

OBJECTIVES

You should study this chapter to know

- the techniques for achieving effectiveness in comprehending various texts
- how to predict content and understand the gist of a particular text
- the SQ3R (survey, question, read, recall, review) technique for meaningful reading
- study skills to be applied while reading the texts

Reading Comprehension

INTRODUCTION

According to Richard Steele, 'Reading is to mind what exercise is to body'. Akin to keeping one's body fit with regular exercises, reading helps to keep the mind active. Comprehending what we read is the most demanding aspect of our reading. Students and professionals need to read a variety of texts in order to understand concepts, enhance their knowledge and to know what is going on around them. However, if they are not aware of certain reading techniques they may feel that they are wasting time in reading texts. When they learn these techniques and practise them while reading, they may find that their reading is more meaningful, fruitful, and enjoyable.

IMPROVING COMPREHENSION SKILLS

Improved reading comprehension skills can positively impact many facets of a student's academic performance. Students who have effectively read and understood reading assignments are better prepared for class, leading to improved class participation and more accurate and complete notes. Performance in exams and quizzes could greatly improve as students become more proficient and effective readers. Their interest in a subject is often fostered when they understand the reading assignments. In addition, as students gain proficiency in reading, self-esteem improves. Similarly, professionals also read a lot of material related to their work, and it is important for them to have good reading comprehension skills.

The following are some of the ways in which comprehension skills can be improved:

- Read a variety of materials. Do not limit yourself to textbooks.
- Read a fairly long portion of the material. It would be difficult to assess reading comprehension based on one or two paragraphs. Try to read an entire section or chapter instead.
- Circle unknown or unfamiliar words as you read.

- After reading, recall as much of the information as possible. Jot down points if you like. Then check the accuracy and completeness of your recollections. If the main ideas are presented in a particular order, see if you can recall the structure.
- Consider how interesting the subject matter is and how much you already know about the subject.
- Answer questions about the material after reading it.

These strategies may help you in achieving the following purposes.

'No matter how busy you may think you are, you must find time for reading, or surrender yourself to self-chosen ignorance.'

—Confucius

- To enhance understanding of the content in a text
- To improve understanding of how information is organized in a text
- To improve attention and concentration while reading
- To make reading a more active process
- To increase personal involvement in the reading material
- To promote critical thinking and evaluation of reading material
- To enhance registration and recall of text information in one's memory

TECHNIQUES FOR GOOD COMPREHENSION

As we have already discussed, poor comprehension skills are usually attributable to one or more factors: lack of interest, lack of concentration, failure to understand a word, a sentence, or relationships among sentences, or failure to understand how information fits together.

In this section, we will look at the underlying aspects of text you need to be aware of and the techniques you should develop and practise to hone your reading skills:

- Skimming and scanning
- Non-verbal signals
- Structure of the text
- Structure of paragraphs
- Punctuation
- Author's viewpoint (inference)
- Reader anticipation: Determining the meaning of words
- Summarizing
- Typical reading comprehension questions

Skimming and Scanning

Before starting to read a text in detail, you should take a moment to preview the text. Read quickly, without pausing to study the details. This is called skim reading or skimming. You should understand

- for which audience the text was written (general public, professionals, laymen . . .);
- what type of text it is (report, informal letter, formal letter, article, advertisement . . .);
- what the purpose of the author is (to describe, to inform, to explain, to instruct, to persuade); and
- the general contents of the text.

After having skimmed the text, you can study it in more detail, reading more slowly and carefully and looking for specific information that you are interested in. This is called scanning.



Scanning

Non-verbal Signals

The meaning of a text is not only conveyed by means of words. All texts also contain non-verbal

signs. Non-verbal signs may include certain style features, such as different fonts, bold print, underlining, or italics. The meaning of these style features can vary from one text to another. In one text italics may be used to emphasize a word, in another text italics can be used for subtitles.

Layout features are also non-verbal signals (Exhibit 10.1). For example:

Heading:	A title printed at the top of a page to indicate the subject matter that is going to be discussed in a particular chapter, column, or section
Title:	Tells you what the text is about
Subheading:	presents you with a brief summary, introduction, or explanation
Photographs:	Pictures related to an article or a text
Captions:	Comments on pictures related to a text
Division into paragraphs:	Each paragraph is a unit and deals with one particular idea (see also the section on paragraphs)
Figures, graphs, bar charts, etc:	To visualize facts and figures presented in the text

Structure of the Text

Most texts start with a title and sometimes a subtitle. After that comes the introduction and the body, followed by a conclusion or summary.

An important aspect of reading is prediction. The better you can predict what you are going to read, the faster and more effective you will read. The prediction process begins with the title.

The introduction mostly informs you about what you can expect. The body consists of paragraphs. Each paragraph deals with one aspect of the subject matter. Paragraphs are linked in a logical way. The conclusion sums up and puts the subject matter in the right perspective.

Structure of Paragraphs

A typical paragraph consists of three parts. The first part is the topic sentence, which is the heart of the paragraph, which can figure either at the beginning or at the end of the paragraph. The topic sentence (also called *thesis sentence* or *key sentence*) contains the new aspect of the subject of the text. The second part of the paragraph contains sentences which develop support for the topic sentence. These sentences may contain arguments, explanations, details, examples, and other supporting evidence. The third part of the paragraph is often a summary of the paragraph or a linking sentence to the next paragraph.

In many well-written texts the reader will get a good idea of the contents by reading just the first sentences (i.e., the topic sentences) of each paragraph.

Punctuation

Punctuation is partly based on grammar. For example, commas are often used to separate clauses. If you understand the meaning and usage of punctuation marks, it will be easier to understand the grammatical structures.

Punctuation marks also indicate how the author wants you to interpret a piece of text. For example, if the author puts something in brackets, that part of the sentence should be interpreted as an addition to the sentence. (See Appendix A in the CD.)



EXHIBIT 10.1 Layout features

Heading — **GENERAL KITCHEN LAYOUT**

Kitchen is a busy place and cross-traffic can really hamper the operations. There are certain factors that one needs to keep in mind while planning a kitchen. This is usually done by 'facility planning department', which carefully plans the layout of the kitchens. Some hotels contract out these services but certain hotel chains, such as Oberoi Hotels and Resorts, have their own facility planning department which is responsible for planning and layout of all the kitchens.

Planning a kitchen entails much more than just placement of equipment in its place. A well-planned operation will always follow a systematic procedure (see Fig. 3.1).

Photograph —



Figure —

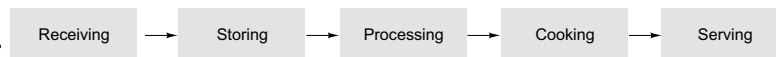


Figure caption — **FIG. 3.1** General workflow pattern in a kitchen

When we talk of design of a kitchen, it would generally mean the overall planning of the space with regards to size and shape of the operations. Layout would mean the detailed arrangement of the floor of the kitchen and allocation of places for the kitchen equipment to be placed where the specific tasks would be carried out. A cluster of such places is referred to as workstation.

A well-planned layout is not only important for the smooth workflow in the kitchen but it also adds to the profitability of the entire operation. Smooth workflow will ensure timely pick up of food for a busy meal period thus creating happy guest and good reputation. Such an operation is also directly linked to the motivation and overall morale of the staff.

Author's Viewpoint (Inference)

In reading a text you make inferences or assumptions about the position of the author. Is the author neutral or does he/she have an opinion? The author often shows his or her opinion either by adding certain phrases or by adding a value to a word.



Authors can add words like *luckily* or *unfortunately* to show approval or displeasure, respectively. They can also add words which show their surprise, regret, or other emotions, for example, *surprisingly*, *to shock*, *unexpectedly*, *regrettably*, *pity*, *desirable*, *to be disappointed*, etc. They may also use words to indicate the level of certainty, for example, *certain*, *obviously*, *undoubtedly*, *naturally*, *always*, *often*, *likely*, *probably*, *maybe*, *unlikely*, *hardly*, *rarely*, and *never*. The author could also add words to comment on more or less objective facts. For example 'Only 40 per cent of the staff is female' has quite a different meaning from 'As much as 40 per cent of the staff is female'.

The author can also reveal his/her viewpoint by adding value to a word. For example, if something is big he/she may use the word *huge* or *gigantic* to indicate he/she is impressed. If something is small he/she may use words like *tiny* or *microscopic* to indicate that he/she is not impressed. If someone is afraid he/she may use the word *terrified* to add suspense; if something is good he/she may use the word *fantastic*.

Reader Anticipation: Determining the Meaning of Words

Even readers who have a wide and flexible vocabulary will encounter words whose meaning they do not know. You may have often come across a not-too-familiar word whose meaning you were able to guess accurately. This is possible if you understand the relationships between words in meaning and form.

You can develop this skill by following a method. Look for clues or indications that help you find the meaning. The following steps can help you:

- Step 1* Determine the word class, i.e., a verb, a noun, an adjective, an adverb, etc.
- Step 2* Determine its function in the sentence, i.e., how it is related to other words in the sentence.
- Step 3* Analyse the contextual clues, i.e., the context in which we find this word positive or negative; what the context tells us about the word.
- Step 4* Is there any relation between this word and a word that is familiar to you? Consider the word *aging* in *the population is aging rapidly*. We recognize the word *age* in *aging* and therefore we can easily derive its meaning.
- Step 5* Try and derive the eventual meaning of the word.

Summarizing

It is very difficult to remember the complete contents of long texts. For that reason it is often advisable to make notes of essential information in the text. The result is a short outline of the text containing all its important aspects. The length of the summary largely depends on the density of the text. The average length of a good summary is about one-third of the original text, but summaries of detailed texts may be longer.

