



Important: "The material in this assignment is an important part of your mid-term exam preparation. Be sure to complete all tasks thoughtfully and revise each topic in detail."



SUBMISSION INSTRUCTIONS

- Use loose leaves for all your assignments.
- Submit all completed work in a neat file cover with your **name, class, and section** clearly written.
- The assignments will be collected on **8th August 2026** between **8:00 a.m.** and **11:00 a.m.**
- Late submissions may affect your assessment.

GUIDELINES FOR STUDENTS



Dear Students,

Summer vacation is a wonderful opportunity to relax, explore new interests, and continue learning in enjoyable ways. You are expected to complete all assigned tasks with sincerity, creativity, and a strong sense of responsibility. Your work should reflect both your understanding and your effort.



HEALTHY DAILY ROUTINE

- **Try to wake up** and sleep according to your regular school timings every day.
- **Plan your day wisely** by balancing study, hobbies, exercise, family time, and rest.
- **Maintain a healthy lifestyle** to stay active and productive throughout the holidays.

DEVELOP THE HABIT OF READING



- Read for at least **30 minutes** every day.
- Choose books that interest you, whether fiction or non-fiction.
- Share interesting facts, ideas, or stories with family and friends.

USE TECHNOLOGY WISELY



- Limit unnecessary screen time.
- Avoid using electronic devices immediately before bedtime.
- Use technology mainly for learning, research, creativity, and meaningful communication.



PERSONAL GROWTH CHALLENGE

Choose one personal habit to improve during the summer, such as:



Better time management



Reading regularly



Waking up early



Helping at home



Staying organized



Exercising daily

At the end of the vacation, reflect on how this habit helped you grow as a person.

REMEMBER:

“ Success is the result of consistent effort, positive habits, and a love for learning. ”



Based on the reading of, 'The Alchemist'.

<https://online.fliphtml5.com/jnaw/vvus/#p=1>

Section A – About the Novel

Read, The Alchemist and answer the following questions in complete sentences.

1. Who is Santiago and what is his dream?
2. Why does Santiago decide to leave Spain?
3. Who is Melchizedek and what advice does he give Santiago?
4. What lesson does Santiago learn from the crystal merchant?
5. Why is the desert important in the novel?

Section B – Reading Comprehension

Read the extract carefully and answer the questions.

“When you want something, all the universe conspires in helping you to achieve it.”

Questions

1. Who says these words in the novel?
2. What do these words mean?
3. Do you agree with this idea? Why or why not?
4. Describe one event from the novel that supports this statement.
5. Write one personal goal and explain how determination can help you achieve it.

Section C – Character Study

Complete the following table.

Character	Role in the Story	Personality Traits	Important Lesson Learned
Santiago			
The Crystal Merchant			
The Alchemist			
Fatima			

Section D – Themes and Messages

Write short paragraphs on the following themes:

1. Dreams and Ambition
2. Destiny and Personal Legend
3. Courage and Risk-taking
4. Love and Sacrifice
5. The Importance of Learning from Life

Section E – Vocabulary Task

Find the meanings of the following words from the novel and use each in a sentence:

- Oasis
- Omen
- Treasure
- Pilgrimage
- Merchant

Section F– Critical Thinking

Answer the following questions thoughtfully.

1. Why do many people give up on their dreams?
2. What sacrifices did Santiago make to follow his Personal Legend?
3. How does the novel encourage readers to believe in themselves?
4. Which character influenced Santiago the most? Explain your answer.
5. What is the main moral lesson of the novel?

ہدایات: تمام سوالات کو غور سے پڑھیں اور دی گئی الفاظ کی حد کے مطابق اپنے جوابات صاف اور خوشخط تحریر کریں۔

سوال نمبر 1

مختلف ممالک میں اس وقت پٹرول کا شدید بحران ہے، پاکستان میں پٹرول کی بڑھتی قیمتوں سے عوام پریشان ہے۔ اس سے سماجی اور معاشرتی زندگی پر کتنے اثرات مرتب ہوئے ہیں؟ اپنی رائے کا اظہار کریں۔

الفاظ کی حد: 200 الفاظ

سوال نمبر 2

سکولوں میں چار دن پڑھائی اور تین دن چھٹیاں ہونے کے بارے میں اپنے تاثرات کا اظہار کریں۔ کیا آپ اس کے حق میں ہیں یا مخالفت میں؟ دلائل کے ساتھ لکھیں۔

الفاظ کی حد: 200 الفاظ

اہم نوٹ (کتابی مشقیں):
کتاب میں سے درج ذیل مشقیں مکمل کرنی ہیں:
پہلی پانچ (5) تفہیم، تلخیص، ترجمہ نگاری اور ای میل مشق۔
ملفوظہ خاطر رہے: سکول کھلنے پر ان تمام مشقوں کا باقاعدہ ٹیسٹ لیا جائے گا۔

Geography

[Marks: 25]

Learn the chapters with the help of the video links given and then read from your book. Solve the exercise given at the end of the chapter.

Chapter#9 INDUSTRIAL DEVELOPMENT.

PRIMARY, SECONDARY AND TERTIARY INDUSTRIES

<https://www.youtube.com/watch?v=JlYULUxkHN8>

https://youtu.be/n_2LA701SVU

<https://youtu.be/6fWcHIOWwKs>

History

[Marks: 25]

Learn the chapters with the help of the video links given and then read from your book. Solve the exercise given at the end of each chapter.

