

UNIT II  
PART I  
ALTERNATIVE TECHNOLOGY

Answer the following questions:

1. *Where is the solar power plant located?*

A. In Spain, from the road to the Solucar solar plant outside Seville.

2. *Why was this region selected?*

A. Souther Spain, a region known the world over for its abundant sun and scarce rain provides an ideal landscape for solar thermal power.

3. *What could the drivers see as they neared the solar power plant?*

A. Drivers can see what appear to be glowing white rays emanating from a tower, piercing the dry air, and alighting upon the upturned faces of the tilted mirror panels below.

4. *Why are mirrors used in the plant?*

A. The upturned mirrors are actually tracking the sun and radiating its energy onto a blindingly white square at the top of the tower, creating the equivalent of the power of 600 suns. That power is used to vaporize water into steam to power a turbine. This tower plant used concentrating solar technology with a central receiver. It's the first commercial central receiver system in the world.

5. *What are the reasons given for the rise in the popularity of this plant?*

A. With gas costs rising and the world sharpening its focus on global warming, and governments around the world making a concerted attempt to invest in alternative energy sources on a larger scale, solar thermal is attracting new attention. Spain is forging ahead with plans to build concentrating solar power plants, establishing the country and Spanish companies as world leaders in the emerging field. The number of installed photovoltaic systems is growing exponentially, and researchers continue to explore a new ways to promote and improve solar power.

6. *What is the function of the heliostats?*

A. The heliostats mounted on trackers that shift position with a slight mechanical groan every few seconds, direct the sun's light to a central receiver at the top of the tower.

7. *What is the challenge faced by the developers of the plant?*

A. In large parts, these CSP plants haven't built before and it remains cost. Spanish companies are working to jumpstart the production of parabolic mirrors and glass tubes to increase production, competition and local access to the necessary parts.

8. *What are the various steps involved in power generation?*

- A.
1. Huge curved mirrors collect the sun's energy.
  2. The mirrors slowly track the sun.
  3. The heat transfer fluid then travels to a steam
  4. The steam powers a turbine.
  5. The heliostats shifts position with a slight mechanical groan.
  6. The heliostats direct the sun's light.

Complete with verb form or noun form: (pg – 5-6)

<u>Verb</u>	<u>Noun</u>
Receive	receives
Vaporize	vaporizer
Radiate	radiator
Promote	promotion
Generate	generation
Assemble	assembler
Improve	improvement

**Compound Nouns :**

I. Identify the compound nouns in the passage: (Identified compound nouns)

- 1) solar plant
- 2) photovoltaic system
- 3) dry air
- 4) tilted mirror
- 5) thermal power
- 6) testing centre
- 7) power equipment
- 8) steam turbine
- 9) electricity generator
- 10) natural gas

II. Write down the expansion of the following compound nouns.

- 1) Solar power: power of a solar
- 2) Research Centre: center used for research
- 3) Gas Cost: cost of a gas
- 4) Power system: the system that carries the power
- 5) Up-front development: development related to up and front
- 6) Cooling system: system that cools
- 7) Steam turbine: turbine used for steaming
- 8) Dry land: land that is dry
- 9) Electricity generator: a machine that generates electricity
- 10) Energy source: source that gives energy

III Suggest compound nouns for the following descriptions:

- 1) the assistant manager of a restaurant: assistant Restaurant manager
- 2) a tape for measuring: measuring tape
- 3) a station for express trains: an express- train station
- 4) size of cables: cable size
- 5) reduction in cost: cost reduction
- 6) two periods of three months: two three – months period

- 7) plugs with three pins: three pin plug
- 8) electricity from the mains: main electricity
- 9) a room for stores : store room

**Imperatives:**

An imperative sentence begins with the main verb and generally it does not have a subject. 'You' is implied as the subject. It is a type of sentence which expresses a command, request, advice, recommendations and directions.

Ex: Sit down.  
Close the window.

Instructions are always in the imperative form. Usually instructions are given to the beginners by the experienced people.

1. Direct form of Instruction:

Here the subject of the sentence 'you' is not mentioned.

Ex: Make the initial adjustments of the spectrometer.

2. General Instructions:

Ex: Initial adjustments of the spectrometer should be made.

Rewrite the following imperative into should form:

1. Choose a short focus convex lens.  
A short focus convex lens should be chosen.
2. Park your car in the car shed.  
Your car should be parked in the car shed.
3. Avoid the risk at any cost.  
At any cost the risk should be avoided.