The following steps can be taken when summarizing a text:

Step 1: Familiarize yourself with the material

After you have read the text or a section of it, you can start summarizing. The length of the section you can easily read through at a time, in an attempt to summarize the text in parts, depends on the structure and the complexity of the text. With reports, it is often a good idea to read one section and then summarize. Newspaper articles are often best read as a whole before starting with the summary.

Some General Rules to Determine What is Important and What is Not

- *Important:* Author, title, reason why the text was written, purpose, theme, key words, link words, all major aspects (especially topic sentence of each paragraph), explanations, author's opinion.
- *Less important:* Introduction, summary, repetition, examples, anecdotes, analogies.

Step 2: Select important information

You should go through each paragraph, sentence by sentence, asking yourself which information is absolutely essential to the argument. You should write down complete sentences as much as possible. Jot down your points clearly or you will have to read the original text all over again. An alternative is to underline or highlight important sentences or phrases.

Step 3: Paraphrase the information

Paraphrasing, or rewriting from the original text in your own words, forces you to completely understand what you are noting down. You should try to condense long and complex sentences into much shorter ones. Use active sentences as much as possible and avoid adjuncts.

Practise economy with words. Avoid descriptions if they can be summarized in one word. For example, do not write 'The state exclusively controls and possesses the trade in stamps', but write 'The state monopolizes the trade in stamps.'

Step 4: Insert links between sentences and paragraphs

Make sure that the connection between sentences is clear and logical and that each group of sentences smoothly fits in one paragraph. This can be done by inserting link words such as *therefore*, *nevertheless*, *but*, *however*, *because*, *on the other hand*, etc. Sentences can also be linked by relative pronouns, for example, *who*, *which*, *whose*, and *that*. Using the correct links means that your summary becomes more logical and coherent.

Step 5: Adjust the length of the summary

If you have to write a summary as part of an assignment and you are assigned a maximum number of words, count the words after writing it out. Depending on whether your word count exceeds or falls below the given number, you can leave out unessential information or add important information.

Typical Reading Comprehension Questions

You should become familiar with the main categories of reading comprehension questions asked in standardized tests. This will help you to focus your attention while reading the passages.

Reading comprehension questions usually take one of three forms: questions based on the entire passage, questions based on sections of the passage, and questions based on particular words or sentences. Each of these is discussed and exemplified in Tables 10.1–10.3.

- Questions based on the entire passage
- Questions based on the entire reading usually target the main point of the text, author intentions, main ideas, and content. Ten types of questions based on the entire passage are given in Table 10.1 along with sample wordings.
- Questions based on sections of the passage
In order to answer questions on specific sections of the passage, one must be able to identify and understand the main points in each paragraph. Look for cue words such as *advantages*,

TABLE 10.1 Sample questions based on the entire passage

Question type	Sample wording
1. <i>Main point:</i> What is the passage trying to tell you?	The passage is mainly concerned with . . .
2. <i>Primary purpose of author:</i> What does the author want to tell you?	The author's primary purpose in the passage is to . . .
3. <i>Mood or attitude of author:</i> What is the tone or attitude of the author?	On the basis of the passage, the author's attitude towards _____ can most accurately be termed as one of . . .
4. <i>Assumptions made by author:</i> What assumptions are made by the author but not directly stated in the passage?	Which of the following is an assumption made by the author?
5. <i>Implications of passage or author:</i> What does the author or the passage imply?	The author implies that _____ is . . .
6. <i>Applications of main ideas:</i> How can you extend the main ideas of the passage? According to the author, _____ would lead to . . .	The author provides information that would answer all of the following questions except . . .
7. <i>Summary of passage:</i> In a few words, how would you describe the passage? What title would you give the passage?	Which of the following titles best summarizes the content of the passage? Which of the following would be the most appropriate title for the passage?
8. <i>Content of the passage:</i> What is the passage really about?	Which of the following describes the content of the passage?
9. <i>Inferences:</i> What can you infer from the passage as a whole?	It can be inferred from the passage that . . .
10. <i>Statements with which the author would agree:</i> What could you say that the author would agree with, knowing the way he/she wrote the passage?	With which of the following statements regarding _____ would the author probably agree?

disadvantages, similarities, differences, in contrast with, in comparison to, most importantly, primarily, and on the other hand. Questions based on portions of the text usually deal with inferences, applications, and implications of the information. Six types of questions based on sections of the passage along with sample wordings are given in Table 10.2.

- Questions based on words, phrases, or sentences
Here, specific details and pieces of information from the text may be the subject of test questions. The content itself is not usually the subject of questions. Rather, the reasons for using the information or the meaning of the information could be questioned.

TABLE 10.2 Sample questions based on a section of the passage

Question type	Sample wording
1. <i>Inferences:</i> What can you infer from specific sections in the passage?	It can be inferred that the ancient atomic theory was primarily based on . . .
2. <i>Applications:</i> How can you apply information in specific sections of the passage to other areas? What precedes or follows the passage? What do you think was written right before the passage or right after the passage?	It can be inferred that in the paragraphs immediately preceding the passage, the author discussed . . .
3. <i>State ideas:</i> Can you find in the passage a specific reference to a <i>stated idea</i> ?	According to the passage, blacks were denied entrance into anti-slavery societies because . . .
4. <i>Implications:</i> What is implied by a section in the passage?	The author implies that many Americans' devotion to the ideal of justice is . . . In describing American attitudes about the land (lines 7–8), the author implies that . . .
5. <i>Tone or mood:</i> What is the tone or mood of a section of the passage?	At the conclusion of the passage, the author's tone is one of . . .

Two types of questions based on words, phrases, or sentences are listed in Table 10.3 along with sample wordings.

TABLE 10.3 Sample questions based on words, phrases, sentences

Question type	Sample wording
1. <i>Reason for use:</i> Why are certain words, phrases, or sentences mentioned or used in the passage?	The author mentions Newton's <i>Principia</i> in order to . . .
2. <i>Meaning of a Word or Phrase:</i> What is the meaning of a certain word, phrase or sentence in the passage?	The enemy referred to in the last sentence is probably . . . According to the author, the words in the Declaration of Independence, 'all men are created equal', are meant to represent . . . By 'this skepticism' (line 35), the author means . . .

PREDICTING THE CONTENT

Predicting the content of a given reading passage enables you to quicken the process of comprehension. In other words, thinking ahead of the given information or anticipating the

information yet to come in the reading passage, makes you understand the entire passage in its total perspective. In order to guess the information through the process of prediction, you need to develop rapid reading skills because an efficient reader is able to think ahead, hypothesize, and predict.

You may find several cues in the passage that may assist you in predicting the content. Your knowledge about the subject, the topic sentences of each paragraph, headings, subheadings, graphics (e.g., graphs, diagrams, and charts), and cohesive markers (e.g., pronouns, transitions, repetitions, and synonyms), all would enable you in the process of prediction.

A pre-reading survey of the passage is a necessary condition for predicting the content. This is the first function you may carry out when you need to comprehend the contents of a given passage. The following steps and the example discussed thereon may help you accomplish the prediction process:

- Familiarize yourself with the subject of the passage by glancing rapidly through it.
- Guess the information through the linguistic/graphic cues.
- Recall related information.
- Use background information related to the topic to accelerate the prediction process.

Example

Given the widespread acceptance of the image of the ocean depths as serene and undisturbed, it is unsurprising that researchers initially greeted the evidence for powerful deep-sea storms and dynamic currents with disbelief. The earliest arguments in support of the existence of such powerful deep-sea currents were based on models of ocean circulation derived from hydrodynamic theory. Because the density of cold water is greater than that of warm water, cold water tends to sink. Thus, near the poles, the chilly water sinks; in theory, this sinking should create powerful, regular deep-sea currents flowing from the poles toward the warm equatorial regions. Over time, investigators have gathered sufficient evidence to confirm the accuracy of this theory. Oceanographic studies have verified that deep-sea currents exist and have demonstrated that, on the western side of the great ocean basins, periodic underwater storms transporting masses of fine sediment scour the sea floor. Corroborating these studies, photographs of the sea floor have disclosed the existence of vast graded beds suggesting the active transport of large volumes of silt and clay. Further corroboration has come from an experimental program known as the High-Energy Benthic Boundary-Layer Experiment (HEBBLE).

- A quick reading of the passage tells us that the topic is about 'deep sea currents' and the related research
- Phrases such as *powerful deep-sea storms and dynamic currents, no surprise, disbelief, arguments, models of ocean circulation derived from hydrodynamic theory, oceanographic studies, over time, deep-sea currents exist, corroborating, further corroboration, HEBBLE*, enable us to guess that though initially the existence of deep sea currents were not believed by scientists, over the years, they started accepting it because of the various studies conducted. We can also predict that the author will talk about the HEBBLE experiment in the next paragraph.
- After identifying the phrases, we can recall the topic once again and try to paraphrase the details in our mind
- If we have some knowledge on the characteristics of liquids with different density we can understand the principle: *Because the density of cold water is greater than that of warm water, cold water tends to sink. Thus, near the poles, the chilly water sinks; in theory, this sinking should create powerful, regular deep-sea currents flowing from the poles toward the warm equatorial region.*

UNDERSTANDING THE GIST

When you try to get the general meaning from a text without concentrating on the individual words, you are reading for gist. In other words, when you read a passage, if you are able to understand its core meaning or main theme, you have understood the 'gist'. You might have observed that you could understand the gist of some passages in the first reading itself. For instance, when you read a passage on environmental pollution, you may understand the core meaning at the first reading itself, whereas when you read a passage on American Civilization or Nuclear Power, you might not be able to do so.

There may be several reasons for this ability or inability to understand the gist at the first reading. Your previous knowledge about the topic would certainly enhance your capacity to get the gist quickly. At the same time, if you are not familiar with the topic and the passage is complex, you may take more time to get the gist. However, for proceeding further with your reading activity, understanding the gist is very important.