Chapter # 11 The Partition and the Nascent state .

<https://youtu.be/pM6rnpilUoM>

<https://youtu.be/NoKcsYZzwpq>

Chapter#12 How far did Pakistan achieve stability following the death of Jinnah.

https://youtu.be/_Oyz_eoNuC8

<https://www.youtube.com/watch?v=jXpwynMQXXA>

Instructions

- Answer all questions in complete sentences.
- Support your answers with relevant historical facts and examples.
- Present your work neatly on loose sheets.
- Original thinking and proper research will be rewarded.

Section A: Research and Analysis [8]**1. Leadership Comparison [4]**

Compare the leadership styles of Hazrat Umar (RA) and Hazrat Uthman (RA). Discuss:

- Their approach to governance
- Their relationship with the people
- One major achievement of each caliph

(Answer in 150–200 words.)

2. The Importance of Administrative Reforms [4]

Choose any four administrative reforms introduced by Hazrat Umar (RA). Explain how each reform helped strengthen the Islamic state and discuss whether similar systems exist today. *(Answer in 150–200 words.)*

Section B: Critical Thinking [8]**3. Preserving the Holy Quran [4]**

Why was the compilation and standardization of the Holy Quran during the caliphate of Hazrat Uthman (RA) necessary? Explain the challenges faced and discuss its importance for Muslims today. *(Answer in 150–200 words.)*

4. Justice in Practice [4]

Research two incidents from the life of Hazrat Umar (RA) that demonstrate justice and equality. Explain what modern leaders can learn from these examples.

(Answer in 150–200 words.)

Section C: Analytical Essay [5]**5. “Great leaders are remembered not only for their achievements but also for their character.”**

Using examples from the lives of Hazrat Umar (RA) and Hazrat Uthman (RA), evaluate this statement. Whose qualities do you find more inspiring and why?

Challenge Question [4]

Create a timeline highlighting at least eight important events from the caliphates of Hazrat Umar (RA) and Hazrat Uthman (RA). Include dates and a brief description of each event.

Mathematics**[Marks: 25]**

* Solve the following questions on loose leaf. [10]

i) Book D3, Exercise 3E (Page No. 76, 77)- Questions: Q1, Q2, Q3, Q4, Q5, Q6, Q7, Q8

ii) Brainstorming Questions [5]

a) Find the next number by pattern: 4, 9, 20, 35,

b) Solve the equation to find A and B:

Given: $(A - 5) \div B = 3$, $A + B = 37$ Show your working.

* Practice Book D3- Exercise: 1A, 1B, 1C

You will have a test of 10 marks of above-mentioned exercises after summer vacation. [10]

Topic: Money and Banking & Trade Unions

Write a detailed report (250–300 words) discussing the importance of money, banking systems, and trade unions in a modern economy.

Your report should:

- Explain the functions of money (e.g., medium of exchange, store of value, unit of account, standard of deferred payment). [6]
- Describe the role of commercial banks in the economy and explain at least two banking services provided to customers with examples. [6]
- Explain what trade unions are and discuss two benefits they provide to workers. [4]
- Discuss one potential disadvantage or limitation of trade unions for businesses or the economy. [3]
- Conclude with a reasoned judgement on the overall importance of banks and trade unions in achieving economic development and improving living standards. [1]

Presentation of this activity will be conducted after vacations. [5]

Accounting**[Marks: 25]****Chapter: Financial Statements & Accounting Rules**

Study the topics covered in class and complete the following tasks:

A. Financial Statements Activity [15]

Create a business named “Summer Stationery Store” (or any business of your choice) and prepare the following:

- An Income Statement for one month showing:
 - Revenue
 - Cost of Sales
 - Gross Profit
 - Expenses
 - Net Profit
- A Balance Sheet (Statement of Financial Position) showing:
 - Non-current Assets
 - Current Assets
 - Current Liabilities
 - Capital
 - Owner’s Equity

You may create realistic figures yourself.

B. Accounting Rules Exercise [5]

Write and explain any five accounting rules/principles studied in class. Provide one example for each rule.

C. Presentation [5]

Prepare a short classroom presentation explaining:

- How an Income Statement helps a business measure performance?
- How a Balance Sheet helps a business assess its financial position?

Topic: Market Research & Motivating Employees

Imagine you are planning to open a new business in your country (e.g., café, clothing brand, online store, bakery, tutoring academy, etc.).

Prepare a report by answering the following questions:

A. Market Research [12]

- a) What product or service will your business provide? Identify your target market and explain its characteristics. [3]
- b) What primary and secondary market research methods will you use before starting the business? Justify your choices. [3]
- c) Design five survey questions that could be used to collect information from potential customers. [3]
- d) Explain how the information collected through market research will help your business make better decisions. [3]

B. Motivating Employees [8]

- a) Explain the importance of employee motivation in a business. [2]
- b) Describe two financial methods and two non-financial methods of motivating employees. [4]
- c) Which motivation method do you think would be most effective for your chosen business? Give reasons for your answer. [2]

C. Summary [3]

Write a brief conclusion explaining why you believe your business will be successful based on your market research findings and employee motivation strategies.

D. Presentation [2]

Presentation of this activity will be conducted after vacations.

