the disturbance in the natural balance of ecological system. Construction of four lane highway, railway track, dams, etc have lead to change in stream course of rivers, closure of aquifers, loss of vegetation, wildlife habitat destruction, weakening of land, etc. All the natural and man induced factors have collectively made the state of J&K more vulnerable to natural and man-made disasters. Recently, whole of the state of J&K has been declared to be falling under the seismic zone V which means that whole of the state has maximum vulnerability to earthquakes. Low lying areas of Kashmir Valley especially, Sangam, Awantipora, Sonawari and Srinagar along with some parts of Jammu are prone to floods. Higher reaches of Kashmir including Islamabad, Kulgam, Gurez, Kargil, Leh, Doda, Ramban, Kishtwar, etc fall in avalanche prone zone. Most parts of Jammu region and some kandi areas of Kashmir are drought prone. Occasional wind storms and hailstorms cause crop destruction and damage to houses in Kashmir valley. With projected increase in frequency and intensity of extreme events of disasters in the state, the management needs a good attention for mitigating the effects of disasters.

Q#4 Vulnerability to various disasters in India is very high. Give reasons.
Ans: Vulnerability refers to the susceptibility of a community to a hazard or prevailing conditions that adversely affect its ability to respond to hazards. The vulnerability of India to various hazards is very high due to widespread poverty, poor infrastructure, lack of education and awareness, lack of appropriate technology and faulty developmental planning. All these factors are prevalent in India which results in the enhanced vulnerable situation in the country. Apart from these factors, the location and topography of India is also responsible for increased damage due to disasters. As per the statistics of National Disaster Management Authority (NDMA), almost 85% area of India is vulnerable to one or multiple hazards. Of the 28 states and 7 Union Territories, 22 are disaster prone. These disasters include the storms spawned in the bay of Bengal and the Arabian Sea, earthquakes caused by the active crustal movements in the Himalayan Mountains, floods brought by monsoons and droughts in the country’s arid and semi-arid areas. Almost 57% of the land in India is vulnerable to earthquakes (high seismic zones III-V). The biggest quakes occur in Andaman and Nicobar Islands, Kutch, Himachal and North-East. About 68% is prone to drought which includes the areas like Rajasthan, Gujarat, Uttar Pradesh, Madhya Pradesh, Orissa, Andhra Pradesh, Maharashtra, Northern Karnataka, etc. About 8% is prone to cyclones. Cyclones typically strike the areas like East Coast of India, along the Bay of Bengal, West Bengal, Orissa, Andhra Pradesh, Tamil Nadu and parts of Maharashtra and Gujarat. About 12% are prone to floods which include the areas like Assam, Bihar, Orissa, Uttar Pradesh, West-Bengal, etc. India has also become much more vulnerable to tsunamis since 2004. Of the 7516 km coastline, almost 5700 km is prone to cyclones and tsunamis. Disaster risks in India are increased due to negative demographic changes and socio economic conditions, unplanned urbanization within high risk zones, environmental degradation, climate change, geological hazards, epidemics, etc. India is also vulnerable to Chemical, Biological, Radiological and Nuclear (CBRN) emergencies and other man-made disasters.

Q#5 Discuss causes and consequences of drought in India.
Ans: Drought can be defined as a lack or shortage of water for an unusually long period of time. A drought is an extended period of months or years when a region notes a deficiency in its water supply whether surface or underground. It is a normal and recurrent feature of climate that occurs in virtually all climatic zones. The main cause of drought is the occurrence of below average precipitation consistently for a long period of time. When such a condition prevails, the water resources start decreasing due to continuous demand and negligible supply. The effects or consequences of drought are listed under:
1. Diminished crop growth and reduced grazing grounds for livestock.
2. Dust storms resulting from desertification and erosion.
3. Famine due to lack of water for irrigation.
4. Habitat destruction affecting both terrestrial and aquatic life.
5. Malnutrition, dehydration and related diseases.
6. Mass migration in search of food and water reserves resulting in internal displacement.
7. Reduced electricity production due to reduced water flow through hydroelectric dams.
8. Shortage of water for industrial users.
9. Snake migration due to low water content in the soil and high heat intensity resulting in increased chances of snakebites.
10. Social unrest.
11. War and conflicts for water resources and food.
12. Increased frequency of wildfires.

Textual questions from Disaster Management and Polythene and its ill effects.

Q#1 Write in detail the role of Search and Rescue team during a disaster.
Ans. Search and rescue is a well planned activity performed by either an individual or a group of specially trained professionals in search and rescue of causalities from adverse conditions to safety. The role of search and rescue team can be summed up as:
1. To search the victims in debris and timely rescue to safety.
2. To provide first aid to victims and transport them to hospitals on priority basis depending upon the critical state of the victims.
3. To help administration in recover, handover and dispose of dead bodies and animal carcasses to prevent spread of diseases.
4. To take necessary steps in cordoning off the damaged and collapsing buildings.
5. To train local volunteers in assisting search and rescue operation besides creating awareness on using locally available material for better use in future.

Q#2 What should be the approach to help a fire burnt victims?
Ans. To help a fire burnt victims, we should follow certain do’s and don’ts:
1. Extinguish flames on clothes by immediately pouring water. It also reduces the degree of burns. If water is not available then wrap the body with thick cloth.
2. Immediately pour water on burnt area to reduce the pain.
3. Cover the burnt area with clean cloth.
4. Immediately remove the tight clothing and jewellery from the victim’s body before swelling and blisters.
5. Keep on giving plenty of fluids to drink till the victim reaches hospital. Oral Rehydration Solution (ORS) should be added to compensate mineral loss.
6. In electric burns, first snap off electric power supply then give first aid to victim.
7. In electric shock, heart rate becomes irregular. In such cases, the victim should be provided with mechanical defibrillation.
8. Don’t touch the victim unless the electric power is snapped off.
9. Don’t use water in electricity burns to avoid electricity jolt.
10. Don’t try to remove the charred clothes from the burnt area.
11. Don’t apply oil or ice on the burnt area.

Q#3 Explain in detail the first, second and third degree of burns.
Ans. Burn is defined as damage to skin caused by direct contact with dry heat, fireflames, steam, hot liquids, hot metals, sunlight, electricity or chemical, radiological and nuclear material. Burns can be of different degrees on the basis of their intensity and the extent of damage caused by them:
1. First Degree Burns:- These are superficial burns involving top layer of skin. Skin appears red and very painful.
2. **Second Degree Burns**: These are partial thickness burns involving two layers named epidermis and dermis. The skin becomes red with blisters, very painful and the tissues become swollen and wet.

3. **Third degree Burns**: These are called full thickness burns and involve all the layers of skin along with deep structures like muscles, vessels and nerves. The burnt areas are charred and look brown and comparatively less painful.

**Q#4 What is safe construction practice?**

Ans. Safe construction practice includes following steps:
1. Soil testing before the construction of buildings.
2. The building should have a simple rectangular plan.
3. Long wells should be supported by reinforced concrete columns.
4. Doors and window openings in walls should be small and centrally located.
5. Location of openings should not be too close to the edge of the wall.
6. Material strength and quality of construction should be good.
7. Seismic bands should be laid at plinth level, doors-windows and lintel level.
8. Vertical still bars should be fitted at each corner of walls.

