Unit 6: Introduction to IT-ITeS Industry

Assignment Solutions

Multiple-Choice Questions (MCQs)

1. Which of the following is not a feature of a computer system?
   a. Fast performance
   b. Executing logical operations
   c. Decision-taking capability
   d. Never get tired

Ans. c

2. Which of the following defines a computer system more accurately?
   a. Hardware
   b. Software
   c. Hardware, software and data
   d. Data, information, hardware, and software

Ans. c

3. ..... is a special type of pen used to write text and select options on the LCD screen.
   a. Stylus
   b. PDA
   c. Embedded computer
   d. All of these

Ans. a

4. Which of the following best defines 'data'?
   a. The output coming from the computer system
   b. Arranging processed data
   c. Report printed by the computer system
   d. Raw facts and figures

Ans. d

5. Which of the following activities are performed by a computer system for a train reservation system?
   a. Checking seat availability
   b. Displaying arrival and departure time
   c. Making reservation and printing tickets
   d. All of these

Ans. d

6. Which of the following computer systems can be used while commuting by train, bus, or plane?
   a. Mainframe computer
   b. Personal computer
   c. Supercomputer
   d. Laptop

Ans. d

7. Which of the following computer systems is used in appliances such as washing machines and cars?
   a. PDA
   b. Laptop
   c. Embedded computer
   d. Mainframe

Ans. c

Very Short Answer Questions

1. What do you mean by computer hardware?

Ans. Computer hardware refers to the physical parts of a computer.

2. Specify an example of computer hardware and software.

Ans. A keyboard is hardware and an operating system is software.

3. Keyboard is an optional component of a computer (True or False).

Ans. False.

4. Give an example that can be interpreted as data.

Ans. A list of students and their marks can be termed as data.

5. What is the combination of IT and biotechnology known as?

Ans. Bio-informatics

Short Answer Questions-I

1. What do you understand by a computer and how is it useful for you?

Ans. A computer is an electronic device used to perform a variety of operations on the basis of a set of instructions called a program. It is useful to us for many operations such

as arithmetic and logical calculations, communications, education, etc.

2. List down the strengths and weaknesses of a computer system.

Ans. The following are the strengths of a computer:

a. Speed
b. High Storage capacity
c. Reliability
d. Accuracy
e. Consistency
f. Versatility

The following are the weaknesses of a computer:

a. No Power to Make Decisions
b. No IQ
c. No Heuristics

3. What are the various applications of computers in the field of entertainment?

Ans. The following are the various applications of computers in the field of entertainment:

a. Computers are used for developing animation movies.
b. They are also used for high quality special effects in movies. For example, Jurassic park.

4. What are the four basic constituents of a computer system?

Ans. The following are the basic constituents of a computer system:

a. System Unit
b. Monitor
c. Mouse
d. Keyboard

5. What do you mean by workstations?

Ans. A workstation is similar to that of personal computer; however, it has greater memory and more extensive mathematical abilities compared to a personal computer. Workstations can be connected to other workstations or personal computers to exchange data.

6. Define technological convergence.

Ans. Technological convergence denotes merging of two or more existing technologies to invent a completely new technology with multiple benefits. For example, a smartphone combines formerly-separated technologies, such as voice, data and video and make them operate on a single platform.

7. List the technologies that have emerged as a result of convergence of two or more technologies.

Ans. The following are the technologies which have emerged as a result of the convergence of two or more technologies:

a. Digital convergence
b. Messaging convergence
c. Media convergence
d. Content convergence

Short Answer Question-II

1. Define technological convergence.

Ans. Technological convergence denotes merging of two or more existing technologies to invent a completely new technology with multiple benefits. Let's try to understand this concept with the help of an example. A smartphone combines formerly-separated technologies, such as voice, data and video and make them operate on a single platform. In a smartphone, these technologies work as a shared resource and interrelate with each other. This eliminates the need of using multiple devices; thus, instead of carrying separate devices, such as a mobile phone, camera, pager and digital organizer, one can simply carry a smartphone, which is capable of performing the tasks of all these devices.

2. List the technologies that have emerged as a result of the convergence of two or more technologies.

Ans. The following are the technologies that have emerged as a result of the convergence of two or more technologies:

a. **Digital Convergence:** It refers to the merger of the Internet, telecommunication and leisure industries.
b. **Messaging Convergence:** It refers to the integration of text and voice messages. For example, text SMS, voice SMS, Interactive Voice Response (IVR), Multimedia Messaging Service (MMS), etc.
c. **Content Convergence:** It refers to the integration of content from various sources on the Internet.
d. **Media Convergence:** It refers to the integration of various media.

3. What do you mean by workstations?

Ans. The processing of workstations is similar to that of personal computers; however, workstations have greater memory and more extensive mathematical abilities. Workstations can be connected to other workstations or personal computers to exchange data. Generally, such computers are used in cases where a high level of computational abilities is required, such as in scientific, industrial and business environments.

4. List down the strengths and weaknesses of a computer system.

Ans. The following are the strengths and weaknesses of a computer system:

a. Strengths:
   - **Speed:** Computers perform at a great speed and have the capability of processing even the most complex computations in a matter of seconds.
   - **Storage capacity:** Computers allow users to store a large amount of data at a single location.

- **Reliability:** The electronic components in modern computers make them more reliable as they rarely break or fail.
- **Accuracy:** Computers have the ability to provide accurate results as they perform computations with utmost accuracy.
- **Consistency:** A computer generates consistent results, if provided the same input and processes.
- **Versatility:** Computers are able to perform different tasks in a variety of domains.

b. Weaknesses:

- **No Power to Make Decisions:** Computers are unable to take decisions.
- **No IQ:** Computers are machines that do not have self-intelligence.
- **No Heuristics:** Computers are unable to learn from their past experiences.

5. What are the various applications of computers in the field of entertainment?

Ans. Some common applications of computers in the field of entertainment are:

- **Music:** Computers can be used to access and download millions of songs available on several websites. We can either stream music or directly download it to our computer. Artists can also record their music and apply special audio effects using computer.
- **Movies:** Computers are used in various aspects such as applying life-like special effects in movies, displaying movies in high-definition on screens of multiple sizes, creating animation movies, etc.
- **Gaming:** Computers are used to design as well as play high-end, graphics-intensive games, which are very popular especially among youth.

Long Answer Questions

1. Do you think a computer system can be used in the fields of business and medicine? Why?

Ans. Computers have become a necessity for performing various kinds of business activities, such as billing, budgeting, accounting and reporting. For example, whenever you want to pay bill in a shopping mall, you are benefited with the power and speed of computers. For example, Calc or Microsoft Excel is a software application used for data calculation and preparing charts. Computer also plays a vital role in the field of medicine and health care. For instance, it handles the activities of monitoring patients, diagnosing diseases, and so on. There are also many computerized equipment and devices, such as pacemaker that is used to fix the heart-related problems of a patient. Medical students may also practice surgical procedures by using virtual labs. For example, Hospital Management System is a software application, given by XoftOasis, used for ward and patient management, hospital records management, blood bank management, etc.

2. In what ways a computer system can be applied in education and research?

Ans. Computers are extensively used in classrooms, libraries and laboratories for preparing reports, displaying information, developing projects and providing interactive learning aids. It is also possible to create virtual classrooms through computers if the instructor and students are situated in two separate geographical regions and read magazines and journals online. For example, GCompris, JumpStart, KidPix and Tux Paint are some software applications for child education.

Research scholars and scientists utilize computers to experiment, design and develop projects. A large number of sophisticated instruments and devices are used in all facets of research and development activities. For example, nuclear reactions in large nuclear reactors are controlled by computers. Computer aided devices can forecast the weather and most natural disasters, such as tsunami and earthquake. Computer Assisted/Aided Qualitative Data Analysis Software (CAQDAS) assists in conducting qualitative researches, such as transcription analysis, coding and text interpretation, recursive abstraction, content analysis, discourse analysis, etc.