Computer**[Marks: 25]****Topic: Autonomous & Embedded Systems****Section A: Multiple Choice / Short Answer**

1. State what is meant by an 'embedded system'. Give ONE real-life example. [2]
2. Identify whether each of the following is an autonomous system or an embedded system: [3]
 - (a) A washing machine controller
 - (b) A self-driving car
 - (c) A digital thermostat
3. State TWO characteristics of an autonomous system. [2]
4. Give TWO examples of sensors used in autonomous vehicles and state the purpose of each. [2]

Section B: Structured Questions

5. A smart home system uses sensors and actuators to control temperature automatically. [6]
 - (a) Name ONE type of sensor the system would use and explain its role. [2]
 - (b) Name ONE actuator in this system and describe what it does. [2]
 - (c) Explain how the sensor and actuator work together to maintain the set temperature. [2]
6. Describe the role of a microcontroller in an embedded system. State TWO ways it differs from a general-purpose computer processor. [4]

Section C: Extended Response

7. Discuss the advantages and disadvantages of using autonomous systems in modern industry. Your answer should refer to specific examples and consider both economic and safety aspects. [6]

Instructions: Carefully read the miracle accounts found in the Synoptic Gospels:

Matthew 8:5–13; 11:1–6; 20:29–34

Mark 2:1–12; 4:35–41; 6:30–52; 7:24–30

Luke 7:11–17; 8:26–56; 9:37–43

Answer all the given questions. Support your answers with examples from the Bible.

1. Jesus' Identity

Jesus performed many different types of miracles.

- a) Identify four different categories of miracles performed by Jesus (e.g., healing, nature miracles, exorcisms, raising the dead).
- b) Choose one miracle from each category and explain what it teaches about Jesus' power and identity.
- c) If you had witnessed one of these miracles, how might it have changed your view of Jesus? Give reasons for your answer.
- (d) Some people argue that Jesus' miracles prove that he was the Son of God. Others believe the stories should be understood symbolically.
 - Discuss both views in your answer.
 - Give arguments supporting miracles as evidence of Jesus' divinity and also arguments supporting a symbolic interpretation.
 - State which view you find more convincing and explain why.

2. Faith revealed through Miracles

Imagine you are one of the following people

- The Centurion whose servant was healed
- The woman healed from bleeding
- A disciple in the boat during the storm
- The widow of Nain

Write a first -person account (150–200 words) describing:

- What happened
- Your feelings before and after the miracle.
- What you learned about faith and God's power.
- How the experience changed your life.

3. Importance of Miracles

Many Christians today believe that the miracles of Jesus still have important lessons.

- a) Choose two miracles and explain how they inspire Christians today.
- b) What message do Jesus' miracles give to people facing challenges such as sickness, fear, loneliness, or doubt?
- c) Do you think miracles are only important because they are extraordinary events, or because of the spiritual lessons they teach? Explain your answer.

Physics

[Marks: 25]

➤ **Answer the following with diagrams, equations, and examples where appropriate: [6]**

1. **Wave Properties Deep Dive:**

- Explain how wave speed changes with medium and why this affects refraction.
- Describe how energy is transferred by waves without transferring matter.

2. **Pressure in Fluids:**

- How does pressure in a liquid vary with depth?
- Explain how Pascal's Principle is used in hydraulic systems.

➤ **Show full working, units, and reasoning: [9]**

1. A hydraulic lift has a small piston of area 0.01 m^2 and a large piston of area 0.4 m^2 .

a) If a force of 200 N is applied to the small piston, calculate the output force.

b) Explain the physics behind this multiplication of force.

2. A diver is 10 m underwater. Find the pressure at that depth.

($\rho=1000 \text{ kg/m}^3$, $g=9.8 \text{ m/s}^2$, atmospheric pressure = $1.0 \times 10^5 \text{ Pa}$)

3. A wave travels along a stretched string at 250 m/s. If the string vibrates at 50 Hz, calculate:

a) Wavelength b) Time period c) How the wave properties change if the tension is increased

➤ **Write a short research report (1–2 pages) with headings, diagrams, and references. [5]**

How Sonar Uses Pressure Waves in Water

- Explain how sonar works, including wave reflection and travel time.
- Discuss real applications in submarines, ships, or fishing.

CHALLENGE Question:[5]

You're swimming at the bottom of a deep pool. You shout underwater.

- Will someone above the water hear your voice clearly?
- Use your knowledge of **wave transmission**, **pressure**, and **wave boundaries** to explain.

Chemistry

[Marks: 25]

1. **Answer the following questions.**

[5]

a) Calculate the mass of 0.25 moles of calcium carbonate (CaCO_3).

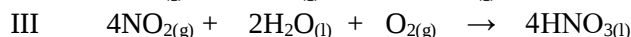
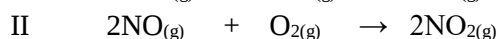
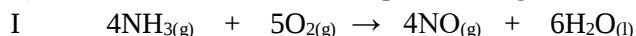
b) A compound contains 85.7% carbon, 6.7% hydrogen and 53.3% oxygen. Determine its empirical formula.

2. **Solve the following questions.**

[10]

a) Draw the energy profile diagrams of endothermic and exothermic reactions. (Show axes, reactants, products, activation energy, enthalpy change).

b) The three reactions that take place during the manufacture of nitric acid from ammonia are:



c) What is the oxidation state of nitrogen in each of the following compounds?