**Q#5 What should be the role of community during a disaster?**

Ans. The community is an institution in itself, emerging as the most powerful in entire mechanism of disaster management. Community representatives or leaders elected by the people themselves can effectively prepare the community before disaster and manage the grave situation during as well as after disasters. The community leaders should make people informed, alert, self-reliant and make them capable of participating in all activities and programmes organized by NGO's or government agencies.

**Short Answer Type Questions:**

**Q#1 What equipments should be carried by a rescuer?**

Ans. The equipments that should be carried by a rescuer include:
1. Equipments for personal safety of rescuer are:
   - Helmet
   - Life jacket
   - Gumboots
   - Torch
   - Whistle
2. Equipments for safety of victims are ladders, ropes, pulley, small cutting tools, hammer, stretchers, first aid kit, bamboo sticks, barrels and air filled tubes.
3. Ultra modern search equipments include infra red cameras, acoustic devices, bio radars and life locators.

**Q#2 What is ABC formula in disaster management?**

Ans. ABC refers to airway, breathing and circulation. An important step in disaster management procedure is to provide first aid treatment to the injured victims and ABC is a formula of providing first aid to the victims.

**Q#3 What should be the constituents of first aid kit?**

Ans. The constituents of a first aid kit include light weight box, sterile cotton, bandages, gloves, antiseptic solution, soap, AMBU (Artificial Manual Breathing Unit) bags, airway, scissors, small towels and oral rehydration solution.

**Additional Question**

**Q#1 What is the role of community in mitigation of disasters?**

Ans. Role of community in mitigating a disaster includes:
1. Awareness and information campaigns.
2. Training of the local volunteers.
3. Proper planning and advocacy.
4. Providing tasks to volunteers.
5. Help weaker sections of the community like old people, women and children.

Q#2 **Role of NGO's in mitigation of disasters.**

Ans. The role of Non-Governmental Organizations (NGO’s) is a potential key element in disaster management. It is one of the most effective alternative means of achieving an efficient communication link between the disaster management agencies and the affected communities. NGO’s take care of the following matters:
1. Shelters at the time of disaster.
2. Providing relief and rescue operations.
3. Providing correct information to the media and press.
4. Checking rumours.
5. Provide information on past disasters.

Q#3 **Role of local and state bodies.**

Ans. At the state level, State Disaster Management Authority headed by the Chief Minister has been constituted. This authority lays down policy and plans for disaster management in the state. It approves the state plan in accordance with the guidelines laid down by NDMA (National Disaster Management Authority) for implementation of state plan. All State governments are required to appoint experts on disaster management in the respective training institutes. In the State of Jammu and Kashmir all the districts have been directed to constitute District Disaster Management Committees. These committees are headed by the concerned district Development Commissioners (DC’s).

Q#4 **Role of individuals.**

Ans. The most important aspect of disaster management is preparedness.
- The basic role of individual is awareness, knowledge on first aid, rescue and evacuation.
- To warn the people in times of an emergency.
- Contacting the local emergency management office or local Red Cross office.
- Door to door campaigns.
- Use of loud speakers.
- Each individual member should make people aware that how to use a fire extinguisher in case of a fire disaster.

Q#5 **What are the ill effects of polythene?**

Ans. The ill effects of polythene include the following:
1. It litters the landscape.
2. It kills animals and aquatic life.
3. It is non-biodegradable and hence is harmful to environment.
4. It causes health hazards.
5. Lead in the black polythene carry bags is highly poisonous to humans and animals.
6. Chromium in red polythene bags, copper in blue polythene bags and barium in green polythene bags is hazardous to humans.
7. Production of polythene requires expensive petroleum.

Q#6 **What should be done to avoid polythene and its ill effects?**

- Use of (shopper) bags for carrying shopping goods.
- Use of wooden made shopping baskets.
- Use of jute bags for carrying goods.
- Use of self made paper bags/ cloth bags.
- Not to burn the polythene as its combustion releases harmful gases.
To educate the masses regarding minimizing the use of polythene.

Q#1: Why is polythene called a worst man made litter?
Ans: Polythene is called as worst man made litter due to the following reasons:

1. Abundance in waste: Most of the food items are packed in polythene bags. People find the polythene bags easy to dispose off after use because they are light weight and easily thrown away.
2. Ignorance of the people: People do not know about the ill effects of polythene bags. So, they dispose the polythene bags carelessly.
3. Carelessness of people towards the safety of environment: People do not care about proper disposal of polythene and throw it away without caring about their environment.
4. Lack of laws: There is no punishment for continuous improper disposal of polythene bags.

Q#2: Differentiate between biodegradable and non-biodegradable compounds.
Ans: Biodegradable compounds: These are the compounds which undergo natural decomposition by the action of micro organisms. These compounds do not pollute environment. Some examples of biodegradable compounds are vegetable residues, paper products, organic matter, etc.

Non-biodegradable compounds: These are the compounds which do not undergo natural decomposition by any microbial action. These compounds last for a longer time. They alter the environment and pollute it. Some examples of non-biodegradable wastes are glass, polythene, plastic products, etc.

Q#3: What are the effects of polythene in water bodies?
Ans: Polythene impacts the water bodies in the following negative ways:

1. Water systems like springs, ponds, rivers, etc., are blocked during continued disposal of polythene material along the banks and shores.
2. The water flow is affected and even sometimes stopped causing floods, diseases and unpleasant scenery.
3. Accumulation of huge amounts of polythene results in the suffocation of aquatic life.
4. Pollution due to polythene decreases the water quality.

Q#4: Polythene decreases soil fertility. Comment?
Ans: Polythene has widespread bad impact on the ecosystem. Soil is an important component of our ecosystem and as such it is also influenced by the pollution due to polythene. About 96% of polythene bags are thrown into landfills. In these areas, the polythene has been deposited in large quantities and they have lost their soil fertility. When the polythene bags enter the soil, they block further passage of mineral salts & oxygen to the soil. Polythene pollution degrades the natural quality of the soil. It also results in death of soil microbes.

Q#5: What are the effects of polythene on humans?
Ans: Polythene poses serious effects on human health as:

1. It clogs the sewer pipes and makes the water stagnant which becomes ideal habitat for mosquitoes and other parasites. This results in the spreading of diseases like Dengue, Malaria, etc.
2. Children sometimes use polythene as toys which can lead to suffocation.
3. Polythene has a carcinogenic effect i.e., it causes cancer in humans.
4. Burning of polythene releases dioxins which are highly poisonous substances. They cause reproductive and developmental problems, damage to immune system and hormonal imbalance in humans.

Q#6: What are the possible control measures to curb the polythene pollution?
Ans: The following measures can possibly control the polythene pollution:

1. We should not accept polythene bags from shopkeepers rather take our own bag to market.
2. We should avoid the products that are packed in polythene, as much as possible.
3. We should avoid plastic disposable items at fast food places and ask the owners to provide reusable plates and glasses.
4. We should buy products that are packed with eco friendly material.
5. We should always carry our own bottle and refill it with water when needed.
6. We should not litter on road side and especially on river banks and sea shores.
7. We should educate others about the ill effects of polythene.