3. How computer systems can be applied in communications?

Ans. In modern world, computers play a big role in public as well as corporate communications. The following are the ways in which computers can be used in communication:

a. E-mail, nowadays, is a primary method of communication in any organization. A company may have its own e-mail server or it can take services from a vendor to implement its e-mail services.

b. Computers can be used to increase a person's or a company's presence on the Internet by launching their own website. This allows implementation of various services such as comments and chat boxes.

c. Video conferencing is also an advanced method of communication that uses computers. It is more interactive than any other digital means of communication. This is so because it can be used for both verbal and non-verbal communication.

4. Do you think computer systems can be applied in the field of manufacturing? Why?

Ans. Manufacturing of any product at any skill require no logic, but repetitive work with accuracy and speed. Computers are better than human being at doing repetitive tasks with high speed. It is a challenge to regulate and control a real-time manufacturing process, such as preparation and packaging of soft drinks. Such challenges can be handled efficiently using computers. In manufacturing, all the activities are automated and controlled by computers. Manufacturing activities, such as putting the cork on the bottle, are accomplished by real-time computer software

because it requires high precision and accuracy. This also reduces cost of manufacturing to a great extent.

5. How computer systems are implemented in governance and defense?

Ans. Governments generally have to deal with a large amount of data related to the population governed by them. Since computers have ability to store and handle large amount of data, they prove to be quite useful for tasks involving huge amount of data. Computers are used by the government to maintain or deal with bulk of data, such as maintaining census details, measuring per capita income, reserving tickets, paying bills and taxes, etc.

Computers are used by the military staff to perform many important tasks, such as evaluating the trajectories of missiles and broadcasting information. For example, Distributed Common Ground System-Army (DCGS-A) is an application developed for Army specifications by a consortium of defense contractors.

6. Computers are unable to take decisions on their own; instead, they depend upon the input being provided by humans. Give explanation in support of your answer.

Ans. Computers are machines that work according to a set of given instructions given to them. These instructions are called programs. Since computers don't have any self-intelligence, they depend completely on humans to inform them about the task to be performed next. Also computers are not able to learn from their past experiences. So, they do not have any saved memory about the solution they worked on previously. It implies that when a computer commits an error once, then it would commit the same mistake again in a similar situation. We can rely on the computers to complete only those tasks that are repetitive in nature and don't require taking decisions at any step. Since computers are much faster and efficient than human beings in doing repetitive tasks, they are best suited for these kinds of tasks only and hence, should not be considered as a complete replacement of manpower.

Chapter 5

The Fundamental Unit of Life
Intext Questions

On Page 59

Question 1:Who discovered cells and how?

Solution:Cell was discovered by Robert Hooke with the help of his self-designed microscope. He examined a thin slice of cork and saw that the cork resembled the structure of a honey comb consisting of many compartments.

Question 2:Why is the cell called the structural and functional unit of life?

Solution:There are various components in the animal and plant cell known as cell organelles.Each kind of cell organelle performs a specific function, such as making new materials in the cells, release of waste, transportation, etc. Thus, a cell can perform all its functions with the help of these organelles. That is why the cells are called structural and functional unit of life.

On Page 61

Question 1:How do substances like $CO_2$and water move in and out of the cell? Discuss.

Solution:Substances like CO_2accumulate in high concentration inside the cell. There is CO_2 concentration difference in the internal and external environment of a cell. CO_2moves out of the cell, from a region of high concentration to a region of low concentration outside the cell by the process of diffusion.

Question 2:Why is the plasma membrane called a selectively permeable membrane?

Solution:The plasma membrane selectively allows the entry and exit of some materials in and out of the cell. It also prevents movement of some other materials. Therefore, it is called a selectively permeable membrane.

On Page 65

Question 1:Can you name the two organelles we have studied that contain their own genetic material?

Solution:Mitochondria and plastids.

Question 2:If the organisation of a cell is destroyed due to some physical or chemical influence, what will happen?

Solution:The cell will not be able to perform its basic functions and will die after sometime.

Question 3:Why are lysosomes known as suicide bags?

Solution: The lysosomes contain very powerful hydrolytic enzymes which are capable of breaking down organic matter. For example, when a cell gets damaged, then lysosomes burst and enzymes digest their own cell. Hence, the lysosomes are known as 'suicide bags' of cells.

Question 4:Where are proteins synthesised inside the cell?

Solution:Ribosomes are the site of protein is synthesis.

Exercises

Question 1:Make a comparison and write down ways in which plant cells are different from animal cells.

Solution:Comparison of plant cell and animal cell

Plant Cell

Cell wall is present outside the plasma membrane.

Generally regular in shape.

Larger in size than animal cells

Plastids are present.

A permanent and large vacuole is present.

Animal Cell

Cell wall is absent.

Generally irregular in shape.

Smaller in size than animal cells.

Plastids are absent except in Euglena.

Vacuoles are many, small and temporary.

Question 2:How is prokaryotic cell different from a eukaryotic cell?

Solution:See the Ans. of Question 1 (Intext Questions Page 63).

Question 3:What would happen if the plasma membrane ruptures or breaks down?

Solution:In case of plasma membrane ruptures or breaks down:

All the useful substances will move out of the cell

There will be no difference between cell content and its external environment.

The cell will close its normal shape.

Question 4:What would happen to the life of a cell if there was no Golgi apparatus?

Solution:Effect of absence of Golgi apparatus on life of a cell

(i) The packaging and dispatching of different types of proteins to various targets inside and outside the cell will be influenced.
(ii) The products of cell cannot be stored and modified later.
(iii) There will be effect on lysosomes formation. This will cause accumulation of worn out and dead cell organelles within the cell which may cause cell death.

Question 5:Which organelle is known as the power house of the cell? Why?

Solution:The organelle mitochondria known as the power house of the cell. Process of cellular respiration takes place in mitochondria to generate energy required for various chemical activities in the form of ATP. This is the reason that mitochondria is known as power house of the cell.

Question 8:What is osmosis?

Solution:The movement of solvent from a region of its high concentration to a region of its low concentration through a semipermeable membrane is called osmosis. During osmosis, the water molecules (solvent) are free to cross the plasma membrane in both the directions.

Question 9:Carry out the following osmosis experiments Take four

peeled potato halves and scoop each one out to make potato cups. One of these potato cups should be made from a boiled potato. Put each potato cup in a trough containing water. Now

a) Keep cup A empty
(b) Put one tea spoon sugar in cup B.
(c) Put one tea spoon salt in cup C.
(d) Put one tea spoon sugar in the boiled potato cup D.

Keep these for two hours. Then observe the four potato cups and answer the following:

(i) Explain why water gathers in the hollowed portion of B and C?
(ii) Why is potato A necessary for experiment?
(iii) Explain why water does not gather in the hollowed out portion of A and D?

Solution:(i) Osmosis is the process responsible for the gathering of water in the hollowed portion of B and C. Since, the concentration of solute (sugar in cup Band salt in cup C) is higher inside the cup as compared to the water, which is outside the cup. Hence, water from its higher concentration (outside the cup) will move towards the lower concentration (inside the cup). This process of osmosis (moving in of solvent) is called endosmosis.

(ii) Potato A acts as a control for the experiment. This is required for comparing the results of the experiment.

(iii) Water does not gather in the hollowed out portions of A and D because of the following reasons:

• The hollowed portion of potato A is empty. So, because of no concentration difference, no osmosis can occur.

• The hollowed portion of potato D contains sugar in it but it is boiled. So, osmosis cannot occur as its semipermeable membrane is destroyed by boiling.

हिन्दी व्याकरण

1 वर्ण-विच्छेद ('र' के विभिन्न रूप, अनुस्वार, अनुनासिक, नुक्ता (आगम ध्वनियाँ))

वर्ण (Letter)

वर्ण-विच्छेद को समझने से पहले, आइए जानें, वर्ण किसे कहते हैं?