Now, let us discuss how to go about understanding the gist of the passage. Each passage that you read will include some main ideas supported by adequate details. If the passage is a paragraph, it will have one main idea and various details to substantiate that idea. If the passage is long, it may generally talk about the main idea in the first paragraph and may contain the subordinate ideas in each of the remaining paragraphs. The concluding paragraph will once again emphasize the main idea. Each of the subordinate ideas will be supported by adequate details contained in a number of sentences. Hence, in order to understand the gist you need to identify essentially the main idea or theme of the passage and the subordinate ideas and also the relationship between the ideas and the supporting details. You can do this by posing questions such as what does the author want to say or what the topic is about.

Usually, you can find the main idea within the first one-third of the passage. The title or the main heading of a text, if any, can also give a clue to the content. You can also look for repetition of certain important terms or their synonyms that may help you identify the main topic. Similarly, the topic sentences of each paragraph can help in identifying the central idea. Each paragraph will have a subordinate idea that you can find either in the beginning of that paragraph or at its end. You may also glance over the beginning of the text to identify its logical organization as mentioned in the previous discussion on skimming.

With these strategies, you may be able to get the gist of your reading text or passage. Read the following passage carefully with a view to get its gist. Then go through the discussion that follows.

Communicating through Space

One way that people can communicate with one another is by manipulating the space between them. People have a very strong sense of personal space that surrounds them and are greatly discomforted when it is invaded. Crowded subway cars, for example, may be experienced as psychologically uncomfortable, and outbreaks of aggression are more likely in crowded situations.

Edward T. Hall studied attitudes toward physical proximity in several cultures. He found that people from different cultures vary in the degree of closeness that they will tolerate from strangers or acquaintances. Americans seem to require more personal space than any other people—a distance of at least 30 to 36 inches, unless the relationship is a very intimate one. American travellers to other countries find that the inhabitants stand almost offensively close. But people in these cultures are apt to consider Americans—who are always backing away when one tries to talk to them—disdainful and rude.

Hall suggests that there are four distinct zones of private space. Intimate Distance is the zone which extends up to 18 inches from the body. It is reserved for people with whom one may have intimate physical contact. Personal Distance is the zone which extends from 18 inches to 4 feet. It is reserved for friends and acquaintances. Some physical intimacy is permitted within this zone, such as putting one's arm around another's shoulder or greeting someone with a hug, but there are limits. Social Distance is the zone which extends from 4 to 12 feet. It is maintained in relatively formal situations, such as job interviews. There is no actual physical contact within this zone. Public Distance is the zone which extends for 12 feet and beyond, and is maintained by people wishing to distinguish themselves from the general public. Speakers addressing an audience, for example, maintain this distance.

(Source: Roberta Steinberg, *Complete Tools for the TOEFL Test*, p. 313, McGraw-Hill, New Delhi, 2006)

You might have identified that the main topic of this passage is 'communication can take place by using the space that is maintained between the speaker and the listener in various ways'. You would have done this by identifying the title (as this passage has a title) and also the first sentence. Then you would have got the gist of the passage by identifying the topic sentences (here the first sentence) of the second and third paragraphs. So, the gist of the passage according to you might have been as follows: 'Communication can take place by using the space that is maintained between the speaker and the listener in various ways. The space communication is affected by cultural variations and it is of four types.'

To sum up the discussion, we can say that you should carefully read the following in order to understand the central idea of a text:

- The title or the main heading
- The opening paragraph
- The topic sentence of each paragraph
- The last paragraph

SQ3R READING TECHNIQUE

Some of us read the texts several times to understand them and in this process we lose time. In order to reap maximum benefit out of our reading time, we can make use of the SQ3R reading technique—*survey, question, read, recite, review*. George Bernard Shaw said: 'Question, Examine, Search' in order to understand things in their right perspective. On the same lines we can say that reading comprehension also needs certain steps in order to understand and interpret the given text. The functions of the SQ3R technique enable us to get an idea about the structure and organization of the text and show us the direction in which we need to proceed further. Let us look at the constituents of this reading technique in little more detail.

Survey

Just like we try to understand a problem before attacking it in order to find a solution, we need to get an overview of the text before finding out answers for the given questions. Get an overview of the text by

- Reading the title, contents, headings and subheadings
- Reading the chapter summaries
- Looking at the illustrations, their captions, etc.
- Making a note of highlighted words, sections, etc.
- Reading the introduction and conclusion

We can assume that surveying a text is more or less equal to scanning the text as detailed in an earlier section of this chapter. Surveying the text also helps us to judge our background knowledge related to the text.

Question

Many a time we pose questions to ourselves to clarify something. For instance, when we look at our passport we ask ourselves, 'Is my name typed correctly? What is the expiry date? When should I apply for a re-issue?' Such questions enable us not only to get a clear picture of the given information but also enable us to check the details. Similarly, while reading a text, we should ask questions on its contents. Assume that you are reading the following paragraph in a text:

The flow direction of refrigerant through a heat pump is controlled by valves. When the refrigerant flow is reversed, the heat exchangers switch function. This flow-reversal capability allows heat pumps either to heat or to cool room air.

'Reading without reflecting is like eating without digesting.'

—Edmund Burke

After reading these lines, we could ask ourselves this question to check our understanding: 'What is it that allows heat pumps to heat or cool room air?' When we ask questions while reading each paragraph, we may be able to get the main points of the text. We may also grasp well the sequence of ideas presented in the text.

Read and Recite/Recall

Once we survey and question, we should read the text focusing on the main points. We may have to slow down our reading speed in case of certain dense or complicated texts whereas we may read fast the simple texts. Making notes while reading may be helpful to understand and interpret the texts. Read the guidelines given in the section on note-making.

Just as we retain some information regarding places, people or products by recollecting the details when we had come across them earlier, we need to recall the main points and supporting points once we finish the reading and note-making processes. At this point, we may try to recall the supporting points for each of the main points and recite them/speak them aloud in our own words. We may even write down the points. But we should not copy from the passage but use our own words to recite or write. For instance, in the following text, you may see that there are two supporting points for the main point, which is 'getting more corneas', contained in the first two sentences.

Getting more corneas for the blind is a difficult choice. Two types of solutions have been proposed for getting more corneas. One answer is to impose compulsory eye donation on patients dying in hospitals. The other answer is to educate the masses through vigorous campaigns for voluntary post-death eye donations.

Reading and recalling steps in the SQ3R technique enable us to retain most of the information in the text.

Review

After completing steps 1 to 4 we can move on to the last stage namely, 'review' of SQ3R technique. At this stage, first, we need to test ourselves by covering the key points whether we remember them. If we are successful in this attempt, we can check the correctness by referring to the text. Otherwise, we can reread or expand our notes or discuss with our friends the main



points. These steps will enable us to review the text and its salient points. Go through the solved reading comprehension exercises in the CD (text supplements) and then assess your skills.

STUDY SKILLS

Besides employing various techniques while reading a text, you need to apply certain skills in order to make the most of your comprehension. These skills may be useful in answering your reading comprehension questions. Two important skills, namely note-making and sequencing of sentences are discussed in this section.

Note-making

Note-making is a systematic process of writing down important information, ideas, facts, viewpoints, and arguments contained in a written text for future reference. Note-making is necessary to recall the main ideas in what you have read as you may not be able to keep in mind all important information contained in a variety of material you may be reading. You would need to develop qualities such as quick comprehension, identification of main ideas, and recognition of their relevance to your needs, besides an ability to record them with quickness and precision. The following are some formal note-making methods:

- Outline/linear method
- Sentence/categorical method
- Schematic/mapping method

We will discuss each of these methods for making notes from the following passage on Indian economy.

Indian Economy

Just over a decade after the Indian economy began shaking off its statistic shackles and opening to the outside world, it is booming. The surge is based on strong industry and agriculture, rising Indian and foreign investment and consumer spending by a growing middle class. After growing just 4.3 per cent last year, India's economy is widely expected to grow close to 7 per cent this year.

The growth of the past decade has put more money in the pockets of an expanding middle class, about 30 crores strong, and with more choices in front of them, their appetites are helping to fuel demand-led growth for the first time in decades.

India is now the world's fastest growing telecom market, with more than ten lakh mobile phone subscriptions each month. Indians are buying about 10,000 motorcycles and scooters a day and 20,000 cars per month. Banks are now making two crores a year in home loans, with the lowest interest rates in decades and thus helping to spur spending on building. Credit and debit cards are slowly but steadily gaining momentum.

The potential for even more market growth is enormous, a fact recognized by multinational and Indian companies alike. For example, in 2001, according to census figures, only 31.6 per cent of the country's 18 crore households had a television, and 2.5 per cent a car, jeep, or van.

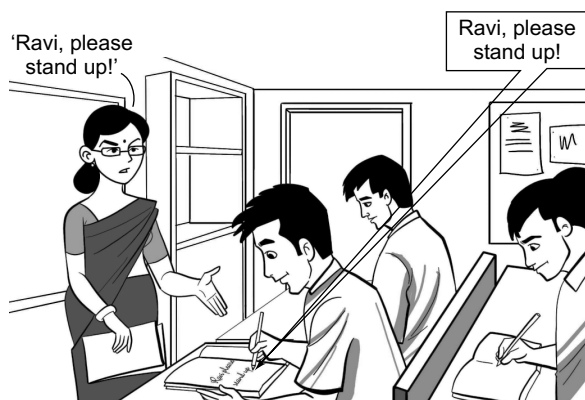
Outline/Linear method

In this method, you need to identify the main ideas and the corresponding main and subsidiary points from the reading text and arrange them in a table consisting of two columns. Use the first column for writing down the main ideas and the second one for the corresponding main and subordinate points of each main idea. You can distinguish between the main and subordinate points by using indentation or two levels of bullets, as shown below.