Rewrite the following should form into imperative:

1. No dirt should be left on them.  
Leave no dirt on them.
2. The vessel should be cleaned thoroughly.  
Clean the vessel thoroughly.
3. The surfaces should be pressed together.  
Press the surfaces together.

**CLOUD COMPUTING ARCHITECTURE**

1. *What is Cloud computing?* Write the example?

A. The practice of using a network of remote servers hosted on the Internet to store, manage, and process data, rather than a local server or a personal computer. Yahoo mail and Gmail use cloud computing. You just need an internet connection to send your emails.

## 2. How does cloud computing work?

- A. The cloud makes it possible for you to access your information from anywhere at any time. While a traditional computer setup requires you to be in the same location as your data storage device, the cloud takes away that step. The cloud removes the need for you to be in the same physical location as the hardware that stores your data. Your cloud provider can both own and house the hardware and software necessary to run your home or business applications.

## 3. How is it beneficial to companies?

- A. This is especially helpful for businesses that cannot afford the same amount of hardware and storage space as a bigger company. Small companies can store their information in the cloud, removing the cost of purchasing and storing memory devices. Additionally, because you only need to buy the amount of storage space you will use, a business can purchase more space or reduce their subscription as their business grows or as they find they need less storage space.

### *Speaking: (Pg – 8-10)*

#### 1. What are the advantages of cloud computing?

- A. The main advantage of using cloud computing facility is that customers do not have to pay for infrastructure installation and maintenance cost. As a user of cloud computing you have to pay the service charges according to your usage of computing power and other networking resources. You do not have to worry about software updates. Installation, email servers, anti-viruses, backups, web servers and both physical and logical security of your data. Thus, cloud computing can help you focus better on your core business competency.

#### 2. Explain the types of cloud computing?

- A. Considering the installation of network infrastructure, a cloud environment can be classified into three types – public, private and hybrid cloud.

**Public cloud:** In this type a third party data center provides both disk space and computing power for all the application software. Amazon web and Google Apps are two of the most popular public cloud computing service providers.

**Private cloud:** In this type, you need to set up your own data center and also bear all the installation and maintenances expenses. You will have control of all your data. This system provides more security and privacy, but also more expensive than public cloud.

**Hybrid cloud:** It is typically offered in one of two ways: a vendor has a private cloud and forms a partnership with a public cloud provider, or a public cloud provider forms a partnership with a vendor who provides private cloud platforms.

#### 3. What are the problems with cloud computing?

- A. In an era of outsourcing, all important data resides in a third party premise, there is therefore always a concern about the trustworthiness of the cloud service providers. Any security and privacy violation can be fatal; as a result many business owners are still to be convinced about the security and privacy in cloud computing systems. Data related to banking and government documents were leaked or if information relating credit cards fell into the hands of cyber criminals. As cloud privacy issues are addressed and strict rules and governance for cloud operation fall in place, more businesses will feel safe opting for cloud computing.

## A Visionary Passes

**Answer the following questions: (Pg – 12)**

1. *Identify the remarkable qualities of Steve Jobs that made him one of the greatest emerging technologists of the twentieth century?*
  - A. His ability to come back to the core of innovation after fighting tough battles, and set the bar higher. Neither a 12 year absence after his 1985 exit due to an internal power struggle nor serious health setbacks seemed to curb his spirit.
2. *What message does Jobs give us? How did Apple computers grow?*
  - A. The only way to do great work is to love what one does. A second powerful message from the 56 year old tech wizard is to learn from failure. Steve Jobs could connect the dots and how. Apple Computer, which he co-founded with Steve Wozniak in 1976, has been a world beating success under his visionary leadership. It soared from its start as a garage venture into a technology giant with a market valuation of \$350 billion, and an unmatched reputation for inventing disruptively brilliant gadgets.
3. *What advice did he give the students of Stanford University?*
  - A. “You have to trust in something. Your gut, destiny, life, karma, whatever”.