परिभाषा–'लिखित भाषा की उस छोटी-से-छोटी मूल ध्वनि को वर्ण कहते हैं, जिसके टुकड़े नहीं किए जा सकते।' मूल रूप में वर्ण वे चिह्न होते हैं, जो हमारे मुख से निकली हुई ध्वनियों के लिखित रूप होते हैं। यह भाषा की सबसे छोटी इकाई होती है और इसके खंड नहीं किए जा सकते। उदाहरण के लिए–'राम बाजार गया।' यदि इस वाक्य का विश्लेषण करें तो–(र् + आ, म् + अ) (ब् + आ, ज् + आ, र् + अ) (ग् + अ, य् + आ) प्राप्त होंगे। इससे आगे इसके खंड नहीं किए जा सकते। अत: इन्हें ही वर्ण कहा जाता है।

वर्णमाला (Alphabet)

वर्णों के क्रमबद्ध समूह को 'वर्णमाला' कहा जाता है। हिंदी भाषा में मुख्य रूप से निम्नलिखित वर्ण प्रयुक्त किए जा रहे हैं :

अ, आ, इ, ई, उ, ऊ, ऋ, ए, ऐ, ओ, औ। (स्वर)

अं, अँ, अः। (अनुस्वार, अनुनासिक, विसर्ग)

क्, ख्, ग्, घ्, ङ्		
च्, छ्, ज्, झ्, ञ्	ड़ ढ़	
ट्, ठ्, ड्, ढ्, ण्		व्यंजन
त्, थ्, द्, ध्, न्		
प्, फ्, ब्, भ्, म्		
य्, र्, ल्, व्		अंतस्थ व्यंजन
श्, ष्, स्, ह्		ऊष्म

हल-चिह्न (्)–व्यंजनों के नीचे लगा हल-चिह्न स्वर के न होने का चिह्न है। सभी व्यंजन स्वर के बिना होते हैं। परंतु उनका उच्चारण स्वर की सहायता के बिना नहीं हो सकता। जब भी व्यंजन का उच्चारण होता है तो स्वर की सहायता से ही; जैसे–म् + अ = म, म् + आ = मा, म् + इ = मि। स्वरों का योग हो जाने के कारण ये व्यंजन अक्षर कहलाते हैं।

ऑ–अंग्रेज़ी भाषा के शब्दों के प्रयोग के लिए हिंदी भाषा ने 'ऑ' ध्वनि को भी हिंदी वर्णमाला में स्वीकार कर लिया है; जैसे–डॉक्टर, कॉलेज, कॉफ़ी।

ड़, ढ़–इन दो ध्वनियों का प्रयोग भी हिंदी भाषा में बहुतायत से होता है। इनका संबंध संस्कृत के ड और ढ से तो कदापि नहीं है। इसकी विशेषता यह है कि यह ध्वनि शब्द के आरंभ में नहीं आती; जैसे–बूढ़ा, गढ़ा, पहाड़, चढ़ाई, साड़ी। ड और ढ शब्द के प्रारंभ में आते हैं; जैसे–डाल, ढाल, डरपोक आदि।

कुछ पूर्णतया विदेशी ध्वनियाँ वर्ण के रूप में अपने शब्द भंडार के साथ हिंदी में प्रविष्ट हुई हैं; जैसे–क़, ख़, ग़, ज़ और फ़। ये ध्वनियाँ अरबी, फ़ारसी, तुर्की आदि भाषाओं की हैं, परंतु हिंदी में फ़ारसी के द्वारा ही आई हैं; जैसे–

क़–क़ौम, ख़–ख़ुदा, ग़–ग़रीब, ज़–ज़रूरत, फ़–फ़न।

विद्वानों द्वारा क्ष, त्र, ज्ञ, श्र को हिंदी वर्णमाला में सम्मिलित नहीं किया जाता, क्योंकि ये वर्ण नहीं 'संयुक्त वर्ण' कहलाते हैं। इन वर्णों की उत्पत्ति दो वर्णों के मेल से हुई है :

क्ष = क् + ष् + अ त्र = त् + र् + अ ज्ञ = ज् + ञ् + अ श्र = श् + र् + अ

इसलिए सामान्य रूप से इनकी गणना वर्णमाला में करना युक्तिसंगत नहीं होगा।

उच्चारण के आधार पर वर्णों को दो भागों में बाँटा गया है :

वर्ण (Letter)

(i) स्वर (Vowels) (ii) व्यंजन (Consonants)

स्वर (Vowels)

जिन वर्णों का उच्चारण करते समय हवा मुख विवर से बिना किसी रुकावट के निकल जाती है, वे स्वर कहलाते हैं। अर्थात् स्वर स्वतंत्र ध्वनियाँ हैं। इनकी कुल संख्या ग्यारह है :

अ, आ, इ, ई, उ, ऊ, ऋ, ए, ऐ, ओ, औ।

उच्चारण में लगे समय के आधार पर स्वरों के तीन वर्ग बनते हैं :

1. ह्रस्व 2. दीर्घ 3. प्लुत।

1. **ह्रस्व स्वर (Short Vowels)**—जिन स्वरों के उच्चारण में कम-से-कम समय लगता है, वे 'ह्रस्व स्वर' कहलाते हैं। हिंदी में अ, इ, उ, ऋ ये चार ह्रस्व स्वर हैं।

2. **दीर्घ स्वर (Long Vowels)**—जिन स्वरों के उच्चारण में ह्रस्व स्वर से दुगुना समय लगता है, वे 'दीर्घ स्वर' कहलाते हैं। हिंदी में आ, ई, ऊ, ए, ऐ, ओ, औ ये सात दीर्घ स्वर हैं।

3. **प्लुत स्वर (Longer Vowels)**—जिन स्वरों के उच्चारण में दीर्घ से दुगुना तथा ह्रस्व से तिगुना समय लगता है, वे 'प्लुत स्वर' कहलाते हैं; जैसे—हे राऽम, ओऽम् आदि।

उच्चारण-स्थान के आधार पर स्वरों के दो भेद किए जाते हैं—अनुनासिक तथा निरनुनासिक स्वर।

व्यंजन (Consonants)

'व्यंजन उन वर्णों को कहते हैं, जिनका उच्चारण स्वर की सहायता से होता है।' इनका उच्चारण करते समय फेफड़ों से निकली वायु को मुँह में विभिन्न स्थानों पर पूरा या आंशिक रूप से रोका जाता है। कुछ व्यंजनों के उच्चारण में वायु मार्ग इतना संकरा होता है कि हवा रगड़ खाकर बाहर निकलती है। उच्चारण करते समय हवा को किसी भी रूप में रोका जाता है तथा जिस स्थान पर हवा रगड़ खाती है, उस स्थान को व्यंजन विशेष का उच्चारण स्थान कहते हैं। व्यंजनों के निम्नलिखित तीन भेद हैं :

1. **स्पर्श व्यंजन (Mutes-Consonants)**—क् से लेकर म् तक के 25 वर्ण स्पर्श कहलाते हैं। इन वर्णों का उच्चारण करते समय जिह्वा मुख के भिन्न-भिन्न भागों का स्पर्श करती है। इसके कुल पाँच वर्ग हैं और प्रत्येक वर्ग अपने वर्ग के प्रथम वर्ण के नाम से जाना जाता है।

क् वर्ग — क्, ख्, ग्, घ्, ङ्
च् वर्ग — च्, छ्, ज्, झ्, ञ्
ट् वर्ग — ट्, ठ्, ड्, ढ्, ण्
त् वर्ग — त्, थ्, द्, ध्, न्
प् वर्ग — प्, फ्, ब्, भ्, म्

2. **अंतस्थ व्यंजन (Semi-Consonants)**—इन वर्णों का उच्चारण करते समय जिह्वा मुख के किसी भी भाग को स्पर्श नहीं करती। इनका उच्चारण स्वर तथा व्यंजन का मध्यवर्ती-सा होता है। ये कुल चार हैं—य्, र्, ल्, व्।

3. **ऊष्म व्यंजन (Sibiliants-Consonants)**—इन वर्णों का उच्चारण करते समय हवा के रगड़ खाने से एक प्रकार की ऊष्मा-सी उत्पन्न होती है। ये कुल चार हैं—श्, ष्, स्, ह्।

संयुक्त और द्वित्व व्यंजन

संयुक्त व्यंजन–दो या दो से अधिक व्यंजनों के संयोग से संयुक्त ध्वनियाँ बनती हैं। हिंदी में स्वर रहित व्यंजन को आगे वाले व्यंजन से मिला दिया जाता है।

संयुक्त व्यंजन बनाने के कुछ नियम इस प्रकार हैं :

(क) खड़ी पाई वाले व्यंजनों का संयुक्त रूप बनाने के लिए पाई को हटा दिया जाता है; जैसे:

बच्चा (च + च = च्च)
प्रख्यात (ख + य = ख्य)
विघ्न (घ + न = घ्न)
पथ्य (थ + य = थ्य)
न्याय (ञ + य = न्य)
लम्ब (म + ब = म्ब)
स्वस्थ (स + व = स्व, स + थ = स्थ)
सज्जा (ज + ज = ज्ज)
मग्न (ग + न = ग्न)
पत्ता (त + त = त्त)
ध्वस्त (ध + व = ध्व, स + त = स्त)
प्याला (प + य = प्य)
सभ्यता (भ + य = भ्य)
व्यवहार (ह + य = व्य)

(ख) क और फ के संयुक्ताक्षर बनाते समय इनका पीछे वाला भाग हटा दिया जाता है; जैसे:

पक्का (क + क = क्क)
रफ्तार (फ + त = फ्त)

नई मानक वर्तनी के अनुसार 'पक्का' का स्वरूप 'पक्का' मान्य नहीं है।

(ग) बिना पाई वाले व्यंजनों (ट, ठ, ड, ढ, द, ह, ङ) के संयुक्ताक्षरों में हल् चिह्न का प्रयोग होना चाहिए; जैसे–

वाङ्मय = ङ् + म
पाठ्य = ठ् + य
विद्या = द् + य
लट्टू = ट् + ट
बुड्ढा = ड् + ढ
ब्राह्मण = ह् + म

(घ) हिंदी में 'र्' वर्ण के भी अनेक रूप हैं।

ऋ शब्द का प्रयोग केवल संस्कृत से लिए गए तत्सम शब्दों में ही होता है अन्यत्र नहीं। इस प्रकार के प्रयोग में विद्यार्थी विशेष रूप से भूल कर डालते हैं। इन भूलों का निराकरण अभ्यास पर ही आधारित है। फिर भी कुछ नियमों की जानकारी हम आगे लेंगे।

'र्' के विभिन्न रूप

हिंदी वर्णमाला में र् की स्थिति दूसरे वर्णों से भिन्न है। इसकी स्थिति वर्णमाला में विशेष है, क्योंकि इसके लेखन में विविधता है।

– रेफ (◌ॅ) लेखन की स्थिति :

र् जब हलंत अर्थात् स्वर रहित होता है तो उसके नीचे हल्-चिह्न नहीं लगता। ऐसी स्थिति में 'र्' रेफ (◌ॅ) बनकर अगले व्यंजन के सिर पर लगता है।

अशुद्ध रूप	शुद्ध रूप	अशुद्ध रूप	शुद्ध रूप
पर्व	पर्व	वर्ष	वर्ष
गर्व	गर्व	अर्ध्य	अर्ध्य
सर्व	सर्व	धर्मार्थ	धर्मार्थ

पर्व शब्द में 'व' वर्ण के पहले आने के कारण यह 'व' के शीर्ष पर लगेगा; जैसे—पर्व।

अर्ध्य में चूँकि र् के बाद ध् भी हलंत सहित है, अत: यह ध् के बाद आने वाले वर्ण य के शीर्ष पर लगेगा; जैसे—अर्ध्य

धर्मार्थ में 'र्' अगले वर्ण 'मा' तथा 'थ' पर लगा है; जैसे—धर्मार्थ।

कुछ मिले-जुले शब्द

क़द	क़िताब	क़रार	क़ौल	क़ालीन	क़तरा	ख़सरा	ख़ुदा
ख़र	ख़ाना	ख़ार	ग़ल्ला	ग़रज	गुल	ग़ौर	गज़
ग़श	राज़	ज़िला	ज़रा	ज़माना	ज़ीना	ज़ंग	ज़िरह
ज़री	ज़रब	ज़लाल	ज़लील	ज़ार	ज़ारी	तेज़	ताक़
ताज़	दर्ज़	दफ़ा	फ़लक	बेबाक़	हज़	हक़	हज़्म
हैज़ा	अक़्ल	सज़ा	मुक़र्रर	मुक़द्दर	माक़ूल	बाग़	

Intext Questions - 1 Page: 100

1. An object has moved through a distance. Can it have zero displacement? If yes, support your answer with an example.

Solution

Yes, an object moving a certain distance can have zero total displacement. Displacement refers to the shortest distance between the initial and the final positions of the object. Even if an object moves through a considerable distance, if it eventually comes back to its initial position, the corresponding displacement of the object would be zero.

2. A farmer moves along the boundary of a square field of side 10m in 40 s. What will be the magnitude of displacement of the farmer at the end of 2 minutes 20 seconds from his initial position?

Solution

Given that the farmer covers the entire boundary of the square field in 40 seconds, the total distance traveled by the farmer in 40 seconds is 4*(10) = 40 meters.

Therefore, the average distance covered by the farmer in one second is: $\frac{40m}{40} = 1m$

Two minutes and 20 seconds can be written as 140 seconds. The total distance traveled by the farmer in this timeframe is: $1m * 140 = 140m$

Since the farmer is moving along the boundary of the square field, the total number of laps completed by the farmer will be: $\frac{140}{40} = 3.5\ laps$

Now, the total displacement of the farmer depends on the initial position. If the initial position of the farmer is at one corner of the field, the terminal position would be at the opposite corner (since the field is square).

In this case, the total displacement of the farmer will be equal to the length of the diagonal line across the opposite corners of the square.

Applying the Pythagoras theorem, the length of the diagonal can be obtained as follows: $\sqrt{10 + 10^2}$ = $\sqrt{200}$ = **14.14m**.

This is the **maximum** possible displacement of the farmer.

If the initial position of the farmer is at the mid-point between two adjacent corners of the square, the net displacement of the farmer would be equal to the side of the square, which is 10m. This is the **minimum** displacement.

If the farmer starts at a random point around the perimeter of the square, his net displacement after traveling 140m will lie between 10m and 14.14m.

3. Which of the following is true for displacement? (a) It cannot be zero. (b) Its magnitude is greater than the distance travelled by the object.

Solution

Neither of the statements are true. Statement (a) is false because the displacement of an object which travels a certain distance and comes back to its initial position is zero. Statement (b) is false because the displacement of an object can be equal to, but never greater than the distance traveled.

Intext Questions - 2 Page: 102

1. Distinguish between speed and velocity.

Solution

Difference Between Speed and Velocity	
Velocity	**Speed**
It refers to the displacement of a given object over a time interval.	It refers to the distance moved by an object over a time interval.
It has a specific direction	It does not have any direction.
Velocity = $\frac{\text{displacement}}{\text{time}}$	Speed = $\frac{\text{distance}}{\text{time}}$
Velocity can hold a negative value	Speed cannot hold a negative value.

2. Under what condition(s) is the magnitude of average velocity of an object equal to its average speed?

Solution

Since average speed is the total distance traveled in a time frame and velocity is the total displacement in the time frame, the magnitude of average velocity and average speed will be the same when the total

distance traveled is equal to the displacement.

3. What does the odometer of an automobile measure?

Solution

The odometer measures the total distance traveled by the automobile.

4. What does the path of an object look like when it is in uniform motion?

Solution

The path of an object in uniform motion is a straight line.

5. During an experiment, a signal from a spaceship reached the ground station in five minutes. What was the distance of the spaceship from the ground station? The signal travels at the speed of light, that is, 3×10^8 m/s.

Solution

Given that the signal travels in a straight line, the distance between the spaceship and the ground station is equal to the total distance traveled by the signal.

5 minutes = 5*60 seconds = 300 seconds.

Speed of the signal = 3×10^8 m/s.

Therefore, total distance = (3×10^8 m/s) * 300s

= $9*10^{10}$ meters.

Intext Questions - 3 Page: 103

1. When will you say a body is in (i) uniform acceleration? (ii) non-uniform acceleration?

Solution

Uniform Acceleration: In this type of acceleration, the body moves along a straight line and its velocity increases/decreases at a uniform rate (it changes at a constant rate in any constant time interval).

Non-Uniform Acceleration: In this type of acceleration, the body moves along a straight line and its velocity increases/decreases at a rate that is not uniform (it changes at a different rate for a given constant time interval).