ADDITIONAL QUESTIONS

Q#1 Illustrate briefly how an earthquake occurs?
Ans: An earthquake is a sudden shaking of earth’s surface due to release of energy in the earth’s crust. This energy is released when two parts of the rock masses move suddenly in relation to each other along a fault. Earthquake is the most destructive natural hazard and its occurrence is usually sudden with little or no warning.

Q#2: What do you understand by a natural disaster?
Ans: A natural disaster is an event that is caused by natural hazards and leads to loss of life and damage to the infrastructure and environment. Examples of natural disasters are 2004 Indian Ocean tsunami, 2005 Muzaffarabad earthquake, 2005 Waltengo snow avalanche, 2010 cloud burst in Leh, etc.

Q#3: Write some events of earthquakes in India.
Ans: Some of the earthquakes in India are listed as under:

<table>
<thead>
<tr>
<th>AREA</th>
<th>YEAR</th>
<th>MAGNITUDE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rann of Kuch</td>
<td>1819</td>
<td>8.0</td>
</tr>
<tr>
<td>Assam</td>
<td>1897</td>
<td>8.7</td>
</tr>
<tr>
<td>Kangra</td>
<td>1905</td>
<td>8.0</td>
</tr>
<tr>
<td>Arunachal Pradesh</td>
<td>1950</td>
<td>8.5</td>
</tr>
<tr>
<td>Uttarakashi</td>
<td>1991</td>
<td>7.0</td>
</tr>
<tr>
<td>Kutch</td>
<td>2001</td>
<td>7.7</td>
</tr>
<tr>
<td>Indonesia (Indian Ocean tsunami)</td>
<td>2004</td>
<td>9.3</td>
</tr>
<tr>
<td>Sikkim</td>
<td>2011</td>
<td>6.9</td>
</tr>
</tbody>
</table>

Q#4: What is the difference between drought and famine?
Ans: Drought can be defined as a lack or shortage of water for an unusually long period of time. A drought is an extended period of months or years when a region notes a deficiency in its water supply whether surface or underground. It is a normal and recurrent feature of climate that occurs in virtually all climatic zones. While as, a famine is a widespread scarcity of food due to several factors including crop failure, reduction in people’s access to food, decline in availability of food or government policies.

Q#5: What do we understand by Mitigation? Give some examples.
Ans: Mitigation is an effort to reduce loss of life and property by reducing the impact of disasters. Mitigation is taking preventive actions before the next disaster happens in order to reduce human and financial consequences. Mitigation measures are of two types:
1. Pre-disaster mitigation measures which are taken before the occurrence of disaster.
2. During the disaster mitigation measures.
3. Post-disaster mitigation measures which are taken after the disaster.

Some examples of mitigation measures related to earthquake include:
1. Verification of building plans: Municipality should verify that buildings are constructed in compliance with the building guidelines set by The Bureau of Indian Standards and National Disaster Management Authority.
2. Retrofitting of existing buildings: Retrofitting is the process of strengthening older buildings in order to make them earthquake resistant.
3. Public awareness: Training programmes should be conducted for architects, engineers, contractors, government functionaries, etc. regarding adoption of safe construction practices for buildings and other structures. Mock drills and earthquake awareness programmes must be conducted among people especially students.

Q#6: Listsome of the major natural disasters that are likely to occur in hilly regions. Elaborate any one of them.
Ans: Earthquakes, landslides, rock avalanches, snow avalanches, mudslides, etc are some of the major natural disasters that are likely to occur in hilly regions.

Landslides: Landslides are mostly observed to affect the hilly areas and occur in almost all parts of India from Kerala to Himalayas. Areas prone to landslides include the Eastern and Western Ghats, the Nilgiris, the Vindhyans, mountains of northern and north-eastern states throughout the Himalayan range. The incidence of landslides occurs mostly during and after the spells of heavy rains. The major consequences of landslides include:
1. Blockade of streams.
2. Overflowing of lakes.
3. Disruption of vehicular movements.
4. Risk of life.
5. Risk of accidents.
7. Loss or damage to infrastructure (roads, shops, buildings, etc).

Q#7: What is a drought? Describe how it can be prevented.
Ans: Drought can be defined as a lack or shortage of water for an unusually long period of time. A drought is an extended period of months or years when a region notes a deficiency in its water supply whether surface or underground. It is a normal and recurrent feature of climate that occurs in virtually all climatic zones. It can have the substantial impact on the ecosystem and agriculture of the affected area. The commonly adopted mitigation measures to prevent drought are as follows:
1. Construction of dams or check dams to store water.
2. Watershed management.
3. Selection of drought resistant crops for drought prone areas.
4. Soil conservation techniques.
5. Reducing deforestation and cutting if firewood in affected area.

Q#8: Describe some of the safety measures that should be adopted during an earthquake?
Ans: the following are the safety measures that should be adopted during an earthquake:
1. Remain calm and derive an action plan and also try to reassure others for the same.
2. Stay away from the glass windows, mirrors and chimneys.
3. If in danger, get under a table, bed or desk in a corner away from the window with your head covered by your arms.
4. If outside, avoid high building walls, power poles and other objects that could fall. Do not run through the streets. If surrounded by buildings, take shelter in the nearest strongest one.
5. If in an automobile, stop in a safe place available preferably an open area.
6. Don’t use elevators while coming out of a building instead use staircase.

Q#9: What are the relief steps that need to be taken in the aftermath of landslides or snow avalanches?
Ans: The relief steps that need to be taken in the aftermath of snow avalanches are:
1. Snow avalanches can be mitigated my shifting people and property from the areas which are prone to avalanches.
2. Stopping indiscriminate mining and quarrying in mountain areas which may lead to avalanches during winter.
3. Afforestation of zones prone to snow avalanches.

The relief steps that need to be taken in the aftermath of landslides are:
1. Stay away from the slide area, there may be danger of additional landslides.
2. Check for injuries or the trapped people near the slide without entering into the slide area.
3. Stay tuned to the local radio or television stations for the latest emergency information.
4. Replant the damaged ground as soon as possible, since the erosion caused by the loss of vegetation can lead to flash floods.

Class: - 10th MANUFACTURING INDUSTRIES Geography

Textual Questions

Short Answer Type Questions

Q#1 Define manufacturing?
Ans: Manufacturing is an economic activity which involves the processing of raw materials into more refined, usable and valuable products. The process of manufacturing converts primary products into secondary products and enhances their quality and value. Many of the natural resources cannot be utilized directly without processing, e.g., cloth is manufactured from cotton, sugar from sugarcane, paper from paper pulp and petrochemicals from mineral oil.

Q#2 How is raw material an important geographical factor in the location of an industry?
Ans: Raw material is an important geographical factor in the location of some manufacturing industries, especially heavy industries. Industries which use heavy and bulky raw materials in large quantities are located near the supply of raw material in order to reduce the cost of transportation e.g., iron and steel industries. Also, the industries which use raw material that cannot be transported to longer distances, due to their perishable nature, are established near the supply of raw material e.g., sugar producing mills.