## NANO TECHNOLOGY:

Answer the following questions:

1. *Identify some of the areas where nanotechnology is currently applied?*
  - A. a. Sunscreens and cosmetics: They absorb ultraviolet rays and are appealing to the consumer. Nano-sized iron oxide is present in some lipsticks as a pigment.
    - b. Carbon fibres and bundles of multi-walled CNTs are used in polymers such as antistatic packaging. For example, carbon black used as a filler to reinforce car tyres..
    - c. Clay particle based composites – containing plastics and nano-sized flakes of clay – are also finding applications such as use in car bumpers.
    - d. Cutting tools made of nanocrystalline materials finding applications in the drills used to bore holes in circuit boards.
2. *What chemicals are used in sunscreens? Why?*
  - A. Nano-sized titanium dioxide and zinc oxide are currently used in sunscreens, as they absorb and reflect ultraviolet rays and yet transparent to visible light and appealing to the consumer.
3. *Identify some areas of interest where nanotechnology is likely to be applied?*
  - A. a. Nanoscale-fabricated magnetic materials have applications in data storage. Devices such as computer hard disks depend on the ability to magnetise small areas on a spinning disk to record information.
    - b. Nanocrystalline zirconium oxide (Zirconia) is hard, wear resistant, bio-corrosion resistant and bio-compatible. It therefore presents an attractive alternative material for implants.

c. Machinable ceramics can be used as components in high temperature furnaces. Nanocrystalline ceramics can be pressed into complex net shapes and sintered at significantly lower temperatures than conventional ceramics.

d. Nano-engineered membranes could potentially lead to more energy-efficient water purification processes, notably in desalination by reverse osmosis.

e. Ceramic materials are very hard and resistant to heat and chemical attack, making them useful for applications such as coating turbine blades, but they are also very brittle.

4. *Why is zirconia used for implants?*

A. Nanocrystalline zirconium oxide (Zirconia) is hard, wear resistant, bio-corrosion resistant and bio-compatible. It therefore presents an attractive alternative material for implants.

5. *What are the special features of the battle suits made of enhanced nanomaterials?*

A. A short development is likely to be energy-absorbing materials that will withstand blast waves; longer term are those that incorporate sensors to detect or respond to chemical and biological weapons (for example, responsive nanopores that 'close' upon detection of a biological agent). There is speculation that developments could include materials which monitor physiology while a soldier is still on the battlefield, and uniforms with potential medical applications, such as splints for broken bones.

6. *How is the new ceramic material different from the conventional one?*

A. Zirconia. Normally a hard, brittle ceramic, has even been rendered superplastic (it can be deformed up to 300% of its original length). They are also used as components in high temperature furnaces. Nanocrystalline ceramics can be pressed into complex net shapes and sintered at significantly lower temperatures than conventional ceramics.

7. *What are the special features of the water filtration devices?*

A. Nano-engineered membranes could potentially lead to more energy-efficient water purification processes, notably in desalination by reverse osmosis.

**Verbal ability:** (Pg – 15)

I Write four words for each prefix:

- a. Nano: nanotechnology, nanoparticle, nanosecond, nanoscale
- b. Micro: microprocessor, microscope, microorganism, microsecond
- c. Multi: multinational, multicultural, multicast, multichannel
- d. Bio: biotechnology, biodiversity, biosphere, biomedical

II What do the following initialisms and acronyms stand for?

CNT: Carbon Nanotubes Composites

MRI: Magnetic Resonance Tomography

DNA: Deoxyribo nucleic acid

STM: Scanning Tunnelling Microscope

MIT: Massachusetts Institute of Technology

III Write single sentence definition for the following: (Pg – 15)

a) Robot: A machine that can perform a complicated series of tasks automatically.

b) Computer: An electronic machine that can store, organize and find information, do calculations and control other machines

c) Hard disk: A disk inside a computer that stores data and programs.

d) Microbes: An extremely small living thing that you can only see under a microscope and that may cause disease.

e) Microprocessor: A small unit of a computer that contains all the functions of the central processing unit.

### SUBJECT-VERB AGREEMENT

A verb must agree with its subject in number and person.

1) Two or more singular nouns or pronouns joined by **and** require a plural verb.

Ex: Gold and Silver are precious metals.

Fire and Water do not agree.

2) If nouns refer to the same person or thing, the verb is singular,

Ex: **Bread** and **butter** is his only food.

The **horse** and **carriage** is at the door.

**Honor** and **glory** is his reward.

3) Words joined to a singular subject by **with**, **as well as** etc., the verb should be put in singular;

Ex: Silver **as well as** cotton, has fallen in price.

4) Two or more singular subjects connected by **or** or **nor** require a singular verb,

Ex: Our happiness **or** our sorrow is largely due to our actions.

Either the cat **or** the dog has been here.

When it is plural, the verb must be plural,

Ex: Neither the chairman **nor** the directors are present.