(i) NH_3 (ii) NO_2 (iii) NO (iv) HNO_3

d) Explain in term of oxidation states, what has been

(i) oxidized in reaction I

(ii) reduced in reaction III

3. **Learn and write the following tests:**

[10]

a) The tests for identifying cations using aqueous sodium hydroxide and aqueous ammonia.

(Given on Pg 225 and 226, Table 14.3 and Table 14.4)

b) The tests for identifying anions. (Pg 227, Table 14.5)

(Writing=5 marks, Test will be given from these Tables= 5 marks)

Note: The student will go through the syllabus topic #8 'Human Nutrition' to attempt the worksheet Questions.

Guideline can be taken from Biology Course Book for O Levels by Hodders & Matter book
Marshall Cavendish Education & the links shared below.

<https://www.youtube.com/watch?v=dZB7kzKUZIc>

<https://www.youtube.com/watch?v=sLP8dcnWnJg&t=14s>

<https://www.youtube.com/watch?v=wSOwMPkJ9wE>

<https://www.youtube.com/watch?v=TomgHXgMx6Y>

https://www.youtube.com/watch?v=_T_vmcLyTzI

<https://www.youtube.com/watch?v=qJ4z25ofX7g>

Diet and Digestive System

[5]

1)

Match the components of a balanced diet with their role in the body.

Provides energy -

Insulation -

Growth and repair -

Transit through the alimentary canal -

Fibre

Protein

Fat

Carbohydrate

2)

Predict the relative energy contents of the four food types listed by matching them with the relative quantitative terms. Assume that the same mass of each food was used in this investigation.

Fried potato chip -

Dried pasta -

Corn flake -

Dried cucumber -

Low

Very low

Very high

High

3)

During the application of the food type to the bottom of the test tube, some of the food falls from the tongs.

The student picks up the portion of food that dropped and reignites it, before positioning it again under the boiling tube.

Was this the correct course of action?

☐ True

☐ False

4)

Number the following steps in order to describe how to obtain a measurement that reflects the energy content of a piece of food.

Place a thermometer into a boiling tube of 20 ml water and measure the initial temperature -

Holding the food sample in tongs, set it alight in the flame of a Bunsen burner -

Immediately position the burning food sample beneath the base of the boiling tube to heat the water -

Gently stir the water using the thermometer before measuring and recording the final temperature -

2

3

1

4

5)

After heating the water with the burning food, the water must be stirred to ensure that the heat is distributed throughout the water before the final temperature is measured.

☐ True

☐ False

6)

food substance	mass of food burnt /g	starting temperature / °C	final temperature / °C	rise in temperature / °C
starch	0.62	31	65	34
sugar	0.54	30	59	29
fat	0.56	30	90	60
protein	0.95	31	62	31

The table shows the results of an experiment in which the energy content of four food types was determined.

A student claimed that sugar had the least energy content as it increased the temperature of the water by the smallest amount.

Was she correct?

☐ True

☐ False

7)

	Food	% composition		
		Carbohydrate	Protein	Fat
A	Bread	47	10	3
B	Butter	0	1	82
C	Fish	8	20	10
D	Fried rice	37	4	19

The table shows the composition of four foods.

If each were eaten in equal quantities, which food would provide the most energy?

☐ C

☐ A

☐ D

☐ B

	age	sex	level of activity	body weight /kg
A	5	male	high	18
B	20	male	low	85
C	40	female	high	82
D	65	female	low	75

The table shows some characteristics of four people.

Which person requires the greatest energy intake in their diet?