Q#3 Market is an important locational factor in the establishment of an industry. Explain.
Ans: The location of a manufacturing industry depends upon the location of its market. Nearness of an industry to the market is essential for quick disposal of manufactured goods. It helps in reducing the transport cost and enables the consumer to get the things at cheaper rates. The modern industries are seeking locations as near as possible to their markets to save overall production cost.

Q#4 Write a short note on cotton textile industry of India.
Ans: Indian monopoly in the manufacturing of cotton textile is very old. The first cotton textile mill, however, was set up in 1818 at Fort Glaster near Kolkata. But, this mill was closed down later. The first successful modern cotton textile mill was established in Mumbai in 1854. Indian cotton textile industry developed rapidly after independence in 1870’s due to the introduction of various policies and programmes by the government from time to time. By 1875-1876, the number of cotton mills rose to 47 out of which over 60% were located in Mumbai city alone. Today cotton textile is the largest industry of India. It gives employment to over 15 million workers which comprise about 20% of the industrial labour force of the country. The cotton cloth is produced in three different sectors i.e., mills, power-loom and handlooms.

Q#5 Differentiate between Private Sector Industry and Public Sector Industry.
Ans: Public Sector Industry
1. These industries are owned by the government of the country or government agencies.
2. These industries are directly or indirectly managed by the government.
3. Bhilai Steel Plant, Durgapur Steel Plant, NHPC, ONGC, NTPC and Bharat Heavy Electricals Ltd. are the examples of Public Sector Industry.
4. All the capital is invested by the government.

Private Sector Industry: -
1. These industries are owned by individuals or firms.
2. These are not managed by the government.
3. Bajaj Auto, Reliance, Godrej industries and Tata Iron and Steel Company (TISCO) are the examples of Private Sector Industry.
4. All the capital is invested by the individuals or private firms.

Q#6 What are the major industrial regions of India. Name five of them.
Ans: The industrial region is an area where a number of industries are located close to each other and they share the benefits of their closeness. In India, the Major Industrial Region is identified as having the minimum daily factory working force of 1.5 lakh. Following are the Major Industrial Regions of India:
1. Mumbai-Pune Industrial Region.
2. Hoogli Industrial Region.
3. Bangalore-Tamil Nadu Industrial Region.
4. Gujarat Industrial Region.
5. Chota Nagpur Industrial Region.
6. Vishakhapatnam-Guntur Industrial Region.
7. Gurgaon-Delhi-Meerut Industrial Region.
8. Kollam-Thiruvananthapuram Industrial Region.

Q#7 Write a short note on handicrafts in Jammu & Kashmir.
Ans:

Long Answer Type Questions
Q#1 What are the geographical and non-geographical factors which influence the location of an industry?
Ans: Geographical Factors
1. Raw Material: It is an important geographical factor in the location of some manufacturing industries, especially heavy industries. Industries which use heavy and bulky raw materials in large quantities are located near the supply of raw material in order to reduce the cost of transportation e.g., iron and steel industries. Also, the industries which use raw material that cannot be transported to longer distances, due to their perishable nature, are established near the supply of raw material e.g., sugar producing mills.
2. Power: Regular supply of power is the necessary requirement for the establishment of a modern industry. The power supply can be maintained through three conventional sources which include coal, petroleum and hydro-electricity. Most of the industries tend to concentrate near the source of power.
3. Labour: Most of the industries require a large number of workers. People with skill and technical expertise are also needed. Although, the location of an industry is determined after a careful balancing of all the relevant factors, yet the light industries and agro-based industries require plentiful labour supply and hence they are mainly established in densely populated areas e.g., sugar industries of U.P. and Bihar.
4. Transport: Transport facility through land and water is important for moving the goods between production and marketing sites. Most of the heavy industries in India are located around the port towns of Kolkata, Mumbai and Chennai which are further connected with other areas of India through railways.
5. Market: Nearness of an industry to the market is essential for quick disposal of manufactured goods. It helps in reducing the transport cost and enables the consumer to get the things at cheaper rates. The modern industries are seeking locations as near as possible to their markets to save overall production cost.
6. Climate: Harsh climate is not much suitable for the establishment of manufacturing industries. Moderate climatic conditions are essential for proper functioning of machinery and workers. This is the reason that
24% of modern industries and 30% of labour force of India is concentrated in Maharashtra-Gujarat region alone.

7. **Water**: Iron & Steel industry, textile industries and chemical industries require large quantities of water for their proper functioning. Many industries are established near rivers, canals and lakes because of this reason.

8. **Site**: An area with flat topography, fine terrain and adequate transport facility is preferable for the location of an industry. Also, an industry requires a large expanse of land for its establishment. However, the cost of the land to be selected is also taken into consideration.

### Non-Geographical Factors

1. **Capital**: Modern industries are capital intensive and require huge financial investments. The cities like Kolkata, Mumbai, Delhi and Chennai are big industrial regions because many capitalists live in these cities, and there is easy availability of capital.

2. **Banking Facilities**: The areas with better banking facilities are better suited for establishing an industry because banks help in easy transactions worth crores of rupees.

3. **Insurance**: Insurance facilities are also important for an industry because of the risk of damage to industrial property and workers.

4. **Highly Professional Management**: The skilled man-power is important for almost all industries for their proper management. The fast growing IT and E-Commerce industry specifically needs the skilled and technically experienced man-power. For this reason, these industries are mainly concentrated in the regions of Bangalore, Hyderabad and Pune.

**Q#2 Highlight the importance of Iron & Steel Industry in India. What are the factors influencing its location?**

**Ans:**

The first iron and steel unit in India was established in 1830 at Porto Nova in Tamil Nadu, but it was closed down in 1866. Modest beginning of the modern steel industry was made at Kulti in West Bengal in 1864. The concept of large scale production, however, could materialize only with the establishment of Tata Iron & Steel Company (TISCO) at Jamshedpur in 1907, then came Indian Iron & Steel Company (IISCO) in 1919 at Burnpur in West Bengal and Mysore Steel Works at Bhadravati in Karnataka. This industry involves capital investment of about Rs.90,000 and provides employment to about 5,00000 people.

At present there are 10 primary integrated Iron and Steel plants and around 200 decentralized secondary units known as mini steel plants in the country. Besides there are several rolling and re-rolling mills and foundaries that manufacture different items of steel using pig-iron and steel ingots. Most of the foundaries are concentrated in Maharashtra Gujarat and Tamil Nadu. At present, India is the eighth largest steel producer in the world.

Iron and steel industry is a basic industry and an index of modernization and industrialization. It calls for huge investment for basic infrastructure, efficient means of modern transport and communication and abundant fuel and power supply. It also calls for continual updating of technology through research and development.

**Factors influencing the location of Iron & Steel industry:** Iron and steel is a heavy industry. It uses heavy and bulky raw materials namely iron ore, coal, limestone and manganese ore. The location of this industry, therefore, is governed by its close proximity to raw materials except the Vishakhapatnam steel plant, which has a coastal location. All other integrated iron and steel plants of the country are located in the mineral rich north eastern and southern part of the Indian peninsula.