2. A bus decreases its speed from 80 km h^{-1} to 60 km h^{-1} in 5 s. Find the acceleration of the bus.

Solution

Given, the initial velocity (u) = 80km/hour = $\frac{80,000m}{3600s}$ = 22.22 m.s^{-1}

The final velocity (v) = 60km/hour = $\frac{60,000m}{3600s}$ = 16.66 m.s^{-1}

Time frame, t = 5 seconds.

Therefore, acceleration (a) = $\frac{v-u}{t} = \frac{16.66\ m.s^{-1}-22.22\ m.s^{-1}}{5s}$

= -1.112 m.s^{-2}

Therefore, the total acceleration of the bus is -1.112m.s^{-2}. It can be noted that the negative sign indicates that the velocity of the bus is decreasing.

3. A train starting from a railway station and moving with uniform acceleration attains a speed 40 km h^{-1} in 10 minutes. Find its acceleration.

Solution

Given, the initial velocity (u) of the train = 0m.s^{-1} (at rest)

Terminal velocity (v) of the train = 40km/hour = 11.11 m.s^{-1}

Time interval, t = 10 minutes = 600 s.

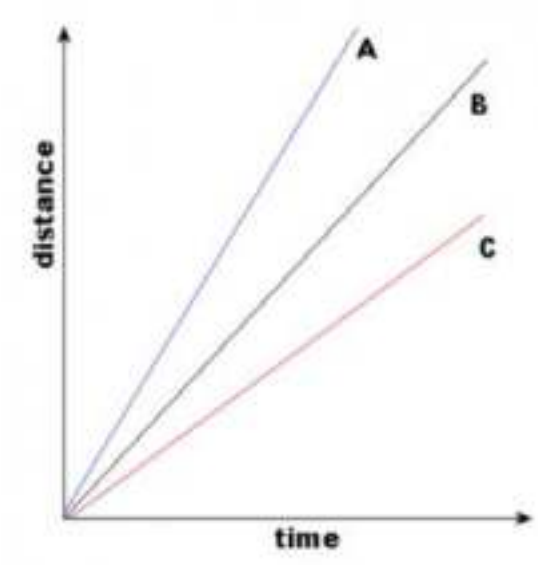
The acceleration of the train is given by $a = \frac{v-u}{t} = \frac{11.11\ ms^{-1}-0}{600s}$ = **0.0185 m.s^{-2}**

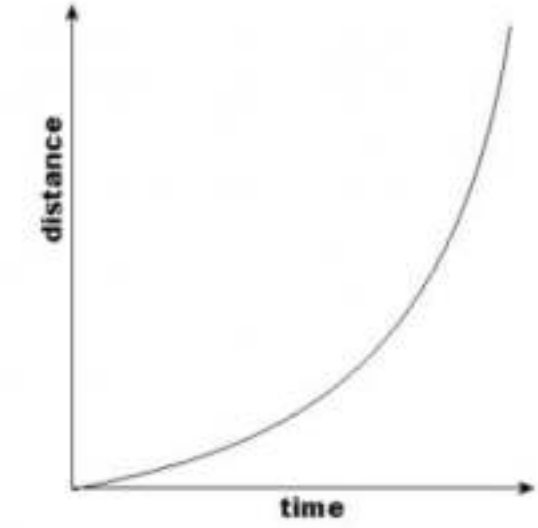
Intext Questions - 4 Page: 107

1. What is the nature of the distance-time graphs for uniform and non-uniform motion of an object?

Solution

For uniform motion, the distance-time graph is a straight line. On the other hand, the distance-time graph of an object in non-uniform motion is a curve.



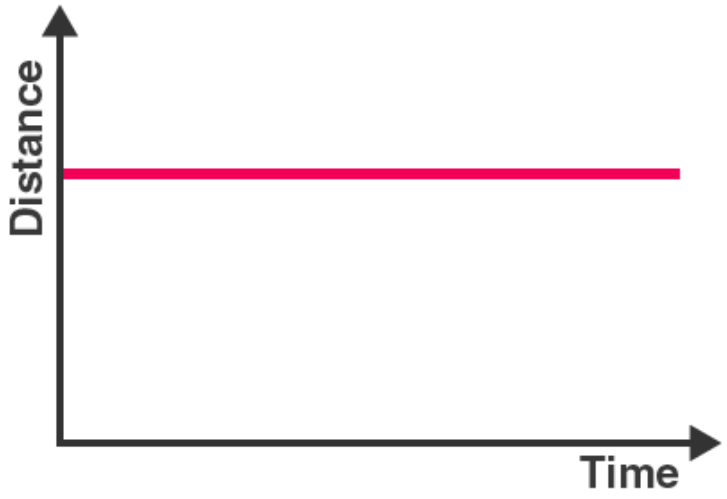


The first graph describes uniform motion and the second one describes non-uniform motion.

2. What can you say about the motion of an object whose distance-time graph is a straight line parallel to the time axis?

Solution

This distance-time graph can be plotted as follows.

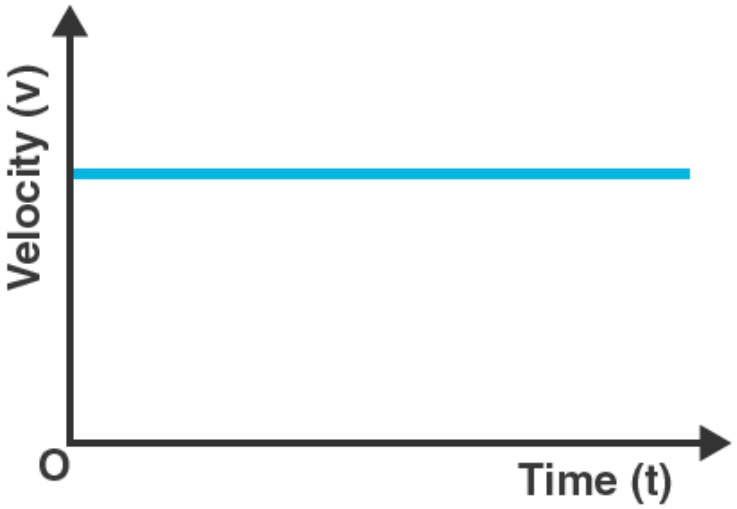


Since there is no change in the distance traveled by the object (or the Y-Axis value) at any point in the X-Axis (time), the object is at rest.

3. What can you say about the motion of an object if its speed-time graph is a straight line parallel to the time axis?

Solution

This speed-time graph can be plotted as follows.

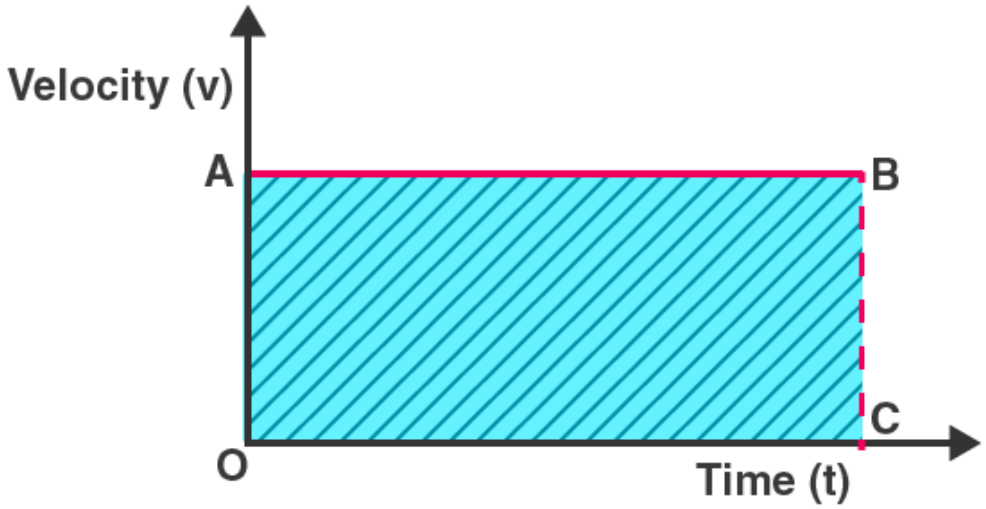


Since there is no change in the velocity of the object (Y-Axis value) at any point of time (X-axis value), the object is said to be in uniform motion.