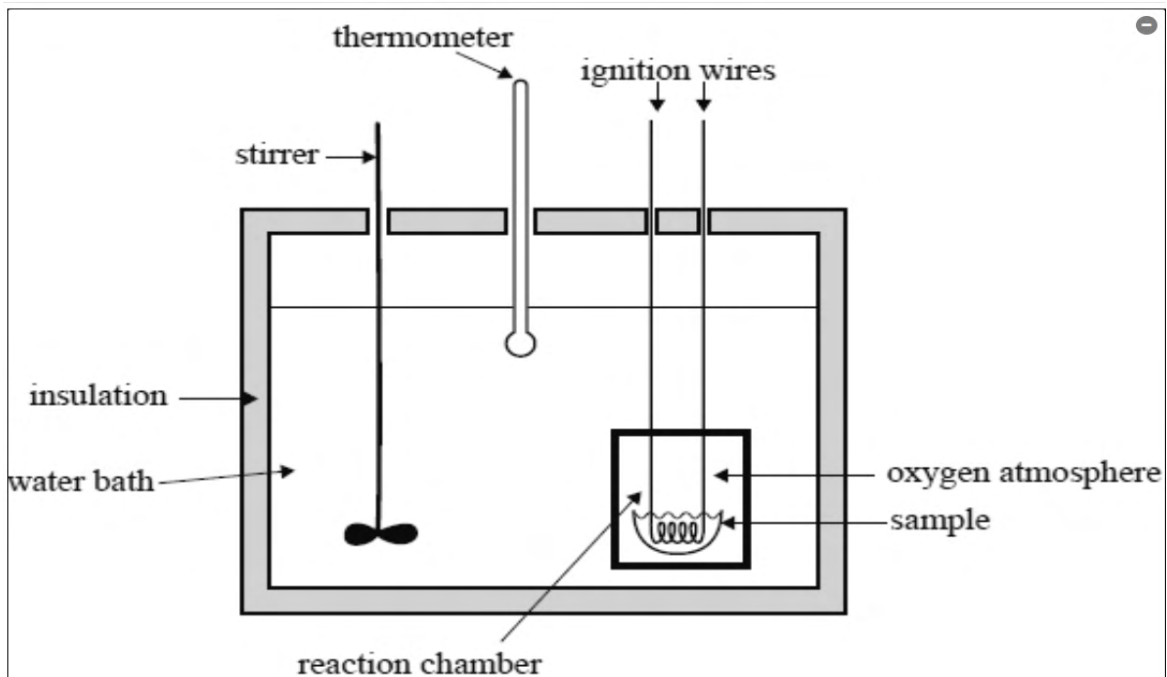
☐ A

☐ B

☒ C

☐ D

9)



The diagram shows a bomb calorimeter. This is used in industry to measure the energy content of substances including food.

The sample is placed within a reaction chamber full of oxygen which is underwater. After being ignited using wires, the food sample is burned and the thermometer measures the increase in water temperature.

List the ways in which the bomb calorimeter is an improvement on the equipment set up you used in your experiment.

- ☐ Less heat energy is lost to the surroundings
- ☐ All of the food sample is burned in the oxygen atmosphere
- ☐ A stirrer continuously mixes the water to ensure even distribution of heat
- ☐ More heat energy released by the food sample is transferred to the water

10)

A student made three statements after conducting a practical investigation into the energy content of different types of biscuit:

1. The first biscuit increased the temperature of the water the least
2. The second biscuit had to be ignited three times as it did not burn very easily
3. The third biscuit had the most energy

Another student claimed that statements 1 and 3 are conclusions, while statement 2 is an observation.

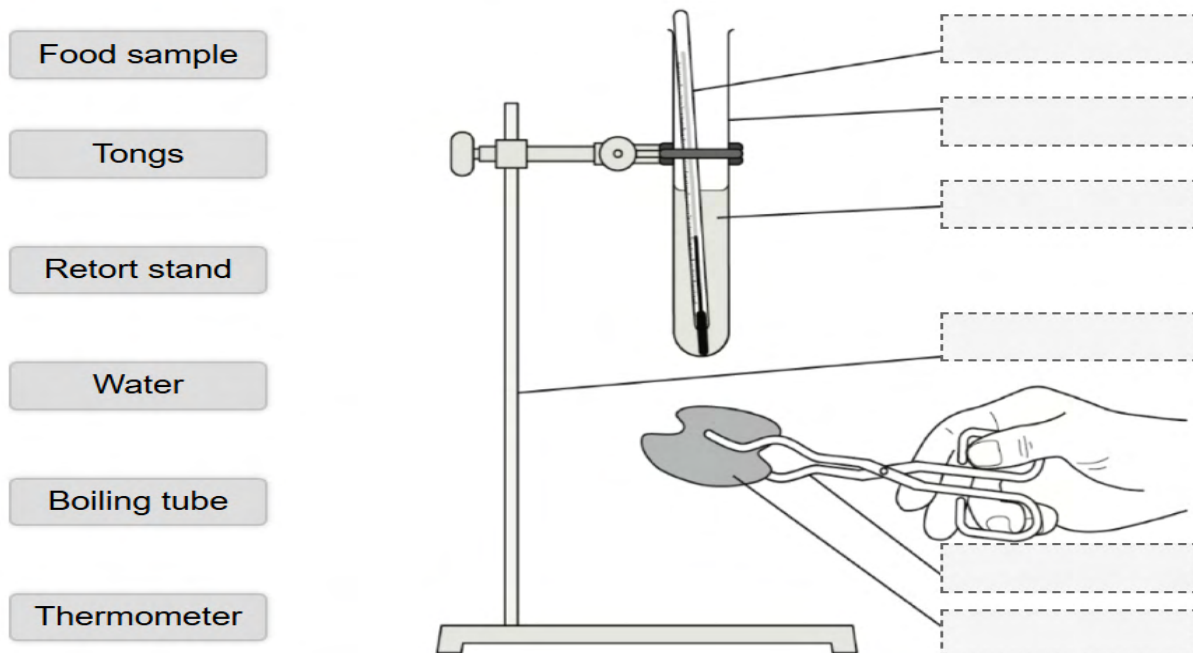
Is this true or false?

☐ True

☐ False

11)

The diagram below shows the experimental setup of an investigation into the energy content of different types of food. Label the diagram.



12

A student put together a risk assessment for an investigation into the energy content of different food types. Fill in the missing words to complete the risk assessment.

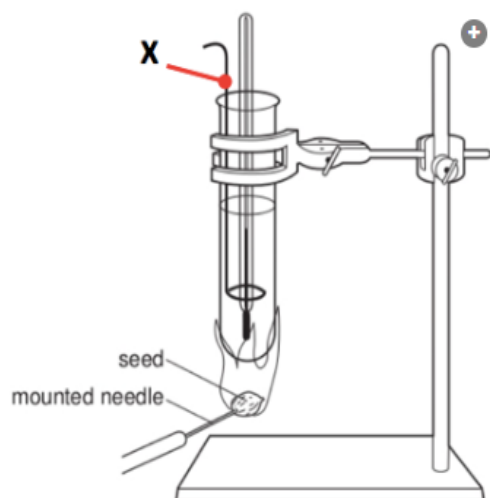
The piece of food is placed into the flame of a Bunsen burner for a few .