**Q#3 Discuss in detail the development, distribution & importance of textile industry of India.**

**Ans:**

**Importance:** Textile industry of India involves the processing and distribution of cotton, jute, wool, silk and synthetic fabrics. The textile sector occupies an important place in terms of employment generation.
The sectors like handloom, handicrafts, power loom and readymade garments are specially known for their employment potential. These industries contribute about 14% of the value addition in manufacturing sector, 4% to the GDP and provide employment to about 40 million people in India. The contribution of textile industry to the Gross Export Earnings of country is over 20%.

**Development:** In India, the textile industry is believed to have started with the production of cotton fabrics since ancient times. Indian monopoly in the manufacturing of cotton textile is very old. The first modern cotton textile mill, however, was set up in 1818 at Fort Glaster near Kolkata which was later closed down. The first successful cotton textile mill was established in Mumbai in 1854. Today cotton textile is the largest industry of India. It gives employment to over 2.6 lakh persons which comprise about 20% of the industrial labour force of the country.

Jute is the second important textile industry of India after cotton textile industry. It started at a large scale in 1855 at Rishra near Kolkata. In 1859, the first power looms were started in the same industry. Initially this industry developed at a fast rate till 1947 but, later declined due to the shortage of raw jute as a result of partition of India.

Modern Woollen textile industry was started with the establishment of Lal Imli at Kanpur in 1876. It was followed by setting up of the mills at Dhariwal (Punjab) in 1881, Mumbai in 1882 and Bangalore in 1886. India is also well known for the production of silk since ancient times and it ranks as the second largest producer of raw silk next only to China.

The synthetic fibre units were started between 1925 and 1935 in India. The first such mill to produce synthetic fibre was established by Travancore Rayons Ltd. at Rayapuram in Kerala. This was followed by National Rayon Company at Mumbai and the Sisilk Ltd. at Hyderabad. Many other units have been established since then which are working successfully.

**Distribution:** Cotton mills are located in 80 cities of India. Larger concentration is found in Maharashtra, Gujarat, West Bengal and Uttar Pradesh. Mumbai is the largest centre for production of cotton fibre having 63 mills. Ahmedabad in Gujarat is the second largest centre for cotton production having 73 mills. Jute industry is largely concentrated in West Bengal. It has 56 jute mills and 41261 looms. Over 845 of jute goods come from West Bengal and 10% from Andhra Pradesh. Important centres for jute mills are Kolkata, Titagarh (9 mills), Jagatdal (8 mills), Budge (8 mills), Haora (5 mills) and Bhadreshwar.

The main concentration of woolen textile industry is found in Punjab, Maharashtra, Uttar Pradesh, Gujarat, Karnataka, West Bengal and J&K.

Silk industry is mainly concentrated in Karnataka, West Bengal and J&K.

Synthetic fibre producing units are located in almost all the important cities of India.

**Q#4 Discuss in detail the growth and importance of petroleum industry in India.**

**Ans:**

**Importance:** Petroleum and petroleum products are mainly used as motive power. It is a compact and convenient liquid fuel that has revolutionized the transportation in the air, on land and on water. It can be easily transported from one place to another through tankers and pipelines. It emits very little smoke and leaves no ash and is used up to the last drop. The fractionation of petroleum gives many important and useful products.

**Growth and development:** The petroleum industry includes the reserves, the production sites and the refining sites. Oil and natural gas in India occur in sedimentary rocks and about 42% of total area of the country is covered by sedimentary rocks. The Indian Mineral Year Book (1982) estimated a petroleum reserve of 468 million tons in India, of which 328 million tons was available in Mumbai High. India was not a significant producer of petroleum until Mumbai High started production on a large scale in 1970’s. In 1980-81, about half of the petroleum production in India came from on-shore fields and the remaining half was received from off-shore oil fields. Later on, the off-shore production increased at a much faster rate. However, the overall production of petroleum in India has witnessed certain fluctuating trend. The
production was all time high i.e., 34.09 million tons in 1989-90 which slumped to 30.44 million tons 1991-92, then 28.46 million tons in 1992-93 and further to 27.03 million tons 1993-94. The regular decline in production of petroleum was ascribed to improper extraction practices for which certain remedial measures were initiated in the year 1993 e.g., horizontal drilling, drain hole drilling, etc. this helped in the increase in production to 32.24 million tons in 1994-95, 37.24 million tons in 1995-96 and 38.57 million tons in 1996-97. A declining trend in the production was again recorded after 1997. However, there has been a marginal increase in petroleum production after 2001-02. The off-shore oilfields produce twice the amount of oil obtained from the on-shore fields.

Important Additional Questions

Q#1 Name the Minor Industrial Regions of India.
Ans The Minor Industrial Regions in India are:
1. Ambala-Amritsar in Haryana Punjab.
3. Indore-Dewas-Ujjain in Madhya Pradesh.
7. Middle Malabar in Kerala.

Q#2 Name the main Industrial Clusters of J&K.
Ans They are:
1. Industrial Estate Gangyal Jammu.
2. Industrial Growth Centre Samba Jammu.
3. Industrial Infrastructure Development Project (IIDP) Udhampur.
5. Industrial Complex Rangreth, Srinagar.
6. Industrial Complex Lassipora, Pulwama.
7. Industrial Complex Khonmoh, Srinagar.
8. Industrial Complex Zainakote, Srinagar.
10. Industrial Growth Centre, Ompora, Budgam.

Q#3 Name four important textile centres of Maharashtra.
Ans The four important cotton textile centres of Maharashtra are: -
i. Mumbai
ii. Sholapur
iii. Pune
iv. Wardha

Q#4 Why are the most of the jute mills of India located in West Bengal?
Ans The most of jute mills are located in West Bengal due to availability of raw materials, favourable climatic conditions and inexpensive water transportation system.

Q#5 Name two most important sugar producing states of India.
Ans U.P. and Maharashtra are the two most important sugar producing states of India.

Q#6 Name two iron and steel producing plants each of Karnataka and West Bengal.
Ans The two iron and steel producing plants of Karnataka are: -
a) Visweswaraya Iron and Steel Ltd., Bhadravati and
b) Vijayanagar Steel Plant.
The two iron and steel producing plants of West Bengal are: -
a) Durgapur Steel Plant (with British collaboration) and
Q#7 Name five electronic goods producing centres of India.
Ans Bangalore, Hyderabad, Delhi, Mumbai, and Chennai are the five electronic goods producing centres of India.

Q#8 What is single window service?
Ans Single window service is a type of service provided by electronic and communication centre. In single window service, a single place provides various types of services. It has mainly benefited business class as they can send and obtain documents related to export and import. This service is the outcome of advancement in Science and technology.

Q#9 What are light industries?
Ans Industries which require light raw materials and produce light goods are called light industries. Industries producing electric fans and sewing machines are examples of light industries.