Boom in economy due to liberalization	• Liberalization of economy ◇ strong industry ◇ strong agriculture ◇ rising investment ◇ consumer spending by growing middle class ◇ expected growth this year 7 per cent from 4.3 per cent last year
Growth spurred by demand	• Demand ◇ demand-led growth because of consumer spending by growing middle class (30 crores) ◇ more money ◇ more choices ◇ more demand
India—fast-growing market	• India—fast-growing market ◇ 10 lakh mobile phone subscriptions each month ◇ 10,000 motorcycles and scooters sold daily ◇ 20,000 cars sold per month ◇ banks earning 2 crores in home loans
Enormous potential for further growth	• Potential for further market growth enormous ◇ in 2001 only 31.6 per cent households (18 crore) had a television ◇ only 2.5 per cent owned a car, jeep, or van

Sentence method

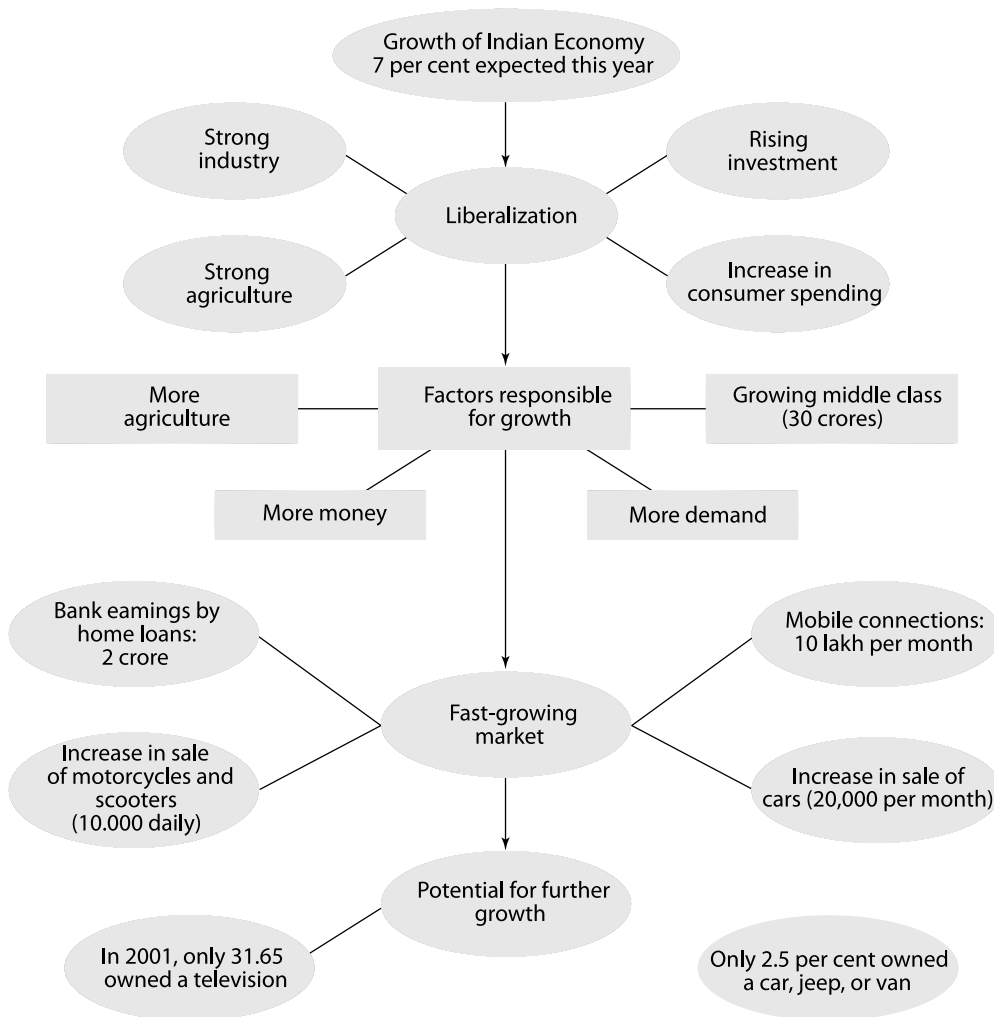
In this method, also known as the categorical method, sentences are used to represent the main idea and subordinate ideas. Generally, the text contains one main idea/thought/fact in one paragraph and this is supported by several supporting points. You will have to identify the main and subordinate ideas and write them as short sentences. As mentioned earlier, you may be able to identify the topic sentence in each paragraph. All you have to do is to write the topic sentence in your notes, after editing it, if necessary. Then you should identify the sub-points and write them down below the sentence containing the main point. You might have observed that this method resembles the linear method, the only difference being the use of sentences in place of words or phrases, as shown below for the passage on Indian economy.



Ravi's notes are always complete. He never misses a thing the teacher says.

- There is a boom in Indian economy due to liberalization.
 - It is based on strong agriculture and industry.
 - There is an increase in Indian and foreign investment.
 - There is greater consumer spending, especially by growing middle class.

- The growth rate expected this year is 7 per cent.
- The growth has been spurred by demand.
 - There is greater consumer spending by growing middle class (about 30 crore).
 - There are more choices, more money, and, hence, more demand.
- India has become a fast-growing market.
 - 20,000 cars are sold and 10 lakh mobile phone connections are issued every month.
 - 10,000 motorcycles and scooters are sold everyday.
 - Banks are earning about 2 crore as interest on home loans every month.
- There is enormous potential for further growth.
 - In 2001, only 31.6 per cent of households had TV.
 - In the same year, only 2.5 per cent owned a car, jeep, or van.



Schematic/Mapping method

You must be aware of mind-mapping technique used for categorizing your ideas on a particular topic where you use circles, blocks, and arrows to represent various main and subordinate ideas. The schematic or mapping method also is a semi-graphic representation of the contents of a text to show the relationship of each point or idea to other facts and ideas contained therein. In fact, this method has an edge over other methods as you can record a great deal of information in less space and also show the complex relationships among several ideas and facts. Given below are some tips on using this method for your note-making tasks:

- Represent the main ideas in a central box/circle.
- Depict the subordinate ideas as though they are radiating from this central image.
- Use branches attached to the higher-level branches to represent further minor points.
- Ensure that the branches form a connected nodal structure.

Practice 1

Read the following passage and make notes from it. You can use any of the three methods explained in the preceding discussion.

The march of scientific mechanization over industry, throughout the world, is unabated, so is the misery of the poor. Equally unchecked is the thriving of a few among the upper rungs of industrial hierarchy and the bureaucratic and political echelons. One feels proud of the scientific innovations in the manufacturing process where manpower is speedily being replaced by capital potential. The researches in the field are so swift that the labour factor is gradually being eliminated. Automation has withdrawn hazards from man but has offered him unemployment. In the progressing countries, where there is no check on population, scientific industrialization has become an eye sore on the job front. It has resulted in long queues at the employment exchanges.

Scientific industrial development has proved manna for the progressive countries of Western Europe, Canada, the USA, and Japan. They reap certain advantages over the backward nations. It has provided a luxurious life even to the common man there. Scientific researches result in mass production of commodities. Thus, the West has a huge surplus of finished goods to flood the world market and to reap profits. The resultant economic growth in these countries enables them to proceed with further scientific researches to make their industries more capital oriented. Thus they always have an advantage over the backward countries.

Notwithstanding the backwardness or poverty, scientific industrialization is responsible for an increase in the gross national product in progressing countries like India too. But it creates two-fold problems. The advantages of this increase in gross national product are reaped by the rich for it is they who have invested money. The growth of capital too is their prerogative. The profits and interest go to the coffers of the industrialists. The fruits of progress and mechanization do not go the poor. It is only a class—a group that benefits from the scientific development not all.

(Source: Bhatia, M.P., *A Handbook of Applied Grammar and Composition*, 8th Edition, p. 138, M.I. Publications, Agra, 2005)

Understanding Discourse Coherence

The term discourse refers to a serious speech or a piece of writing on a particular subject and the term coherence refers to the logical development of ideas within a text and it is an important sub-skill for you to be aware of. A coherently structured discourse is assumed to be a collection of sentences, and in turn paragraphs, that are ordered such that they make good

sense in some relation to each other. We usually expect written texts to be coherent, meaningful communications in which the words and/or sentences are linked to one another.

Incoherence can arise from too much or too little information as well as from incorrectly ordered sentences or thoughts. It is important to ensure that the reader understands the relation between the various thoughts expressed in a discourse. We normally use our own interpretations and perceptions of familiar situations and concepts while reading/hearing discourses of interest. Therefore, it must be ensured that there is no scope for ambiguity, especially in technical discourses.

To clearly express the relationship between the various segments of a discourse, and thereby effectively communicate the intended meaning, you can use a variety of expressions such as the following:

but, yet, so, as, and, since, while, similarly/likewise/in the same way, on the other hand/on the contrary/contrariwise/whereas/while/however/yet/although/nevertheless/nonetheless/whereas/unlike/despite/in spite of/even so, therefore/as a result/as a consequence/consequently/thereby/thus, because/due to/on account of/inasmuch as, though/although/even though, in addition/moreover/furthermore, either...or, neither...nor, of course, in fact/clearly/evidently/obviously/actually/indeed/surely/certainly, so that/so as to/in order to, in other words/that is/to put it differently/to repeat/namely, for instance/for example, hence/in conclusion/to sum up/at last/finally

These words are known as transitional words or phrases that join one idea to another idea. You can use transitions within a paragraph as well as between paragraphs. They help your reader to follow from one idea to the next smoothly. These words/phrases are also known as connectors, markers, or signal words.