The burning food is held at arm's length immediately under the .

If the flame extinguishes, the food is .

Extreme care is taken when reading the thermometer so as not to the apparatus.

13



The diagram shows how the energy content of a seed can be measured in the laboratory.

What is the function of the piece of apparatus labelled X?

- ☐ It can be moved up and down to mix the water
- ☐ It is fixed in position to hold the thermometer still
- ☐ It is fixed in position to help with reading the thermometer
- ☐ It can be moved up and down to help remove the thermometer from the boiling tube at the end of the experiment

14.

A student wanted to estimate the reducing sugar content of fruit juice.

She carried out a Benedict's test on a sample of the juice, as well as a Benedict's tests on samples of reducing sugar solution of known concentrations. She then compared the colours of the test results to make an estimate of the concentration of reducing sugar in the fruit juice.

How could a better estimate of the reducing sugar concentration be obtained?

Carry out Benedict's tests on more concentrations of reducing sugar -

Reduces the subjectivity of the measurement

Carry out repeats of the tested concentrations of reducing sugar -

Increases the accuracy of the measurement

Increases the reliability of the measurement

Use a means of obtaining a quantitative measurement instead of the - Benedict's test -

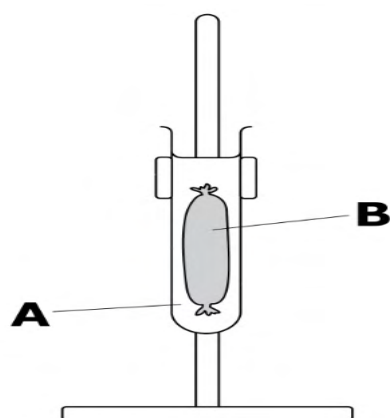
15.

An investigation was conducted into the effect of amylase on starch digestion. Amylase solution was added to a suspension of starch and a stopwatch was started. At 5 minute intervals, a small volume of the reaction mixture was extracted and tested for the presence of reducing sugars using Benedict's reagent. Starting with the first sample, and ending with the last, arrange the colours into the order of results that would be seen in this investigation.

- 1 -
- 2 -
- 3 -
- 4 -
- 5 -

- Blue
- Orange
- Red
- Yellow
- Green

16.



CONTENTS OF A		
Time / minutes	Colour with Benedict's solution	Colour with iodine solution
0	Blue	Red-brown
15	Red	Red-brown
CONTENTS OF B		
Time / minutes	Colour with Benedict's test	Colour with iodine solution
0	Blue	Blue-black
15	Red	Red-brown

A student made a model gut consisting of Visking tubing that contained a mixture of starch and amylase. He incubated this in a boiling tube of water at 37 °C for 15 minutes.

Before and after the period of incubation, the student carried out tests for starch and reducing sugar on the contents of the model gut (B) and the surrounding water (A). The table above shows his results.

Which statements would explain these results?

- ☐ Starch molecules cannot pass through the Visking tubing
- ☐ Iodine is red-brown in the presence of starch, and blue-black in the absence of starch
- ☐ Reducing sugars can pass through the Visking tubing
- ☐ Benedict's reagent remains blue in the absence of reducing sugar
- ☐ Amylase digests starch into reducing sugars

17.

In an investigation into the effect of amylase on starch solution, a scientist made a number of observations and measurements.

Match the terms to show which were qualitative and quantitative.

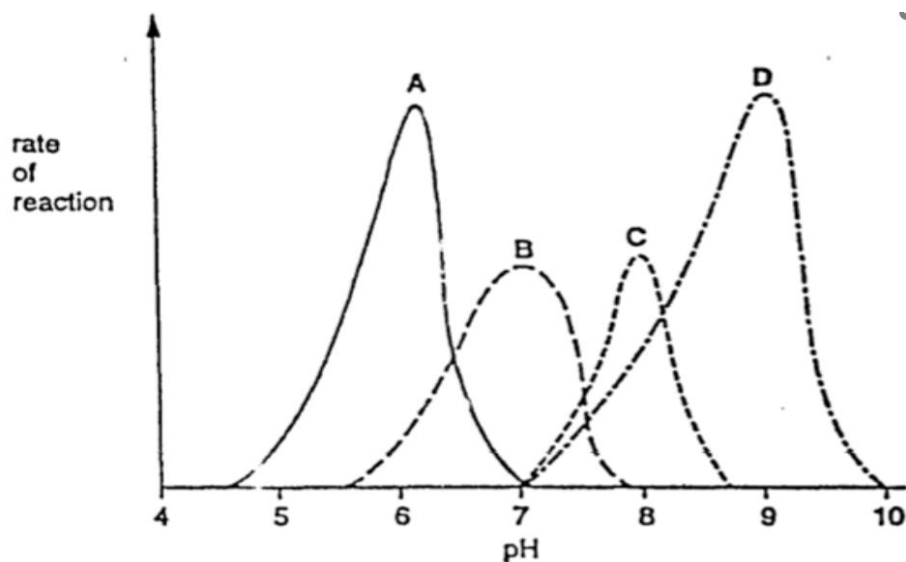
'The sample remained blue' -

'A reducing sugar solution of 0.5 mg / ml concentration was produced' -

'The sample initially turned yellow' -

'A precipitate of depth 1-2 mm formed at the bottom of the test tube' -

18.