Q#10 Why is the Iron and Steel Industry located in Peninsular India only?
Ans The Iron and Steel Industry is located in Peninsular India only because of various reasons which are discussed as under:
1. Availability of raw material: Iron and Steel is a heavy industry using heavy and bulky raw materials. These raw materials are abundantly available in this part of the country. The north-eastern and southern parts of Peninsular India are rich in minerals and are, thus, suitable for location of Iron and Steel Industry.
2. Availability of Roads: Peninsular part of India provides efficient network of railways and roadways which greatly help in the transportation of heavy and bulky raw materials.
3. Ports: Excellent port facilities available in this part of the country help in the export of iron and steel manufactured goods.
4. Labour: Skilled and non-skilled labour is cheaply available here.
5. Market: It provides large indigenous and ready market for the finished products.
6. These were an early start of this industry in Peninsular India. Hence, this industry picked up momentum here with the passage of time.

Q#11 Describe briefly the distribution of silk textile industry in India.
Ans Silk Textile Industry is an important textile industry in India. It produces about 8.5 lakh kg of silk yarn. India is well known for the production of silk and silk goods. The four varieties of silk, namely mulberry, tasar, eri and muga are produced in the country. There are about 90 silk textile mills in India. Besides, small and medium units are also engaged in the production of silk textiles. More than nine tenths of the production comes from Karnataka, West Bengal and Jammu and Kashmir. Main silk manufacturing centres are:
a. Karnataka: Bangalore, Kolar, Mysore and Belgaum.
b. West Bengal: Murshidabad and Bankura.

Q#12 Describe the distribution of ship building industry in India?
Ans Ship building is an important industry. Overseas shipping has an extremely important role to play in India’s international trade. The country has the largest merchant shipping fleet among the developing countries. Ship building is a large industry which requires huge capital. At present there are five major ship building centres in India. They are Vishakhapatnam, Kolkata, Kochi, Mumbai and Marmagao. They are all in public sector. The private sector shipyards look after the local needs. Large ships take years to complete once the work begins. The maximum size of ship that can be constructed at Kochi and Vishakhapatnam are 100000 dead weight tonnage and 50000 dead weight tonnage respectively. For repair of ships there are 17 dry docks in India.

Q#13 How does industrial pollution degrade environment?
The undesirable change in the colour, odour, taste and composition of air, water and land is referred to as pollution. It is caused by the addition of harmful substances. Industries have greatly added to air, water and land pollution.

**Air pollution:** Industries cause air pollution by emitting smoke and undesirable gases like CO, SO\(_2\), dust, fume and mist. Chlorofluoro carbons (CFC’S) also pollute the air.

**Water pollution:** Water is polluted by the addition of industrial effluents to water bodies. Some common pollutants of water are coal, dyes, soaps, pesticides, fertilizers, plastics and rubber. Paper pulp, textiles, chemicals, petroleum, refining, tannery and electroplating industries are the main source of water pollution. It results in many water borne diseases and also disturbs ecological balance.

**Noise pollution:** The small and big machines in industries produce lot of noise due to friction between various parts of machine. It causes discomfort to humans.

**Q#14 Write a short note on the copper smelting industry in India.**

**Ans** The copper smelting plant in India was set up by the Indian Copper Corporation at Ghatshila in Jharkhand. The Hindustan Copper Ltd. took over the Indian Copper Corporation in 1972 and since then it has been the sole producer of copper in the country. This industry has two centres at Maubhandar near Ghatshila in Singhbhum district and the other at Khetri in Jhunjhunu district of Rajasthan. Malanjkhand mines of Balaghat district (M.P) supplement the supply of copper ore to Khetri. A new copper project based on imported ore is being set up at Tuticorin in Tamil Nadu. India produces 43 thousand tonnes of copper blister (partly purified) which is only half of the requirement and the remaining half is imported from Zambia, Chile, United States of America and Canada.

**Q#15 Write a short note on the development of Chemical Industries in India.**

**Ans** The Indian Chemical Industry occupies an important position in the country’s economy. This industry is growing fast. Rapid growth has been recorded in both inorganic and organic chemical industries. Heavy inorganic chemicals include sulphuric acid (which is used for the manufacturing of fertilisers, synthetic fibres, plastics, paints and dyestuffs), nitric acid, alkalis, soda ash (which is used for the manufacture of glass, paper, soap and detergents) and caustic soda. Heavy organic chemicals include petrochemicals which are used for manufacturing of articles like synthetic fibres, synthetic rubber, plastics, dyestuffs, drugs and pharmaceuticals. The inorganic chemical industries are widely spread while organic chemical industries are located near oil refineries and petrochemical plants. Production of pesticides has contributed much to agriculture by controlling insects and weeds. In the production of pharmaceuticals, India leads among the developing countries. It contributes 14% of the production of entire manufacturing sector and its share in export is also 14%.

**Q#16 What is meant by the term industry? What is the importance of industries?**

**Ans** Industry is a complex organization formed by machines, raw material, labour, power etc. Industry enhances the value of the raw materials through the manufacturing process in a factory, for instance, making cloth from cotton, iron from iron ore, sugar from sugarcane etc.

Importance of industries:

i. Industries convert raw materials into utilities.

ii. They generate employment opportunities.

iii. They help in raising the standard of living.

iv. They promote our international trade to earn much needed foreign exchange.

v. They help to increase the national income.

vi. They enhance value of goods.

**Q#17 Why is the iron and steel industry called basic industry?**
Iron and Steel Industry is called the basic industry because a large number of other industries are dependent on it. It provides them with basic machinery, iron rods and sheets. It is an index of industrial and economic development.

**Q#18 Write differences between basic or key industries and consumer industries.**

**Ans Basic or key industries** are those industries on which a number of other industries depend. They provide other industries with machines. Machine Building Plant at Ranchi is one of the examples of this industry. **Consumer Industries** produce goods for the consumption of people. These are basically commodities of daily use. Their products are readily available in the market. This industry requires small investment as compared to the basic industries. Industries manufacturing cosmetics, pens, toothpastes, chocolates etc. are some of the examples of this industry.

**Q#19 Write differences between Large Scale Industries and Small Scale Industries**

**Ans Large Scale Industries**
1. These industries employ large number of workers.
2. Large quantities of finished products are manufactured in these industries.
3. In these industries quantity of raw material and capital investment is very large.
4. Women workers are not generally employed in these industries.
5. Market for this type of industry is also very large.
6. Cotton and jute textile industry is an example of such industry.

**Small Scale Industry**
1. These industries employ small number of workers.
2. Small quantities of finished products are manufactured in these industries.
3. In these industries quantity of raw material and capital investment is comparatively very small.
4. Women workers are employed in large number in these industries.
5. Market for this type of industry is relatively small.
6. Soap making, bidi making, match making industries are the examples of such industry.

**Q#20 What are the important ingredients of modern industry?**

The important ingredients of modern industry are:
1. Raw material in bulk and their regular supply is the first and foremost pre requisite.
2. Skilled, well qualified and efficient labour and managerial personal are needed.
3. Huge capital for purchasing raw materials, setting up power driven machines for mass production, employing labour on a large scale etc. are required.
4. A large market and efficient network of transport and communication are needed to bring raw materials to the industry and to transport finished goods to the market for human consumption.
5. Good transportation system is also an important component of modern industry.