4. What is the quantity which is measured by the area occupied below the velocity-time graph?

Solution

Considering an object in uniform motion, its velocity-time graph can be represented as follows.



Now, the area below the velocity-time graph is the area of the rectangle OABC, which is given by OA*OC. But OA is the velocity of the object and OC represents time. Therefore, the shaded area can be represented as:

Area under the velocity-time graph = velocity*time.

Substituting the value of velocity as $\frac{displacement}{time}$ in the previous equation, it is found that the area under the velocity-time graph represents the total displacement of the object.

Intext Questions - 5 Page: 109,110

1. A bus starting from rest moves with a uniform acceleration of 0.1 m s^{-2} for 2 minutes. Find (a) the speed acquired, (b) the distance travelled.

Solution

(a) Given, the bust starts from rest. Therefore, initial velocity (u) = 0 m/s

Acceleration (a) = 0.1 $m.s^{-2}$

Time = 2 minutes = 120 s

Acceleration is given by the equation $a = \frac{v-u}{t}$

Therefore, terminal velocity (v) = $(at) + u$

= (0.1 $m.s^{-2}$ * 120s) + 0 $m.s^{-1}$

= 12$m.s^{-1}$ + 0 $m.s^{-1}$

Therefore, terminal velocity (v) = 12m/s

(b) As per the third motion equation, $2as = v^2 - u^2$

Since a = 0.1 $m.s^{-2}$, v = 12 $m.s^{-1}$, u = 0 $m.s^{-1}$, and t = 120s, the following value for s (distance) can be obtained.

Distance, s = $\frac{v^2-u^2}{2a}$

= $\frac{12^2-0^2}{2(0.1)}$

Therefore, s = 720m.

The speed acquired is 12$m.s^{-1}$ and the total distance traveled is 720m.

2. A train is travelling at a speed of 90 km h^{-1}. Brakes are applied so as to produce a uniform acceleration of –0.5 m s^{-2}. Find how far the train will go before it is brought to rest.

Solution

Given, initial velocity (u) = 90 km/hour = 25 $m.s^{-1}$

Terminal velocity (v) = 0 $m.s^{-1}$

Acceleration (a) = -0.5 $m.s^{-2}$

As per the third motion equation, $v^2 - u^2 = 2as$

Therefore, distance traveled by the train (s) = $\frac{v^2-u^2}{2a}$

s = $\frac{(0^2)-(25^2)}{2(-0.5)}$ meters = 625 meters

The train must travel 625 meters at an acceleration of -0.5 ms^{-2} before it reaches the rest position.

3. A trolley, while going down an inclined plane, has an acceleration of 2 cm s^{-2}. What will be its velocity 3 s after the start?

Solution

Given, initial velocity (u) = 0 (the trolley begins from the rest position)

Acceleration (a) = 0.02 ms^{-2}

Time (t) = 3s

As per the first motion equation, $v = u + at$

Therefore, terminal velocity of the trolley (v) = 0 + $(0.02\ ms^{-2})(3s)$ = 0.06 ms^{-2}

Therefore, the velocity of the trolley after 3 seconds will be 6 $cm.s^{-2}$

4. A racing car has a uniform acceleration of 4 m s^{-2}. What distance will it cover in 10 s after start?

Solution

Given, the car is initially at rest; initial velocity (u) = 0 ms^{-1}

Acceleration (a) = 4 ms^{-2}

Time period (t) = 10 s

As per the second motion equation, $s = ut + \frac{1}{2}at^2$

Therefore, the total distance covered by the car (s) = $0 * 10\ m + \frac{1}{2}(4ms^{-2})(10s)^2$

= 200 meters

Therefore, the car will cover a distance of 200 meters after 10 seconds.

5. A stone is thrown in a vertically upward direction with a velocity of 5 m s^{-1}. If the acceleration of the stone during its motion is 10 m s^{-2} in the downward direction, what will be the height attained by the stone and how much time will it take to reach there?

Solution

Given, initial velocity (u) = 5 m/s

Terminal velocity (v) = 0 m/s (since the stone will reach a position of rest at the point of maximum height)

Acceleration = 10 ms^{-2} in the direction opposite to the trajectory of the stone = -10 ms^{-2}

As per the third motion equation, $(v^2 - u^2) = 2as$

Therefore, the distance traveled by the stone (s) = $\frac{0^2-5^2}{2(10)}\ meters$

Distance (s) = 1.25 meters

As per the first motion equation, $v = u + at$

Therefore, time taken by the stone to reach a position of rest (maximum height) = $\frac{v-u}{a}$

= $\frac{0-5}{-10}\ seconds$

Time taken = 0.5 seconds

Therefore, the stone reaches a maximum height of 1.25 meters in a timeframe of 0.5 seconds.

Exercises Page: 112,113

1. An athlete completes one round of a circular track of diameter 200 m in 40 s. What will be the distance covered and the displacement at the end of 2 minutes 20 s?

Solution

Given, diameter of the track (d) = 200m

Therefore, circumference of the track (π*d) = 200π meters.

Distance covered in 40 seconds = 200π meters

Distance covered in 1 second = $\frac{200\pi}{40} meters$

Distance covered in 2minutes and 20 seconds (140 seconds) = $140 * \frac{200\pi}{40}$ meters

= $\frac{140*200*22}{40*7}$ meters = 2200 meters

Number of laps completed by the athlete in 140 seconds = $\frac{140}{40}$ = 3.5

Therefore, the final position of the athlete (with respect to the initial position) is at the opposite end of the circular track. Therefore, the net displacement will be equal to the diameter of the track, which is 200m.

Therefore, the net distance covered by the athlete is 2200 meters and the total displacement of the athlete is 200m.

2. Joseph jogs from one end A to the other end B of a straight 300 m road in 2 minutes 30 seconds and then turns around and jogs 100 m back to point C in another 1 minute. What are Joseph's average speeds and velocities in jogging (a) from A to B and (b) from A to C?

Solution

Given, distance covered from point A to point B = 300 meters

Distance covered from point A to point C = 300m + 100m = 400 meters

Time taken to travel from point A to point B = 2 minutes and 30 seconds = 150 seconds

Time taken to travel from point A to point C = 2 min 30 secs + 1 min = 210 seconds

Displacement from A to B = 300 meters

Displacement from A to C = 300m – 100m = 200 meters

Average speed = $\frac{total\ distance\ traveled}{total\ time\ taken}$

Average velocity = $\frac{total\ displacement}{total\ time\ taken}$

Therefore, the average speed while traveling from A to B = $\frac{300}{150} ms^{-1}$ = 2 m/s

Average speed while traveling from A to C = $\frac{400}{210} ms^{-1}$ = 1.9 m/s

Average velocity while traveling from A to B = $\frac{300}{150} ms^{-1}$ = 2 m/s

Average velocity while traveling from A to C = $\frac{200}{210} ms^{-1}$ = 0.95 m/s

3. Abdul, while driving to school, computes the average speed for his trip to be 20 km.h^{-1}. On his return trip along the same route, there is less traffic and the average speed is 30 km.h^{-1}. What is the average speed for Abdul's trip?

Solution

Distance traveled to reach the school = distance traveled to reach home = d (say)

Time taken to reach school = t_1

Time taken to reach home = t_2

therefore, average speed while going to school = $\frac{total\ distance\ traveled}{total\ time\ taken}$ = d/t_1 = 20 kmph

Average speed while going home = = $\frac{total\ distance\ traveled}{total\ time\ taken}$ = d/t_2= 30 kmph

Therefore, $t_1 = \frac{d}{20}$ and $t_2 = \frac{d}{30}$

Now, the average speed for the entire trip is given by $\frac{total\ distance\ traveled}{total\ time\ taken}$

= $\frac{(d+d)}{t_1+t_2}$ kmph = $\frac{2d}{\frac{d}{20}+\frac{d}{30}}$ kmph

= $\frac{2d}{\frac{3d+2d}{60}}$ kmh^{-1}

= 120/5 kmh^{-1} = 24 kmh^{-1}

Therefore, Abduls average speed for the entire trip is 24 kilometers per hour.