Discourse markers help you develop ideas and relate them to one another. They indicate how one piece of text is connected to the other. They show the connection between what has already been written and what is going to be written. But remember not to overuse these markers, as doing so would not only make the style of your text artificial but also affect its smooth flow. A few examples of discourse markers that provide coherence between various parts of the text are discussed below.

Example 1

The following expressions are used to focus on the contrast or contradiction between two ideas or issues

On the one hand ... on the other hand, on the contrary, nevertheless, nonetheless, whereas, despite, in spite of, despite, however, yet, although, while.

By emphasizing the contrast, you can signal the switch of direction in your argument.

1. Most of the students enjoy doing chemistry experiments in the lab. *On the other hand*, they hate performing physics experiments.
2. Some people prefer to spend most of their time alone. *However*, some others enjoy most of their time in the company of their friends.
3. *On the one hand*, we have people who are without work and, *on the other*, we have countless jobs which are not being done.

Example 2

Markers such as *in addition to, furthermore, moreover, as well as, also, too, neither... nor, nor*, and *neither* are used to show addition. You can use them to signal the reader that you are about to add an additional reason or example to substantiate your claim. See the following examples:

1. First, they have a desire to conquer nature to achieve the most difficult and most impossible task. *Moreover*, their spirit of adventure and interest in exploring unknown places provide them the impetus to go mountaineering.

2. Minicomputers are the cheapest, smallest, and slowest. *In addition* to these advantages, they rarely occupy more than one room and are often used for a particular kind of work such as data analysis in a research laboratory.

Example 3

You can use expressions such as *as a result*, *as a consequence*, *consequently*, *thereby*, *thus*, *therefore*, and *hence* to show the effect or result of an action.

1. Scientists have worked hard to develop ways to decrease infant mortality rate and increase longevity. *As a result*, more people are living longer and scientists will soon have to develop some methods with which to control overpopulation.
2. The team completed the given assignment in record time and proved their efficiency. *Consequently*, the company appreciated their efforts and offered them few more prestigious projects.

Example 4

The expressions such as *regarding*, *with regard to*, *with respect to*, *as regards*, *as far as ... is concerned*, and *as for* are used to draw your readers' attention to something that you are going to say next. Among these expressions *as for*, *as far as ... is concerned*, and *as regards* would enable you to inform your readers in advance that there will be a shift in the subject. Look at the following sentences:

1. This manual provides you with all guidelines pertaining to the working of automatic grinders. *As for/as regards* the manual grinders, you need to look into the supplementary booklet.
2. This company is reputed for its purification process for various liquids. *As far as* the purification of water is concerned, it needs to resort to a different method.
3. *With regard to/regarding/with respect to* this new technology developed by our research division, I would like to specify that it could withstand high temperatures.

From the preceding discussion, we can say that a text is coherent when it flows smoothly in a clear direction and when all the sentences are logically arranged.

The following points need to be kept in mind in order to achieve discourse coherence:

- Avoid using too many short, choppy sentences.
- Organize your sentences in a logical sequence.
- Use transitions that suit your purposes, taking care to avoid their overuse.

Example of incoherent paragraph

Canadian software companies face several tough challenges in the new millennium because of 'brain drain', the weak Canadian dollar, and the monopoly held by their American counterparts. However, the Canadian dollar continues its downward spiral even today. 'Brain drain' is a bad thing. Our greatest resources are leaving. Microsoft is squeezing out its competitors. In comparison, if the 'brain drain' continues, Canadian companies will find it difficult to produce innovative software. The weak dollar will hurt us. It will help the Americans.

(Source: <http://www.writingcentre.ubc.ca/workshop/tools/unity.htm>)

The paragraph above is incoherent because it uses choppy sentences ineffectively, arranges the ideas illogically, and uses transition words in improper contexts. The following paragraph is an example of a coherent paragraph.

Example of coherent paragraph

Canadian software companies face several tough challenges in the new millennium because of 'brain drain', the weak Canadian dollar, and the monopoly held by American corporations. 'Brain drain' is a catchy new term for the practice of American companies enticing brilliant Canadian doctors, scientists, researchers, programmers, and business people to cross over the border into the United States. The US firms lure Canadian talent with the strong American dollar and the competitive research and business edge

that many such companies have as a result of industry monopolies. Simply put, Canadian companies are being soundly beaten because they find themselves on a playing field that is no longer level.

(Source: <http://www.writingcentre.ubc.ca/workshop/tools/unity.htm>)

Notice how each sentence flows logically into one another. The paragraph stays consistent with both the content and the organization of the topic sentence.

Practice 2

The passage given below does not include adequate discourse markers for coherence. Combine/rearrange sentences if necessary and use appropriate transitional words/phrases so as to make the text coherent:

The ancient Egyptians were masters of preserving dead people's bodies by making mummies of them. Mummies several thousand years old have been discovered nearly intact. The skin, hair, teeth, fingernails and toenails, and facial features of the mummies were evident. It is possible to diagnose the disease they suffered in life, such as smallpox, arthritis, and nutritional deficiencies. The process was remarkably effective. Sometimes apparent were the fatal afflictions of the dead people: a middle-aged king died from a blow on the head and polio killed a child king. Mummification consisted of removing the internal organs, applying natural preservatives inside and out, and then wrapping the body in layers of bandages.

Sequencing of Sentences

The process of sequencing the sentences in a text or, in other words, arranging the order in which the sentences need to logically appear in a text, is closely related to what you have learnt just now, that is, discourse coherence. If you are clear about the concept of discourse markers you may be able to identify the order in which the sentences need to be organized in a text. Look at the following paragraph:

In Chapter 3, we report a study that found that subjects perceive as variable units only what the theory claims is a unit. Another series of crucial studies is the comparison and contrast experiments reported in Chapter 4, which shows that we do not distinguish complex concepts of different lengths as some current theories do. To a great extent, we have succeeded in showing our theory is valid. Our main concern was to empirically test the theory that forms the background for this work. Chapter 2 reports a study which shows that the rate of perceiving variations in length relates directly to the number of connectives in the base structure of the test.

Are the sentences logically organized? No. What has gone wrong and how can you rectify this mistake? Given below are some steps to arrange the sentences of the text in a logical and coherent manner:

- Read all the sentences and try to identify the topic sentence.
- Place it in the beginning of the text/paragraph.
- Look for discourse markers such as signal words, pronouns, repetitions, synonyms, etc.

Here is the revised version beginning with the topic sentence and containing the supporting sentences in a logical order:

Our main concern was to empirically test the theory that forms the background for this work. To a great extent, we have succeeded in showing our theory is valid. Chapter 2 reports a study which shows that the rate of perceiving variations in length relates directly to the number of connectives in the base structure of the test. In Chapter 3, we report a study that found that subjects perceive as variable units only what the theory claims is a unit. Another series of crucial studies is the comparison and contrast experiments reported in Chapter 4, which shows that we do not distinguish complex concepts of different lengths as some current theories do.

Practice 3

Rearrange the following sentences in a logical and sequential way so as to make a coherent paragraph:

- (a) The dual purpose bicycle has a permanent attachment and modified broad stand cum carrier.
- (b) There are two types of pedal power devices in existence today.
- (c) This modified bicycle is called a dual-purpose bicycle.
- (d) It can also be used to power a drill, a woodworking lathe, and a circular saw.
- (e) The second type of pedal power device is a modified bicycle, which can be used both as a vehicle for transportation as well as power production.
- (f) Some examples are paddy threshers, winnowers, groundnut shell removers, small water-pumps, and grinders.
- (g) This rotary motion can be used to operate machines such as threshers, winnowers, pumps, woodworking lathes, and metal lathes.
- (h) The first type is a stationary one, in which bicycle parts such as the frame, crank, chain, and free wheel are used to produce a rotating motion.

SUMMARY

How we are reading a text is as important as what we are reading. By skimming and scanning a text we may be able to get its gist. In addition, by applying certain other techniques such as summarizing, predicting the content, and anticipation, and by practicing certain study skills, such as note-making and sequencing

sentences in a text, we will be able to improve the effectiveness and efficiency of our reading comprehension. Besides using all these techniques, we can also use the SQ3R reading technique to enhance our reading comprehension skills.

EXERCISES

1. Read the following passage and then answer the questions that follow:

It is like a horror movie without an end. Scenes of death and devastation brought on by the 'worst ever quake to hit the country since independence' are now etched permanently in our memory. On the morning of January 26, 2001, the unstable earth under the Rann of Kutch in Northern Gujarat heaved and collapsed causing an earthquake recorded 6.9 on the Richter scale (China recorded 7.4 and the U.S. measured 7.9 due to different methods of calculation). But no scale can possibly measure the magnitude of the desolation and sorrow that the killer quake left behind in the villages, towns, and cities of Gujarat. Places like Bhuj, Anjar Bachau, and Sukhpar have been completely flattened. Buildings collapsed trapping thousands of people in the rubble and left the

survivors with nothing to live for. We saw the grief-stricken faces of those who had lost their families, distraught men, women, and children huddled in the open in the cold night, and terrified villagers on foot desperately looking for places that might be safe.

What causes an earthquake? The surface of the earth is made of huge plates. They slowly move over, under, and past each other. Sometimes, the movement is gradual. At other times, the plates lock into one another unable to release the energy created by the movement. When this accumulated energy grows strong enough, the plates break free and snap into a new position. Vibrations make the structures around quiver and shake and fall. The fracture in the earth's crust is called a 'fault'. If all the stress has not been released, more tremors (aftershocks) can occur in the fault zone.

The epicentre is the point on the earth's surface directly above where the quake is focussed.