**Q#21 Write an essay on the development and distribution of Cotton Textile Industry in India. Also write down the problems which industry is facing.**

**Ans Development of Cotton Industry:** Indian monopoly in the manufacturing of cotton textile is very old. The first successful cotton textile mill, however, was established in Mumbai in 1854. Indian cotton textile industry developed rapidly after independence due to introduction of various policies and programmes by the government from time to time. Today cotton textile is the largest industry of India. It gives employment to over 15 million persons which comprise about 20% of the industrial labour force of the country. There are about 1600 cotton and human made fibre textile mills in the country. Of this 79% are in private sector and the rest in public and co-operative sectors. Apart from these, there are several thousand factories which have five to ten looms. Today 93% of the cotton cloth is produced in decentralized sector that is other than mills.
**Distribution of Cotton Textile Industry:** Maharashtra and Gujarat lead the country in the production of cotton textiles, with Mumbai and Ahmedabad as twin centres. The other centres are Sholapur, Pune, Wardha, Nagpur, Aurangabad and Jalgaon in Maharashtra and Vadodara Surat, Rajkot and Porbandar in Gujarat. Haora, Murshibabad, Hugli and Silampur are located in West Bengal. Agra and Modinagar are important centres in U.P. Gwalior, Ujjain, Indore and Dewas are the major centres of Madhya Pradesh, Chennai and Madurai in Tamil Nadu are the other important cotton textile centres.

**Problems from which industry suffers:**
1. Scarcity of good quality cotton.
2. Obsolete machinery.
3. Erratic power supply.
4. Low productivity of labour.
5. Stiff competition with synthetic fibre industry.

**Trade:** India exports cotton textiles mostly in the form of ready-made garments. The U.S.A, the U.K, Russia, France, east European countries, Nepal, Sri-Lanka and African countries are the main importers of Indian cotton goods.

**Q#22 Write a note on development distribution and trade of jute textile in India. Also give reasons for the concentration of jute industry on the river Hugli.**

**Ans**
Jute textile is the second important industry next to cotton textile. India ranks number one in the production of raw jute and jute goods. It is number two in export of jute goods in the world after Bangladesh.

**Distribution:** There are about 70 jute mills in India. Most of them are located in West Bengal along the river Hugli. Over 80% of the jute goods are produced in West Bengal. Andhra Pradesh produces about 10%. Rest is produced in Bihar, U.P, M.P, Orissa, Assam and Tripura. The most of the jute mills are concentrated on the banks of river Hugli because of the following reasons:

i. About 90% of India’s jute is produced in Ganga-Brahmaputra delta so there is enough and regular supply of jute to this industry.

ii. Availability of coal in neighbouring areas.

iii. Kolkata provides excellent port facilities for the import of machinery and export of finished jute products.

iv. There is no dearth of finances to be invested.

v. Cheap water transportation with a wide network of roads for distribution of finished products.

vi. Cheap skilled and unskilled labour is available from densely populated cities of West Bengal and the neighbouring states of Bihar and U.P.

vii. Abundant supply of water for processing and dyeing is available.

viii. Hot and humid climatic conditions also favour jute industry.

**Trade:** Before independence and even afterwards, the jute industry brought sizeable amount of foreign exchange. The main buyers of Indian jute products are the USA, Canada, Russia, UAE, Australia and the U.K.

**CHALLENGES FACED BY THE INDUSTRY**

The demand for jute carpets and packaging materials is reducing day by day because of the high production cost and stiff competition in international market. Besides, synthetic substitutes are easily available in the market at cheap rates.

**Q#23 Write a note on Woollen Textile Industry.**

**Ans**
It is one of the oldest textile industries of the country. The main concentration of woollen textile industry is in the Punjab, Maharashtra, U.P, Gujarat, Haryana and Rajasthan.
Distribution of woolen textile industry:

i. In Punjab, Dhariwal, Ludhiana and Amritsar are the major centres.

ii. In Maharashtra, Mumbai is the chief centre.

iii. In U.P, Kanpur, Shahjahanpur, Agra and Mirzapur are the important centres.

iv. In Gujarat, Ahmedabad and Jamnagar are the main centres.

v. Panipat and Gurgaon are the centres of Haryana.

vi. Srinagar in J&K.

vii. Bangalore in Karnataka is an important woollen textile centre.

Trade: Good quality raw wool is imported from Australia. India exports woollen goods to the U.S.A., Russia, the U.K, Canada and several European countries.

PROBLEMS OF THIS INDUSTRY:

Shortage of raw wool, lack of internal market and low quality of woollen products are some of the problems of this industry.

Q#24 Write a short note on sugar industry.

Ans

India is the largest producer of sugarcane in the world. It ranks first in the production of sugar along with Khandsari and Gur. As sugar industry is based on sugarcane which is heavy, weight losing and perishable, the mills are located close to sugarcane producing areas. There are over 460 sugar mills in the country. Around 50% of them are in U.P. and Maharashtra. Most of the sugar mills are located in these two states because of the cheap availability of labour and abundance of electricity. Besides, they are said to be the home of the sugarcane crop. Karnataka, Tamil Nadu, Andhra Pradesh and Gujarat are also important producers of sugar in the country. Indian sugar industry produced about 195 lac tones of sugar in 2000-2001.

Q#25 Distinguish between Agro based and Mineral based industries.

Agro Based Industry
These industries derive their raw materials from agriculture.
These industries mostly produce consumer goods.
Examples of such industries are Cotton and Jute textile Industry, Vegetable Oil Industry, Sugar Industry etc.

Mineral based industry
These industries derive their raw materials from minerals.
There industries produce consumer as well as value-based goods.
Examples of such industries are Iron and Steel Industries, Engineering Industry, Ship Building Industry etc.

Q#26 Suggest measures to control environmental degradation.

Ans

The following measures should be taken to control the fast environmental degradations:

1. Careful planning:- Much of the pollution can be prevented by careful planning and shifting of industries out of the residential areas. In this direction, the supreme court of India has directed the Delhi government to shift all such health hazard industries out of the municipal limits in order to save the citizens from their harmful effects.

2. Use of New Equipments:- The use of sophisticated, better designed equipment goes a long way in controlling environmental degradation. Besides, such equipment must be operated skillfully and in a better way.
3. **Fuel selection and utilization:** Since coal, diesel and petrol are the major pollutants of environment, we should avoid their use in our daily life. We should use oil instead of coal in the industries and Compressed Natural Gas instead of diesel and petrol.

4. **Equipments to control Aerosol:** To control aerosol emission we should use such equipment as inertial operators, filters, precipitators and scrubbers.

5. **Control of water pollution:** Water pollution by industries can be controlled by treatment of industrial liquids before discharging them into the rivers. This can be done in three phases:
   a. **Primary treatment:** (Mechanical process) it includes, grinding, sedimentation etc.
   b. **Secondary treatment:** (Biological process) it involves use of biological processes.
   c. **Tertiary treatment:** (Biological, physical and chemical process) it includes recycling of waste waters.

6. **Control of soil and land pollution:** It involves following activities:
   a) Collection of wastes from different places.
   b) Dumping and disposing of the wastes by land-filling.
   c) Recycling of the wastes for further use.