5) Either, Neither, Each, Everyone, Many, Must be followed by a singular verb.

Ex: Each of these substances **is** found in India.

6) Two nouns qualified by each or every, even though connected by and, require a singular verb,

Ex: Every boy and every girl **was** given a packet of sweets.

7) Some nouns which are plural in form, but singular in meaning, take a singular verb.

Ex: The **news is** true.

**Mathematics is** a branch of study in every school.

8) A collective noun takes a singular verb when the collection is thought of as one whole.

Ex: The Committee **has** issued its report.

9) When the plural noun is proper name for some single object or some collective unit, it must be followed by a singular verb,

Ex: The Arabian Nights **is** still a great favorite.

10) When a plural noun denotes some specific quantity or amount considered as a whole, the verb is generally singular.

Ex: Ten kilometers **is** a long walk.

Fifteen thousand rupees **is** a large sum.

Fifteen minutes **is** allowed to each speaker.

IV In the sentences given below, circle the appropriate verb that completes each sentence. (Pg-16 of Text)

- A black cat (bring/brings) bad luck, according to an old superstition.
- Young children often (protest/protests) when they are asked to do something.
- My thoughts often (become/becomes) confused when I sit down to write an essay.
- Speeding in restricted zones, especially near schools, (endanger/endangers) lives.
- One computer for two or three students (seem/seems) inadequate.
- Honeydew, one of the favourite melons of consumers, (taste/tastes) clean and sweet.
- Coaches who are disciplined and who demand discipline from their players usually (have/has) winning teams.
- Either the plaintiff or the defendant (has/have) changed his mind about the suit.
- Neither the President nor his bodyguard (was/were) safe.
- Fish and chips (is/are) a specialty of local restaurants.

### Adverbs:

An adverb is a word which modifies the meaning of a verb, an adjective or another adverb.

Ex: Rama runs quickly.

This is a very sweet mango.

Govind reads quite clearly.

1) quickly shows how (or in what manner). The word quickly modifies the verb runs.

2) very shows how much (or in what degree). The word very modifies the adjective sweet.

3) quite shows how far ( or to what extent), the word quite modifies the adverb clearly.

**Kinds:** Classified according to their meaning.

1) *Adverbs of Time* (when)

Ex: Wasted time never returns.

He comes here daily.

We shall now begin to work.



2) *Adverbs of frequency* (how often)

Ex: I have told you twice.

He always tries to do his best.

The postman called again.

3) *Adverbs of Place*: (where)

Ex: Stand here.

Come in.

He looked up.

Go there.

4) *Adverbs of manner* (how or in what manner)

Ex: The Sikhs fought bravely.

The story is well written.

The child slept soundly.

5) *Adverbs of degree or quantity* (how much or in what degree or to what extent)

Ex: He was too careless.

You are partly right.

She sings pretty well.

6) *Adverbs of affirmation & Negation*:

Ex: I do not know him.

He certainly went.

7) *Adverbs of reason*:

Ex: He therefore left school.

8) Adverbs should be placed, which word or words they are intended to modify;

Ex: He had got almost to the top when the rope broke.

9) Only should be placed immediately before the word it is intended to modify.

Ex: I worked only two sums.

I praise him only when he deserves it.

10) Two negatives destroy each other. Hence it should not be used in the same sentence unless we wish to make an affirmation.

Ex: I can't see any wit in her.

I couldn't find it anywhere.

11) The adverb 'too' means more than enough and should not be used instead of very or much leaving some exceptional sentences.

Ex: The news is too good to be true.

He is too much exhausted to speak.

### Comparison of Adverbs:

1) Some adverbs, like adjectives have three degrees of comparison. Such adverbs are compared like adjectives.

If the adverb is of one syllable, 'er' is added to the word forming comparative and 'est' forming superlative degree.

Long Longer Longest

Soon Sooner Soonest

2) Adverbs ending in 'ly' form the comparative by adding 'more' & the superlative by adding 'most'.

Skilfully            more skillfully            most skillfully

But the word 'early' can be written as,

<u>Positive</u>	<u>Comparative</u>	<u>Superlative</u>
Ill	worse	worst
Well	better	best
Little	less	least
Eat	ate	eaten

**Position of Adverbs:**

1) Adverbs are placed close to the word they qualify. They are generally placed,

i) before adjectives or other adverbs.

Ex: a) This is good enough. (comes after the adjective)

b) Delhi is too hot in June.

ii) after transitive adverbs.