4. A motorboat starting from rest on a lake accelerates in a straight line at a constant rate of 3.0 m s^{-2} for 8.0 s. How far does the boat travel during this time?

Solution

Given, initial velocity of the boat = 0 m/s

Acceleration of the boat = 3 ms^{-2}

Time period = 8s

As per the second motion equation, $s = ut + \frac{1}{2}at^2$

Therefore, total distance traveled by the boat in 8 seconds = $0 + \frac{1}{2}(3)(8^2)$

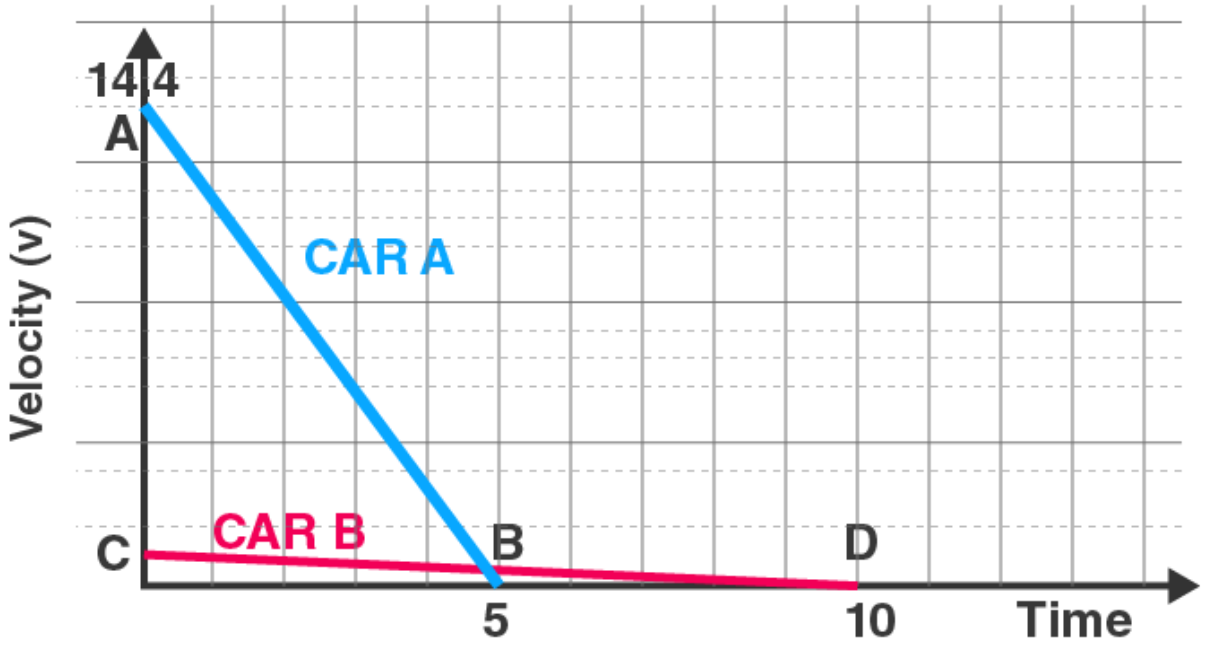
= 96 meters

Therefore, the motorboat travels a distance of 96 meters in a time frame of 8 seconds.

5. A driver of a car travelling at 52 km h^{-1} applies the brakes and accelerates uniformly in the opposite direction. The car stops in 5 s. Another driver going at 3 km h^{-1} in another car applies his brakes slowly and stops in 10 s. On the same graph paper, plot the speed versus time graphs for the two cars. Which of the two cars travelled farther after the brakes were applied?

Solution

The speed v/s time graphs for the two cars can be plotted as follows.



The total displacement of each car can be obtained by calculating the area beneath the speed-time graph.

Therefore, displacement of the first car = area of triangle AOB

= (1/2)*(OB)*(OA)

But OB = 5 seconds and OA = 52 $km.h^{-1}$ = 14.44 m/s

Therefore, the area of the triangle AOB is given by: (1/2)*(5s)*(14.44ms^{-1}) = 36 meters

Now, the displacement of the second car is given by the area of the triangle COD

= (1/2)*(OD)*(OC)

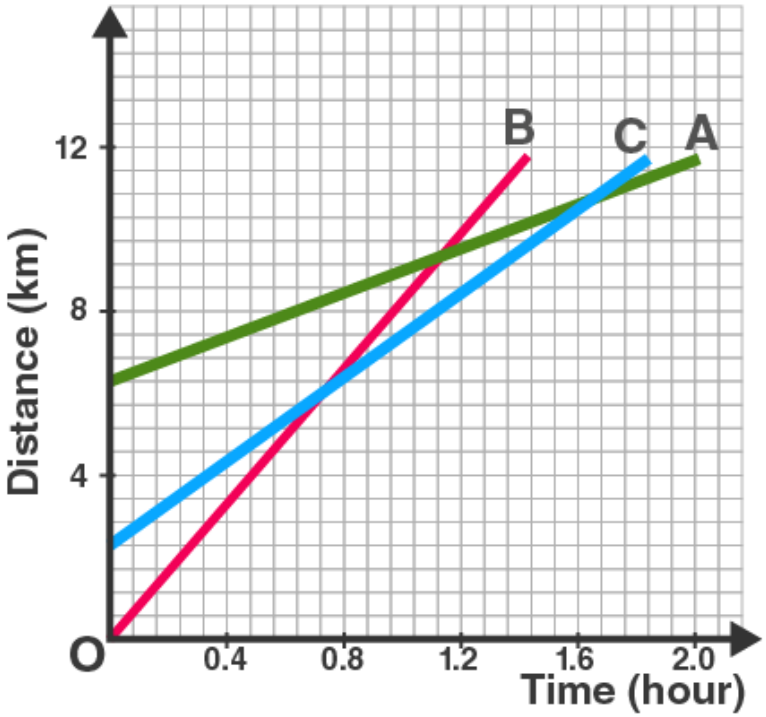
But OC = 10 seconds and OC = 3$km.h^{-1}$ = 0.83 m/s

Therefore, area of triangle COD = (1/2)*(10s)*(0.83ms^{-1}) = 4.15 meters

Therefore, the first car is displaced by 36 meters whereas the second car is displaced by 4.15 meters.

Therefore, the first car (which was traveling at 52 kmph) traveled farther post the application of brakes.

6. Fig 8.11 shows the distance-time graph of three objects A,B and C. Study the graph and answer the following questions:



(a) Which of the three is travelling the fastest? (b) Are all three ever at the same point on the road? (c) How far has C travelled when B passes A? (d) How far has B travelled by the time it passes C?

Solution

(a) since the slope of line B is the greatest, B is traveling at the fastest speed.

(b) since the three lines do not intersect at a single point, the three objects never meet at the same point on the road.

(c) since there are 7 unit areas of the graph between 0 and 4 on the Y axis, 1 graph unit equals 4/7 km. Since the initial point of object C is 4 graph units away from the origin, Its initial distance from the origin is 4*(4/7)km = 16/7 km

When A passes B, the distance between the origin and C is 8km

Therefore, total distance traveled by C in this time = 8 - (16/7) km = 5.71 km

(d) the distance that object B has covered at the point where it passes C is equal to 9 graph units.

Therefore, total distance traveled by B when it crosses C = 9*(4/7) = 5.14 km

7. A ball is gently dropped from a height of 20 m. If its velocity increases uniformly at the rate of 10 m s^{-2}, with what velocity will it strike the ground? After what time will it strike the ground?

Solution

Given, initial velocity of the ball (u) = 0 (since it began at the rest position)

Distance traveled by the ball (s) = 20m

Acceleration (a) = 10 ms^{-2}

As per the third motion equation, $2as = v^2 - u^2$

Therefore, $v^2 = 2as + u^2$

= 2*(10ms^{-2})*(20m) + 0

v^2 = 400m^2s^{-2}

Therefore, v= 20ms^{-1}

The ball hits the ground with a velocity of 20 meters per second.