Earthquakes can occur beneath the ocean floor. Then immense waves (tsunamis) as high as 15 metres caused by the freed energy travel across the waters at great speed and reach the shores. They engulf the coastal areas and cause severe damage. India has a grim history of earthquakes. Calcutta (1737, 300,000 dead) and Assam (1897) saw the worst of them. A series of tremors ravaged Udaypur, Uttarkashi, Chamoli, Latur, and Jabalpur in the last twelve years. The Rann of Kutch itself lost 2000 people in the 1819 quake and again in 2001 the death toll was close to 20,000. Dams built in the quake-prone areas, concentration of population, decrease in groundwater level can all be reasons for these disasters, say environmentalists. Dr R. Bilham of Colorado warns that because of the southward movement of the surface, 60 per cent of the Himalayas are overdue for a quake.

- (a) Say whether the following statements are true or false:
- Rann of Kutch suffered earthquake in the year 1897.
 - Earthquake in the ocean causes huge waves up to 15 metres.
 - The Himalayas are prone to earthquake.
 - Calcutta and Assam saw the worst earthquake in the last 12 years.
 - Dr R. Bilham of Colorado is an environmentalist.
- (b) Write short answers within one or two sentences:
- What do you mean by fault?
 - What is epicentre?
 - State a few reasons for the cause of an earthquake?
 - In correct chronological order, mention the places affected due to earthquake.
- (c) Choose the most appropriate answer:
- Which one of the following is not a cause for earthquake?
 - Dams built in the quake-prone area
 - Concentration of population
 - Decrease in groundwater level
 - Himalayan mountains
 - The exact intensity of 26 January earthquake in Kutch was

- 6.9 in Richter scale
- 7.4 in Richter scale
- 7.9 in Richter scale
- 6.7 in Richter scale

- (d) Complete the following sentences:
- The worst earthquake that hit in dependent India is _____.
 - Tsunami is the name of _____.
- (e) Fill in the blanks with suitable words:
- Because of the _____ movement, 60% of the Himalayan region is overdue for a quake.
 - Another name for an earthquake is _____.

2.(a) Scan the passage on 'Extraction of Gold' given below quickly to identify the types of mining and the ways of obtaining pure gold. Then fill the blanks in the following sentences:

- Two types of mining are _____ and _____.
- Three ways of obtaining pure gold are _____, _____, and _____.

Extraction of Gold

The method of mining gold varies with the nature of the deposit. Two types of deposit can be considered here: one is placer deposit, which refers to the occurrence of gold in particles in the sand or gravel in the bed of a river; the other is lode mine, which refers to gold occurring as veins in gravel or rock. In placer mining, the separation of gold from gravel or other impurities is done by sifting. Hand panning is also common, in which water and gold-containing gravel are swirled in a pan. Gold, being heavy, settles down, and the gravel is washed away. In lode mining, shafts are dug into the rock following the veins of gold. Using explosives, the rock is broken and the ore is obtained. The ore is then transported to mills.

In milling, the ore is first crushed using heavy machines. This is followed by sluicing, that is, using water to wash the ore into sluices or artificial water-channels in which there are grooves which trap the gold.

There are three ways in which this gold is treated to obtain pure gold. They are floatation, amalgamation, and cyanidation. In the first method, a frothing agent is added to produce

foam. A collecting agent is used to produce a film on the gold, which then sticks to the air bubbles. Gold is then separated from the top. In amalgamation, the ore, mixed with water to form a pulp, is collected on a copper plate covered with mercury. The mercury is then removed, partly by squeezing it out and partly by distillation. The cyanide process is now widely used. In this process, a weak solution of sodium, potassium, or calcium cyanide is used to dissolve the gold. The gold is then precipitated by the addition of zinc dust.

The gold thus obtained is smelted and cast into bars.

3. Read the following passage and answer the questions that follow as directed:

The Fight against Wound Infections

In 1865, the British surgeon Joseph Lister (1827–1912) succeeded in devising for the first time a truly antiseptic principle for treating wounds. Until the middle of the nineteenth century, surgery was not only a very gruesome trade—as there was no general anesthesia before that time—but also a dangerous method of treatment, which was always followed by a protracted and often fatal infection.

The patients died even after the slightest operation. All wounds suppurated, and in the hospital wards the sweetish smell of pus everywhere prevailed. The ancient doctrine that this was ‘good and laudable pus’, and must, therefore, be regarded as a sign of the favourable healing of the wound, was not yet dead.

In the hospitals of Lister’s time, ‘charpie’ was used as a dressing. Charpie was made out of old linen cloth, which had become easily teased through frequent boiling, and attendants and patients who were not very ill teased out threads of varying lengths and thicknesses; and these threads were then brought together again to make a soft, absorbent material. Before it was used to pack a wound or as a dressing, the charpie was washed only with cold water without soap—and often it was not washed at all. The instruments and the sponges used to staunch blood were likewise washed only in cold water.

Like all surgeons in all countries Lister was troubled by the fact that a compound fracture—that is, a fracture in which one or both of the broken ends of the bone has pierced the overlying skin

and soft tissues—never did well, and that in such cases, amputation of the limb nearly always had to be performed. Further, in all countries, the mortality rate from septic diseases after amputation varied between 30 per cent and 50 per cent. This was a dreadful state of affairs. As a preliminary to an attack on this problem, Lister had long been carrying out important work on inflammation and the behaviour of the blood during that process. He was led to the conclusion that wound suppuration was decomposition (or putrefaction) brought about by the effect of the atmosphere on blood or serum contained in the wound. But Lister was handicapped by the belief, widely held at that time, that putrefaction was due to oxygen in the air. He spent much time trying to exclude the air from wounds but not unexpectedly, these efforts were unsuccessful. Then in 1865 Lister learned for the first time about the important work of the French chemist Louis Pasteur (1822–1895) on that ‘organized corpuscles’ (i.e., living bacteria) are present everywhere in the air. This was the clue for which Lister was searching. He deduced that in the case of septic or ‘putrefying’ wounds, it was not the air itself but the organisms in the air which caused the sepsis.

Lister decided that these organisms must be killed before they obtained access to the wound. He tested the killing effect of a number of substances on bacteria; and after very careful experiments, he decided to use carbolic acid, not only as a wound-dressing, but in a systematic manner so as to prevent suppuration entirely in the part concerned. The hands of the surgeon and his assistants, and also all the instruments to be used, were soaked in a solution of carbolic acid. So also was the wound itself, and Lister did a lot of research in order to find suitable materials for dressings which would give off the carbolic acid slowly into the wound. For many years also Lister had the atmosphere in the operating theatre sprayed with a fine mist of carbolic acid, and the spray was also used during the change of a dressing. But it was later shown that the spraying of the atmosphere was not necessary.

Having, after these experiments, decided on the method he would employ, Lister tried out his new principle on 12 August 1865 in the treatment of a compound fracture in a patient in his ward in

the Glasgow Royal Infirmary. A perfect result was obtained. Two years later Lister published a series of cases treated by the aid of his principle, and within a short time he was performing operations which previously, because of the danger of sepsis, would not have been undertaken by any surgeon.

Lister's methods soon found favour in Scotland, but English surgeons were very slow to adopt them. It is to the credit of German surgeons that they understood, perhaps more quickly and more thoroughly than any other, the revolution in surgery which Lister had effected. His antiseptic principle was enthusiastically supported in Germany and it led to the great technical advances of German surgeons.

(Source: Pollak, K. and Underwood, E.A., *The Healer*, Nelson, 1968)

- (a) Complete each of the given sentences with a verb from the following list. Use each verb only once.

supported, performed, undertaken, deducted, soaked, led, sprayed, followed, varied, troubled, obtained, effected

- (i) In the middle of the nineteenth century a surgical operation was _____ dead.
- (ii) Lister was _____ by the fact that in the case of compound fracture, the affected limb had to be removed.
- (iii) The mortality rate after amputation _____ from 50 per cent to 30 per cent.
- (iv) Lister was _____ to believe that pus was formed by the effect of the atmosphere on the blood or serum contained in the wound.
- (v) Lister _____ that organisms in the air caused sepsis.
- (vi) Lister _____ a perfect result when he applied the antiseptic principle on the treatment of a compound fracture in a patient.
- (vii) Lister _____ all the instruments in a solution of carbolic acid before they were used for any surgical operation.
- (viii) Lister ensured that the atmosphere in the operating theatre was _____ with carbolic acid.
- (ix) In Lister's time, surgery was _____ in very bad conditions.
- (x) Lister began to do such operations which no one would have _____ some years back.

- (b) A doctor who performs operations is called a surgeon. Try to match the name of the specialist in the left column with his/her specialty in the right column.

<i>Name</i>	<i>Specialty</i>
(i) ophthalmologist	women's diseases
(ii) neurologist	nature of diseases
(iii) cardiologist	skin
(iv) dermatologist	mental illness
(v) gynecologist	illness of children
(vi) pathologist	nerves
(vii) psychiatrist	heart
(viii) paediatrician	eyes

- (c) Here is an outline of the main ideas used in the reading passage. Construct a summary of the passage from these ideas after reading the passage again.