Pancreatic lipase is secreted into the small intestine and works best at pH 7.

Which curve shows the activity of pancreatic lipase?

☐ C

☐ B

☐ A

☐ D

19.

Identify which of the following molecules need to be digested in order to be absorbed from the small intestine into the blood.

☐ Glucose

☐ Fatty acid

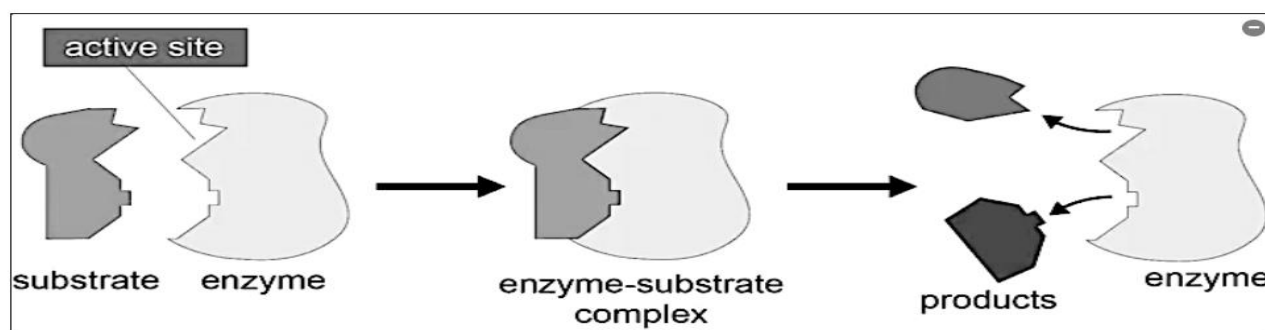
☐ Glycerol

☐ Protein

☐ Starch

☐ Maltose

20.



The diagrams above shows how an enzyme digests a substrate into two products. Arrange the statements below in order, by placing numbers 1 to 5 alongside the statements, to describe how the 'lock and key' model of enzyme action explains how a substrate is digested into products.

- The substrate is digested into two products

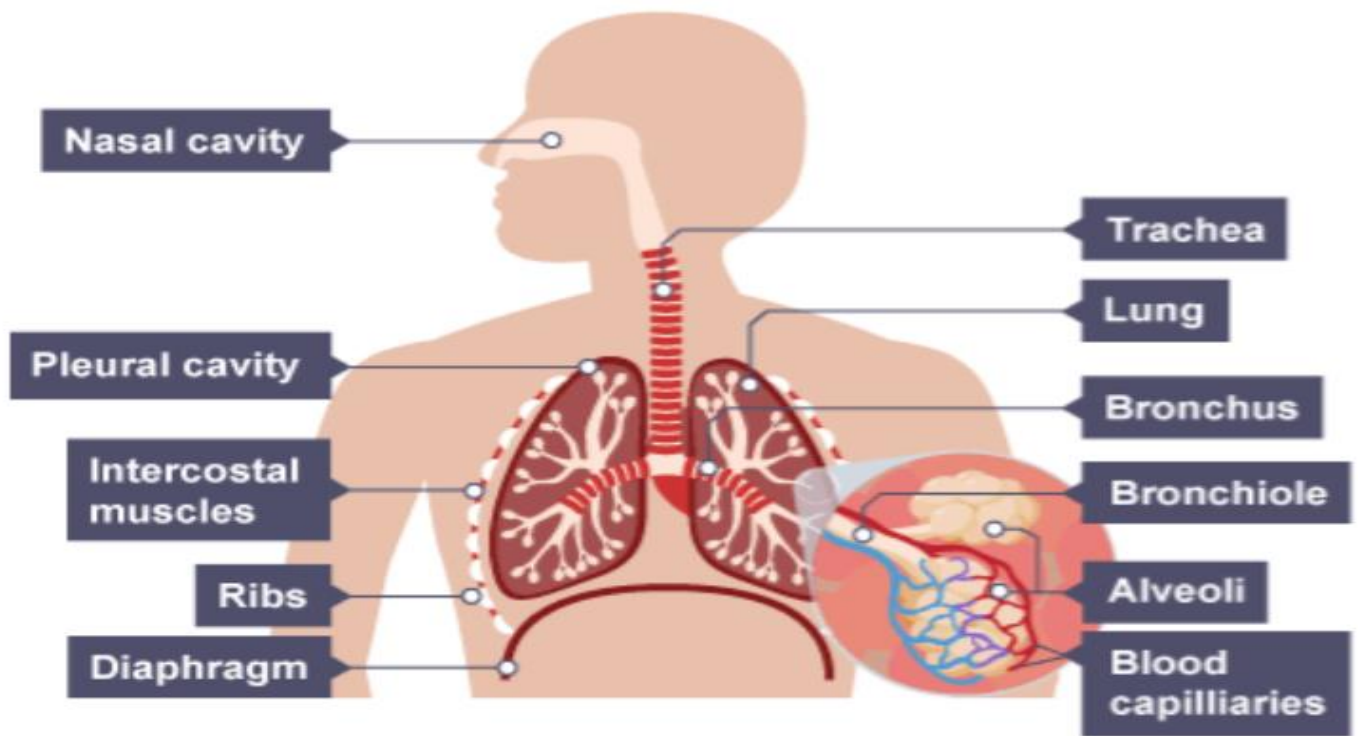
- The products leave the enzyme's active site

- The substrate and the enzyme collide

- An enzyme-substrate complex forms

- The enzyme attaches to the substrate at the active site

Q.No.2 Go through the chapter # 9 'Human Gas Exchange' during summer vacations. Make a Model of Human Lung. Label The larynx , trachea ,bronchi, bronchioles, alveoli and associated blood capillaries. [5]



Q.No.3

Digestion -Model Gut (Visking Tubing)

**Go through the experiment. Write answers related to the experiment on loose sheet.
You can understand the concept from Hooder's book P:135 [5]**

Use the following method to find out whether starch and/or glucose molecules can diffuse through Visking tubing.