As per the first motion equation, $v = u + at$

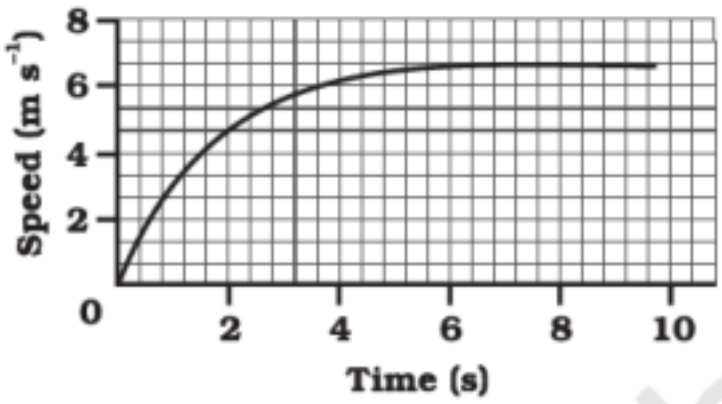
Therefore, $t = \frac{v-u}{a}$

= $\frac{(20-0)ms^{-1}}{10ms^{-2}}$

= 2 seconds

Therefore, the ball reaches the ground after 2 seconds.

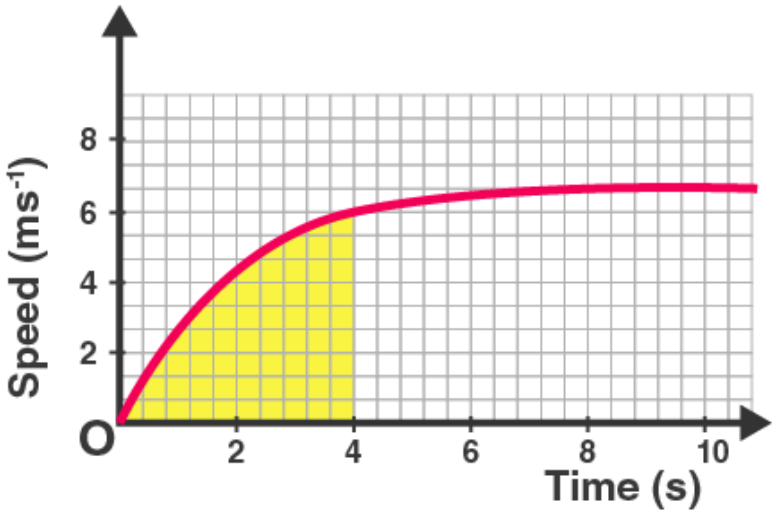
8. The speed-time graph for a car is shown is Fig. 8.12



(a) Find how far does the car travel in the first 4 seconds. Shade the area on the graph that represents the distance travelled by the car during the period. (b) Which part of the graph represents uniform motion of the car?

Solution

(a)



The shaded area represents the displacement of the car over a time period of 4 seconds. It can be calculated as:

(1/2)*4*6 = 12 meters. Therefore the car travels a total of 12 meters in the first four seconds.

(b) Since the speed of the car does not change from the points (x=6) and (x=10), the car is said to be in uniform motion from the 6^{th} to the 10^{th} second.

9. State which of the following situations are possible and give an example for each of these: (a) an object with a constant acceleration but with zero velocity (b) an object moving with an acceleration but with uniform speed. (c) an object moving in a certain direction with an acceleration in the perpendicular direction.

Solution

(a) It is possible; an object thrown up into the air has a constant acceleration due to gravity acting on it. However, when it reaches its maximum height, its velocity is zero.

(b) it is impossible; acceleration implies an increase or decrease in speed, and uniform speed implies that the speed does not change over time

(c) It is possible; for an object accelerating in a circular trajectory, the acceleration is perpendicular to the direction followed by the object.

10. An artificial satellite is moving in a circular orbit of radius 42250 km. Calculate its speed if it takes 24 hours to revolve around the earth.

Solution

Given, radius of the orbit = 42250 km

Therefore, circumference of the orbit = 2*π*42250km = 265571.42 km

Time taken for the orbit = 24 hours

Therefore, speed of the satellite = 11065.4 $km.h^{-1}$

The satellite orbits the Earth at a speed of 11065.4 kilometers per hour.

Class 9

বাংলা পদ্য: খেয়া

রচনাধর্মী প্রশ্ন উত্তর;মান 5

১. “পৃথিবীতে কত দ্বন্দ্ব, কত সর্বনাশ” ক. কার কোন কবিতার অন্তর্গত? দ্বন্দ্ব ও সর্বনাশ বলতে কি বুঝানো হয়েছে? আলোচ্য অংশের তাৎপর্য বিশ্লেষণ করো।

উত্তর ক. রবীন্দ্রনাথ ঠাকুর রচিত 'খেয়া' কবিতার রচনায় অন্তর্গত।

খ. ‘দ্বন্দ্ব’ শব্দের অর্থ সংঘাত বা বিবাদ। আর 'সর্বনাশ'শব্দের অর্থ সবকিছু ধ্বংস।

গ. আলোচ্য অংশে কবি নাগরিক জীবন ও গ্রামীণ জীবনের একটি চিত্র তুলে ধরেছেন। গ্রামের তুলনায় নগরে সুযোগ সুবিধা অনেক বেশি। কিন্তু সেখানে মানুষের সঙ্গে মানুষের যুগসূত্র খুব কম। অভাব শুধু মানবিক সম্পর্কের। প্রতিনিয়ত ও হানাহানি, মারামারি, সংঘাত বিবাদ লেগে থাকে। মানুষের সুখের লালসা অনেক বেশি বলেই সেখানে নিজেদের মধ্যে হানাহানি, মারামারি, রক্তাক্ত সংঘাত বেশি। এই রক্তাক্ত সংঘাত,ই পৃথিবীর বুকে ডেকে আনে চরম সর্বনাশ

২”খেয়া নৌকা পারাপার করে নদীর স্রোতে”;- ক. উদ্ধৃতিটি কোন রচনার অংশ? ‘খেয়ানৌকা' বলতে কি বুঝ? গ. খেয়ানৌকা কার কাজ কি? ঘ. আলোচ্য অংশের তাৎপর্য ব্যাখ্যা করো।

উত্তর ক. উদ্ধৃতিটি বিশ্বকবি রবীন্দ্রনাথ ঠাকুর রচিত খেয়া কবিতার অংশ।

খ.’খেয়ানৌকা’বলতে বুঝায় নদীর দুই তীরের মধ্যে পারাপারকারী নৌকা

। গ. খেয়া নৌকার কাজ নদীর দুই পাড়ের মধ্যে যোগসূত্র গড়ে তোলা

ঘ. উদ্বৃত পংক্তিটিরমধ্য দিয়ে কবি গ্রামবাংলার মানুষের সহজ সরল জীবন যাত্রার ছবি তুলে ধরেছেন।নাম না জানা একটি নদীর দু’পাশে দুই নাম-না-জানা গ্রাম। খেয়ানৌকা এখানে দুইপারের মানুষকে আত্মীয়তার সম্পর্কের বেধেছে। খেয়া নৌকার সঙ্গে এখানে মানুষের সঙ্গে মানুষের যোগসূত্র গড়ে উঠেছে।

৩.” কেহ যায় ঘরে, কেহ আসে ঘর হতে”- ক. কোন রচনার অন্তর্গত? কবি কাদের যাওয়া-আসার কথা বুঝিয়েছেন? গ.আলোচ্য অংশের তাৎপর্য বিশ্লেষণ করো।

উত্তর ক. বিশ্বকবি রবীন্দ্রনাথ ঠাকুর রচিত 'কবিতা রচনার অন্তর্গত।

। খ. আলোচ্য অংশে কবি নদীর তীরে অবস্থিত গ্রামের নাম না জানা দুটি গ্রামের মানুষের যাওয়া আসার কথা বলেছেন।

গ. নদীর দুই তীরে দুই নাম-না-জানা গ্রাম। সেই দুই গ্রামের মানুষের সহজ সরল, শান্ত জীবনযাত্রা। গড়ে উঠেছে মানুষের সঙ্গে মানুষের সুনিবিড় ভালোবাসার সম্পর্ক। দুই গ্রামের সাধারণ মানুষ খেয়ানৌকা করে কেউ কাজ সেরে ঘরে ফেরে আবার কেউ খেয়ানৌকা করে নদী পার হয়ে কাজে যায়