7. **Other measures:**
   a. Legal measures and public awareness.
   b. Mineral conservation
   c. Planting of trees and creating mini-forest areas.
   d. Use of higher quality coal for thermal plants.

**Q#27** Give reasons for the rapid expansion of sugar industry in peninsular India.

**Ans** The following are the reasons for the expansion of sugar industry in peninsular India:

1. Sugarcane produced in south has higher sugar content than those of the northern states due to the fertile soil.
2. Cooperative Sector has a better headway in the south as sugar industry is a seasonal industry and labour cannot be employed in this industry all the year round.
3. Most of the mills are near sugar producing areas which save transport cost. Besides, this industry in the south is equipped with modern machinery. Hence, the cost of production is less.
4. Sugar being our export item and earner of foreign exchange is better suited to southern states, which have better port facilities than northern states.

**VERY SHORT ANSWER TYPE QUESTIONS:**

**Q#1** How can we measure economic strength of a country?
**Ans** We can measure the economic strength of a country from the development of manufacturing industries.

**Q#2** Where and when was the first modern cotton textile mill set up in India?
**Ans** It was set up at Fort Glaster near Kolkata in the year 1818.

**Q#3** Where and when was first successful modern cotton textile mill set up in India?
**Ans** It was set up in Mumbai in 1854.

**Q#4** When did planned development of manufacturing industries in India begin?
**Ans** It began in 1951 with the launching of the first Five Year Plan.

**Q#5** What twofactors contribute to the location of individual industries?
**Ans** Physical factors and Human factors

**Q#6** Classify industries on the basis of the size of labour.
**Ans** On the basis of size of labour, industries are classified into:
1. Large Scale Industries e.g. Cotton Textile Industry
2. Medium Scale Industries e.g. television, cycle and sewing machine industries
3. Small Scale Industries e.g., gur and khandseri industries.

Q#7 How are industries classified on the basis of raw materials?
Ans 1. Heavy industries such as Iron and Steel Industry
2. Light industries such as electric fans and sewing machine producing industries.

Q#8 Classify industries on the basis of ownership.
Ans 1. Private Sector Industries like Tata Iron & Steel Company (TISCO)
2. Public Sector Industries like Bhilai Steel Plant
3. Joint Sector Industries like Oil India Ltd.
4. Co-operative Sector Industries like Sugar Mills, Amul Milk Industry, etc.

Q#9 How would you classify industries on the basis of source of raw material?
Ans 1. Agro-based industries such as, Cotton textile, Jute textile, Sugar Industry etc.
2. Mineral based industries such as Iron and Steel Industry.

Q#10 How many cotton and synthetic textile mills are there in the country and how many persons do they employ?
Ans There are about 1600 such mills employing over 15 million persons.

Q#11 Which two places are the main cotton textile industry centres in India?
Ans They are Mumbai in Maharashtra and Ahmedabad in Gujarat.

Q#12 When and where did smelting of iron ore in modern India begin?
Ans It began in 1830 at Porto Nova in Tamil Nadu.

Q#13 What are the burning problems of the Cotton Industry?
Ans The burning problems of Cotton Textile Industry are scarcity of good quality cotton, obsolete machinery, erratic power supply, low productivity of labour and stiff competition with Synthetic Fibre Industry.

Q#14 Which states have greater concentration of cotton textiles?
Ans Maharashtra, Gujarat, West Bengal, Uttar Pradesh Madhya Pradesh and Tamil Nadu.

Q#15 Which countries are the main importers of India cotton goods?
Ans The U. S. A, the U. K, Russia, France, East European countries, Nepal, Singapore, Sri-Lanka and African countries are the main importers of Indian cotton goods.

Q#16 What percentage of cotton cloth is produced in decentralized sector?
Ans 93% of the cotton cloth is produced in decentralized sector.

Q#17 What is the rank of India in the production of raw jute and jute goods?
Ans India ranks number one in the production of raw jute and jute goods.

Q#18 Which state of India is the largest producer of jute goods?
Ans West Bengal produces over 80% of jute goods.

Q#19 How many jute mills are there in India at present?
Ans There are about 70 jute mills in India.

Q#20 Which countries are the main buyers of Indian jute?
Ans The USA, Canada, Russia, United Arab Republic, Australia and the UK are the main buyers of Indian jute.

Q#21 Name chief centres of woollen textile industry in India.
Ans The chief centres of Woollen Textile Industry in India are Dhariwal, Ludhiana, Mumbai, Kanpur, Shahjahanpur, Agra, Mirzapur, Ahmedabad, Jamnagar, Panipat Gurgaon, Bikaner, Jaipur, Srinagar and Bangalore.

Q#22 From which country do we import good quality wool?
Ans We import good quality wool from Australia.

Q#23 Name the countries to which India exports its woollen goods?
Ans India exports its woollen goods to the U.S.A, Russia, the U.K, Canada and several other European countries.

Q#24 Where and when was the first cement plant set up?
Ans It was set up at Chennai in 1904.

Q#25 Which are the two centres of copper production in India?
Ans They are
1. Maubhandar near Ghatshila in Singhbhum district in Jharkand and
2. Khetri in Jhunjhunu district of Rajasthan.

Q#26 Name the countries from which India imports copper to fulfil its requirements.
Ans They are Zambia, Chile, the USA and Canada.

Q#27 Which are the two categories of Chemical Industries?
Ans They are
1. Inorganic Chemical Industry and

Q#28 Where and when was the first fertilizer plant set up in India?
Ans The first fertilizer plant in India was set up at Ranipet in Tamil Nadu in 1906.

Q#29 Name the fertilizer plant which was set up in 1951 by the Fertilizer Corporation of India.
Ans It was Sindri Fertilizer Plant.

Q#30 Name the raw materials which are used in the manufacturing of cement.
Ans Limestone, silica, alumina and gypsum.

Q#31 Where and when was the first cement plant set up in India?
Ans It was set up in Chennai in 1904.

Q#32 What is the annual production of cement in the country at present?
Ans It is 100 million tonnes.

Q#33 Which city of India has emerged as the electronic capital of India?
Ans It is Bangalore.

Q#34 Which four types of pollution are created by industries?
Ans Air, water, land and noise pollution are created by industries.

Q#35 Name the two gases which cause air pollution.
Ans They are Carbon monoxide and sulphur dioxide.

Q#36 How many cement plants are there in India?
Ans 119 large and over 300 mini plants.

Q#37 Name the industries which create water pollution?
Ans They are: paper pulp, textile, chemical, petroleum, refining, tannery and electroplating.

Q#38 Name a few equipments to control aerosol emissions.
Ans They are inertial separators, filters, precipitators and scrubbers.

Q#39 Name the aircrafts produced by India for defense purpose.
Ans Mig – 21, Kiran (jet trainer), (Supersonic jet interceptor) Marut (Supersonic jet fighter)

Q#40 What is a cooperative sector industry?
Ans A cooperative sector industry is owned and run cooperatively by a group of people, who are mostly producers of raw materials of the industry concerned e.g. a sugar mill owned and run by farmers producing sugarcane.

Q#41 Name the industry in which electricity shares 30 –40% of production cost.
Ans Aluminium smelting.