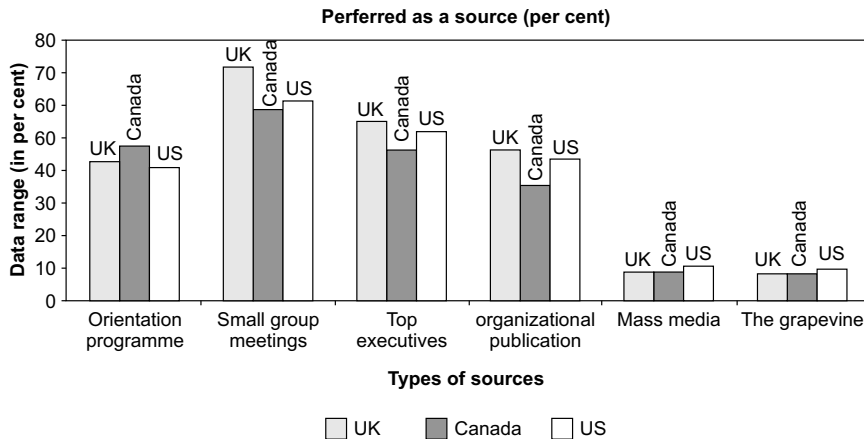
Surgery before 1865 was very dangerous ____ A compound fracture never did well ____ Morality rate from these diseases varied between 30 per cent to 50 per cent ____ suppuration was caused by the effect of the atmosphere on the blood ____ suppuration was due to oxygen in the air ____ Lister learnt from Louis Pasteur that it was not by the living bacteria ____ He used carbolic acid ____ On 12 August 1865, he successfully experimented with his new ____ for treating ____ His revolution was ____

4. Use the appropriate form of the words given in the following list to fill the gaps in the paragraph that follows.

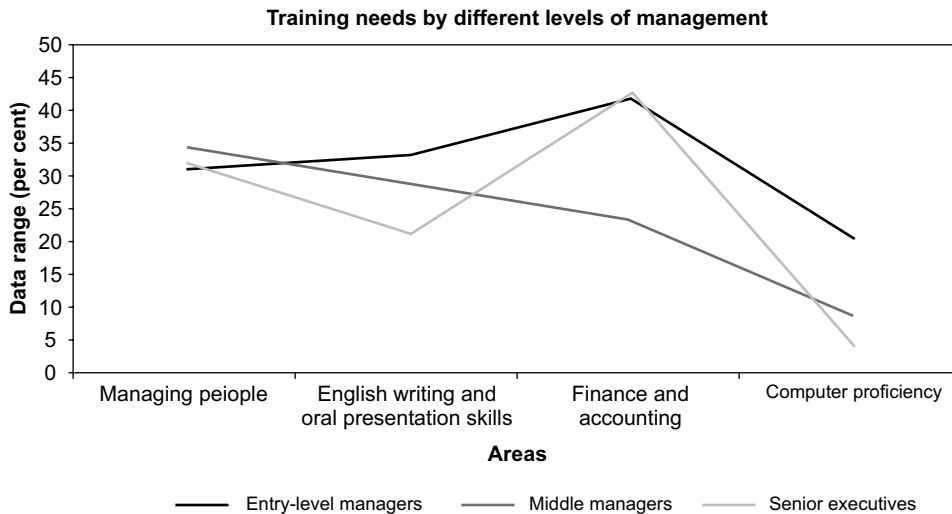
renowned, globe, maintenance, option, survival, drawback, estimate, objective, disease, contaminated

The India Mark II hand pump is _____ all over the world. Clean drinking water is the key to human _____. The United Nations _____ that 80 per cent of all _____ in the world are caused by water. The United Nations' _____ is to provide clean drinking water for every man, woman, and child around the _____ by the year 1990. They considered many but finally decided that a hand pump was the best solution. Older types of pump used before the India Mark II had a number of _____, for example, they did not last very long. The India Mark II is very successful but it has one problem: that is the _____ of the pump over a period of time.

5. The bar chart given below provides the comparative figures of the major sources of information in the manufacturing organizations of three countries, namely, the United Kingdom, Canada, and the United States. Interpret this chart and write a paragraph of about 200 words including the comparative analysis.



6. Interpret the line graph given below. It depicts the training needs (in %) of entry level and the middle level managers in various areas in an organization. Including the information represented by all the three lines in the illustration, write a paragraph of about 150 words.



7. Read the following passage and make notes from it using the mapping method.

The use of heat pumps has been held back largely by scepticism about advertisers' claims that heat pumps can provide as many as two units of thermal energy for each unit of electrical energy used,

thus apparently contradicting the principle of energy conservation.

Heat pumps circulate a fluid refrigerant that cycles alternatively from its liquid phase to its vapour phase in a closed loop. The refrigerant, starting as a low-temperature, low-pressure vapour,

enters a compressor driven by an electric motor. The refrigerant leaves the compressor as a hot, dense vapour and flows through a heat exchanger called the condenser, which transfers heat from the refrigerant to a body of air. Now the refrigerant, as a high-pressure, cooled liquid, confronts a flow restriction which causes the pressure to drop. As the pressure falls, the refrigerant expands and partially vapourizes, becoming chilled. It then passes through a second heat exchanger, the evaporator, which transfers heat from the air to the refrigerant, reducing the temperature of this second body of air. Of the two heat exchangers, one is located inside, and the other one outside the house, so each is in contact with a different body of air: room air and outside air, respectively.

The flow direction of refrigerant through a heat pump is controlled by valves. When the refrigerant flow is reversed, the heat exchangers switch function. This flow-reversal capability allows heat pumps either to heat or to cool room air.

Now, if under certain conditions, a heat pump puts out more thermal energy than it consumes in electrical energy, has the law of energy conservation been challenged? No, not even remotely: the additional input of thermal energy into the circulating refrigerant via the evaporator accounts for the difference in the energy equation.

Unfortunately, there is one real problem. The heating capacity of a heat pump decreases as the outdoor temperature falls. The drop in capacity is caused by the lessening amount of refrigerant mass moved through the compressor at one time. The heating capacity is proportional to this mass flow rate: the less the mass of refrigerant compressed the less the thermal load it can transfer through the heat pump cycle. The volume flow rate of refrigerant vapour through the single-speed rotary compressor used in heat pumps is approximately constant. But cold refrigerant vapour entering a compressor is at lower pressure than warmer vapour. Therefore, the mass of cold refrigerant and thus the thermal energy it carries is less than if the refrigerant vapour were warmer before compression.

Here, then, lies a genuine drawback of heat pumps: in extremely cold climates—where the

most heat is needed—heat pumps are least able to supply enough heat.

8. Read the following paragraph and write down which words indicate the author's opinion. Also explain what his opinion is.

There is the first problem with tipping: the more discretion you have in the matter the more unpleasant it is. Tipping is an aristocratic conceit—'There you go, my good man, buy your starving family a loaf'—best left to an aristocratic age. The practising democrat would rather be told what he owes right up front. Offensively rich people may delight in peeling off hundred dollar bills and tossing them out to grovelling servants. But no sane, well-adjusted human being cares to sit around and evaluate the performance of some beleaguered coffee vendor.

9. Read the following passage carefully and answer the questions in your own words.

The most frightening aspect of malnutrition is that it is likely to cause permanent damage to the brain. Experiments carried out on animals suggest that brain damage due to malnutrition is irreversible. This may not be true of human beings. Nevertheless, known facts as well as results of tests conducted so far point to alarming conclusions. The human brain grows very fast. Three months before its birth, the child's brain weighs one-fourth of the adult's brain. In one year, the brain of a child is already 66 per cent of the weight of the adult brain. At four years the brain weighs 90 per cent and at eight the child's brain is the size of an adult's and there is no further increase. Quite obviously the first four years are crucial for the development of the brain. And if the child suffers from malnutrition, the damage to the brain may well be permanent.

Fortunately and thanks to the research carried out by scientists in India and abroad and systematic attempts made by the National Institute of Nutrition, Hyderabad, to analyse the causes of malnutrition in this country, one need not wait for years to solve at least some aspects of the problem.

For instance, it was found that the addition of iodine in the lake-water salt consumed in the sub-Himalayan region would go a long way to controlling goitre. Again, experiments made by the Institute reveal that inexpensive green leafy

vegetables are a good alternative to eggs and butter as a rich source of Vitamin A.

The Institute has also carried out considerable research into fortification of various foods. Modern bread is a case in point. But since bread is beyond the means of the poor the Institute has found some items of mass consumption which can be strengthened with certain proteins and amino acids. Fortification of common salt is considered the most promising possibility.

Questions

- (a) What is the most serious harm that may be caused by malnutrition in childhood?
- (b) Why is good nourishment so essential during the first four years of child's life?
- (c) What suggestions have been made by the National Institute of Nutrition for controlling goitre in certain parts of India?
- (d) List the other three suggestions made by the Institute for curing the ill effects of malnutrition.

10. Each passage in this group is followed by questions based on its content. After reading a passage, choose the best answer to each question. Answer all questions following a passage on the basis of what is stated or implied in that passage.