Ex: a) We laughed heartily.

b) He ran fast.

2) Between the principal verb and the auxiliary or between two auxiliaries.

Ex: He has already agreed.

They have always been consulted.

2. Fill in the blanks using suitable adverbs: (pg. 32)

A thief entered a house quietly: it was not beautifully decorated like the other houses. Most of the articles were thrown carelessly around. He looked at them excitedly because they were expensive; he quickly tied them up in a bundle. He thought that his plan was working well and that he could escape easily. Unfortunately his plans failed because the door opened suddenly and the inmates of the house walked in.

3. Write five adverbs that go with the verbs given below:

**Sing:** softly, carefully, gracefully, fluently, joyfully

**Fight:** rarely, actively, quickly, carefully, slowly

**Write:** actively, clearly, slowly, sincerely, thoroughly

**Study:** carefully, slowly, clearly, quietly, effectively

**Speak:** fluently, carefully, slowly, clearly, exactly

Fill in the blanks with the correct word: (pg. 36 & 37 of Text)

1. How does candy \_\_\_\_\_ (affect, effect) your blood sugar?
2. Please try not to \_\_\_\_\_ (lose, loose) your new pair of glasses.
3. He will not be able to \_\_\_\_\_ (accept, except) the new job.
4. We had \_\_\_\_\_ (to, too, two) much to eat at dinner.
5. The \_\_\_\_\_ (principal, principle) ingredients of bread are flour, water, and yeast.
6. The bride's mother gave her \_\_\_\_\_ (ascent, assent) to the marriage proposal.
7. She is \_\_\_\_\_ (adept, adapt) in handicrafts.
8. He reserved a \_\_\_\_\_ (birth, berth) on the night train.
9. Do not \_\_\_\_\_ (compliment, complement) people unnecessarily at parties.
10. Strawberry shortcake was served to the invitees as \_\_\_\_\_ (dessert, desert).

Synonyms: (pg. 41 of Text)

These are the words that have the same or almost the same meaning but with different shades in different contexts.

1. Crisis ( )  
a. Threat    b. danger    c. shortage    d. crack    e. disease
2. Bleak ( )  
a. Not encouraging    b. hopeful    c. thoughtful    d. sad    e. dissatisfied
3. Avert ( )  
a. Give up    b. catch    c. prevent    d. abuse    e. scold
4. Breeding ( )  
a. Producing    b. using    c. creating    d. praising    e. admiring
5. Lukewarm ( )  
a. Not enthusiastic    b. pathetic    c. busy    d. sad    e. positive
6. Silver bullet ( )  
a. Plan    b. solution    c. deadly thing    d. medicine    e. technique

Antonyms:

It is a word opposite in meaning with another. To express contrast between two objects, persons or situations, antonyms are the best options.

WORD	ANTONYM
Properly	Improperly
Cycle	Halt, instant
Safe	Unsafe
Governmental	Nongovernmental
treat	Mistreat
informal	Formal
likely	Unlikely
valuable	Worthless
information	disinformation
important	Unimportant
predictable	Unpredictable
estimate	Disregard, doubt
Handle	Mishandle
healthy	unhealthy

Fill in the blanks using the appropriate suffixes. (pg.29)

Priceless    careless    helpless    homeless    endless    thoughtless  
Nameless    friendless    magical

1. Ravi seems to be very thoughtless; he makes lots of mistakes while taking his exams. His problem appears to be endless because it continues even in college. He is a careless boy. He avoids company and so remains friendless.

2. The child lost his house and his parents in the tsunami. No one knows his name. This child is homeless now and nameless. A social service organisation came forward to help this child. A family photograph is the only priceless possession he has.
3. The lights added a magical touch to the play.

Fill in the blanks using the appropriate prefixes.

Preheat	Underwater	misbehave	Unable	unhappy
Return	dishonest	Unwrap	Untied	beware

1. Mom and I had to wait until my birthday to Unwrap my presents.
2. We had to Preheat the oven before we could put the cookies in.
3. John forgot his backpack and had to Return home to get it.
4. Ashtan was sad because she was Unable to get tickets for the concert.
5. Jakob almost fell down because his shoelaces were Untied.
6. Tasha can swim Underwater for over one minute.
7. Sherry was being dishonest when she did not tell the truth.
8. Our teachers told us to not misbehave on the field trip.
9. The kids were very unhappy when their soccer game was rained out.
10. We had to beware of snakes while we are hiking through the woods.