Passage 1

After inventing dynamite, Swedish-born Alfred Nobel became a very rich man. However, he foresaw its universally destructive powers too late. Nobel preferred not to be remembered as the inventor of dynamite, so in 1895, just two weeks before his death, he created a fund to be used for awarding prizes to people who had made worthwhile contributions to humanity. Originally, there were five awards: literature, physics, chemistry, medicine, and peace. Economics was added in 1968, just sixty-seven years after the first awards ceremony. (5)

Nobel's original legacy of nine million dollars was invested, and the interest on this sum is used for the awards which vary from \$30,000 to \$125,000. (6)

Every year on 10 December, the anniversary of Nobel's death, the awards (gold medal, illuminated diploma, and money) are presented to the winners. Sometimes politics plays an important role in the judges' decisions. Americans have won numerous science awards, but relatively few literature prizes. (9)

No awards were presented from 1940 to 1942 at the beginning of World War II. Some people have won two prizes, but this is rare; others have shared their prizes. (11)

- (a) The word 'foresaw' in sentence 2 is nearest in meaning to
 - (i) prevailed (iii) prevented
 - (ii) postponed (iv) predicted
- (b) The Nobel Prize was established in order to
 - (i) recognize worthwhile contributions to humanity
 - (ii) resolve political differences
 - (iii) honour the inventor of dynamite
 - (iv) spend money
- (c) In which area have Americans received the most awards?
 - (i) Literature (iii) Economics
 - (ii) Peace (iv) Science
- (d) All of the following statements are true EXCEPT
 - (i) awards vary in monetary value
 - (ii) ceremonies are held on 10 December to commemorate Nobel's invention
 - (iii) politics plays an important role in selecting the winners
 - (iv) a few individuals have won two awards
- (e) In how many fields are prizes bestowed?
 - (i) 2 (iii) 6
 - (ii) 5 (iv) 10
- (f) It is implied that Nobel's profession was in
 - (i) economics (iii) literature
 - (ii) medicine (iv) science
- (g) In sentence 3, 'worthwhile' is closest in meaning to
 - (i) economic (iii) trivial
 - (ii) prestigious (iv) valuable
- (h) How much money did Nobel leave for the prizes?
 - (i) \$30,000 (iii) \$155,000
 - (ii) \$125,000 (iv) \$9,000,000
- (i) What is the main idea of this passage?
 - (i) Alfred Nobel became very rich when he invented dynamite.
 - (ii) Alfred Nobel created awards in six categories for contributions to humanity.
 - (iii) Alfred Nobel left all of his money to science.
 - (iv) Alfred Nobel made a lasting contribution to humanity.
- (j) The word 'legacy' in sentence 6 means most nearly the same as

- (i) legend (iii) prize
- (ii) bequest (iv) debt

Passage 2

Ever since humans have inhabited the earth, they have made use of various forms of communication. Generally, this expression of thoughts and feelings has been in the form of oral speech. When there is a language barrier, communication is accomplished through sign language in which motions stand for letters, words, and ideas. Tourists, the deaf, and the mute have had to resort to this form of expression. Many of these symbols of whole words are very picturesque and exact and can be used internationally; spelling, however, cannot. (5)

Body language transmits ideas or thoughts by certain actions, either intentionally or unintentionally. A wink can be a way of flirting or indicating that the party is only joking. A nod signifies approval, while shaking the head indicates a negative reaction. (8)

Other forms of non-linguistic language can be found in Braille (a system of raised dots read with the fingertips), signal flags, Morse code, and smoke signals. Road maps and picture signs also guide, warn, and instruct people. (10)

While verbalization is the most common form of language, other systems and techniques also express human thoughts and feelings. (12)

- (a) Which of the following best summarizes this passage?
 - (i) When language is barrier, people will find other forms of communication.
 - (ii) Everybody uses only one form of communication.
 - (iii) Non-linguistic language is invaluable to foreigners.
 - (iv) Although other forms of communication exist, verbalization is the fastest.
- (b) The word 'these' in sentence 5 refers to
 - (i) tourists
 - (ii) the deaf and the mute
 - (iii) thoughts and feelings
 - (iv) sign language motions
- (c) All of the following statements are true EXCEPT
 - (i) there are many forms of communication in existence today

- (ii) verbalization is the most common form of communication
- (iii) the deaf and mute use an oral form of communication
- (iv) ideas and thoughts can be transmitted by body language
- (d) Which form other than oral speech would be most commonly used among blind people?
 - (i) Picture signs (iii) Body language
 - (ii) Braille (iv) Signal flags
- (e) How many different forms of communication are mentioned here?
 - (i) 5 (iii) 9
 - (ii) 5 (iv) 11
- (f) The word 'wink' in line 7 means most nearly the same as
 - (i) close one eye briefly
 - (ii) close two eyes briefly
 - (iii) bob the head up and down
 - (iv) shake the head from side to side
- (g) Sign language is said to be very picturesque and exact and can be used internationally EXCEPT for
 - (i) spelling (iii) whole words
 - (ii) ideas (iv) expressions
- (h) People need to communicate in order to
 - (i) create language barriers
 - (ii) keep from reading with their fingertips
 - (iii) be picturesque and exact
 - (iv) express thoughts and feelings
- (i) What is the best title for the passage?
 - (i) The Importance of Sign Language
 - (ii) The Many Forms of Communication
 - (iii) Ways of Expressing Feelings
 - (iv) Picturesque Symbols of Communication
- (j) Who would be MOST likely to use code?
 - (i) A scientist (iii) An airline pilot
 - (ii) A spy (iv) A telegrapher

11. Read the following case carefully using your critical reading skills where you apply both creative and critical thinking. Answer the questions that follow.

The problem involved SBB Manufacturing, a large producer of non-woven materials such as clothing lining, automobile insulation, and hospital gowns. SBB identified a large market opportunity in supplying automobile repair shops with a new material for disposable shop rags—rags for cleaning and wiping oil and grease residue and spills.

The disposable rags replaced the re-usable shop rags supplied by industrial launderers; they recycled cloth rags by cleaning them and returning them to the shops each week. The cloth rags were often returned torn and worn, and occasionally they had embedded metal shivs capable of gouging man and machine.

SBB, on the other hand, offered clean, soft, and strong rags. They had the feel of cloth and could be laundered, but they were less expensive for the mechanics. Another benefit was that each night they threw the SBB rags in the trash, instead of having to store the used cloth rags, which were full of oil, grease, and solvents, and created a fire hazard.

Everything was going well for SBB until the Environmental Protection Agency (EPA) created a new regulation. Suddenly, oil or grease soaked rags were considered hazardous materials, and companies were limited to the amount of hazardous materials they could dispose of each month. The amount of SBB contaminated rags that the large auto shops used far exceeded the 100 kilos per month that the EPA was allowing.

The auto shops had just five months to comply with the new EPA regulations, and they informed SBB that they would go back to cloth rags unless something could be done about the situation.

All of the ideas that SBB thought of either cost too much money or took too much time. As a result, we were invited by the marketing head to run a creative session to help SBB out of the mess.

Questions

- (a) Write a brief (3–5 sentences) description of the problem.
 - (b) What have you tried to resolve your situation, and why do you think that resolution has failed?
 - (c) What other obstacles stand in the way of a successful solution?
 - (d) Summarize what needs to be changed in your situation in one sentence beginning with the words ‘How to...’
12. Recall the skills that have been discussed in this chapter under critical reading. Read the following passage and using your creative and critical thinking choose the best option for each of the questions that follow:

Passage

Although the schooling of fish is a familiar form of animal social behaviour, how the school is formed and maintained is only beginning to be understood in detail. It had been thought that each fish maintains its position chiefly by means of vision. Our work has shown that, as each fish maintains its position, the lateral line, an organ sensitive to transitory changes in water displacement, is as important as vision. In each species a fish has a ‘preferred’ distance and angle from its nearest neighbour. The ideal separation and bearing, however, are not maintained rigidly. The result is a probabilistic arrangement that appears like a random aggregation. The tendency of the fish to remain at the preferred distance and angle, however, serves to maintain the structure. Each fish, having established its position, uses its eyes and its lateral lines simultaneously to measure the speed of all the other fish in the school. It then adjusts its own speed to match a weighted average that emphasizes the contribution of nearby fish.

- (a) According to the passage, the structure of a fish school is dependent upon which of the following?
 - (i) rigidly formed random aggregations
 - (ii) the tendency of each fish to retain at a preferred distance from neighboring fish
 - (iii) measurements of a weighted average by individual fish
 - II only
 - III only
 - I and II only
 - I and III only
 - II and III only
- (b) Which of the following best describes the author’s attitude toward the theory that the structure of fish schools is maintained primarily through vision?
 - (i) heated opposition
 - (ii) careful neutrality
 - (iii) considered dissatisfaction
 - (iv) cautious approval
 - (v) unqualified enthusiasm
- (c) The passage suggests that, after establishing its position in the school formation, an individual fish will subsequently
 - (i) maintain its preferred position primarily by visual and auditory means
 - (ii) rigorously avoid changes that would interfere with the overall structure of the school

- (iii) make continuous sensory readjustments to its position within the school
- (iv) make unexpected shifts in position only if threatened by external danger
- (v) surrender its ability to make quick, instinctive judgments
- (d) Generate at least five possible solutions to the problem posed in the following case, analyse each of them in the light of their positive and negative factors and present your analysis in about 300 words:

A group of eight students from Erudite University plan to go on a motorbike expedition to the nearby hill station Mountpeak on a three-day break. On the way to the hill station, they have to go through a village hamlet. One of the two vehicles which were cruising ahead of the other two runs over a village kid and flees from the spot. Meanwhile, elders in the village come to know about the incident and decide to search out the culprits. For the students, this is the only route to get back to their home town. The group has four girls whose safety had to be taken care of. If you are the members of this group, what would you do?

- (e) Supply the missing words from the choices provided. _____ (1) people breathe, pollutants in the air _____ (2) in the lungs or absorbed into the body. And polluted air can harm animals and plants _____ (3)

people. For this reason, our air supply should be _____ (4) watched and managed to assure _____ (5) good quality.

- (i) When, until, during, if, just as
- (ii) Have deposited, are depositing, had to be deposited, will have deposited, may be deposited
- (iii) As well as, in addition, even if, in spite of, supposing
- (iv) Alternately, previously, hastily, closely, furtively
- (v) Them, its, his, theirs, it
- (f) Supply the missing word from the choices provided.
Petroleum, or crude oil is one of the world's _____ (1) natural resources. Plastics, synthetic fibres, and _____ (2) chemicals are produced from petroleum. It is also used to make lubricants and waxes. _____ (3), its most important use is as a fuel for heating, for _____ (4) electricity, and _____ (5) for powering vehicles.
- (i) As important, most important, so importantly, less importantly, too important
- (ii) Much, a lot, plenty, many, less
- (iii) Therefore, however, moreover, hence, rather
- (iv) Generated, to generate, being generated, generate, generating
- (v) Decisively, exclusively, especially, favourably, notably