1. Open the piece of Visking tubing by holding it under a running tap and gently rubbing the tubing between your thumb and forefinger.
2. Tie a knot at one end of the tubing; handle carefully to avoid tearing.
3. Fill a 10cm³ syringe with the starch and glucose solution mixture. Then gently fill the Visking tubing with the mixture until it is approximately two thirds full.
4. Now tightly tie the top of the filled tubing with a knot or a piece of thread to make a small 'bag'. Make sure that the tubing is tightly sealed and that none of the mixture leaks out.
5. Gently rinse the tubing with water under a tap.

*Why is it important for there to be no leaks?
Why do you need to rinse the tubing under a tap?*

6. Label two sets of test-tubes: 0, 10, 20, 30. Add the label at the top so that it's easy to see and doesn't get washed off later.
7. Place the Visking tubing into a boiling tube and fill the tube with distilled water. Ensure that the tubing is fully covered with water.

Why is it important for the tubing to be fully covered with water?

8. Immediately start the timer and remove a small sample of the water from the boiling tube using the dropper pipette.
9. Place 4 drops of the sample into each of the test-tubes labelled '0'.

Why is a sample taken at time 0 minutes? What does this represent?

10. After 10 minutes, take another sample from the boiling tube and add 4 drops of the sample to each of the two test-tubes labelled '10'.
11. After 20 minutes, take another sample from the boiling tube and add 4 drops to each of the test-tubes labelled '20'.
12. After 30 minutes, take a final sample from the boiling tube and add 4 drops to each of the test-tubes labelled '30'.

*Why are samples of water taken every 10 minutes? What variable is this?
Why do you think an interval of 10 minutes was used?
Why was the same volume of sample added to each test-tube?*

13. Now test each sample, one at a time, for the presence of starch and then glucose.

What safety precautions do you need to consider when handling iodine solution and Benedict's solution?

14. To test for starch:

- i. Add 4 drops of iodine solution to one of the test-tubes labelled '0'.
- ii. Gently swirl the contents being careful not to break the test-tube or spill the contents.
- iii. Add 4 drops of iodine solution to each of the other test-tubes in the same test-tube rack.
- iv. Record your observations. Has there been a colour change? Record the colour of the solution, not just 'change' or 'no change'.

Why is the same number of drops of iodine solution added to each sample?

15. To test for glucose:

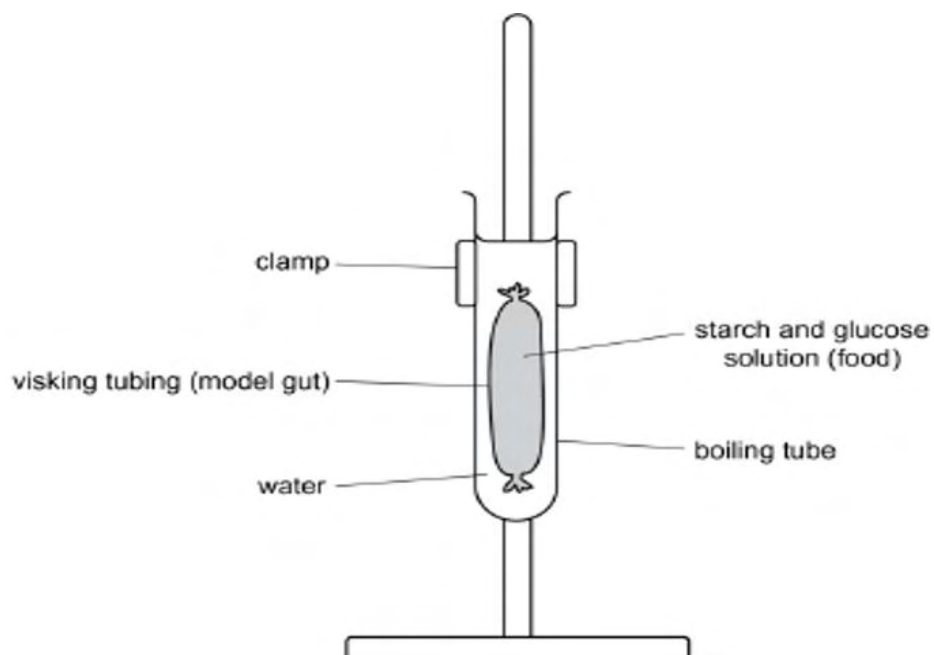
- i. Use the other set of test-tubes that have not had iodine solution added.
- ii. Add 4 drops of Benedict's solution to each test-tube.

Why is the same number of drops of Benedict's solution added to each sample?

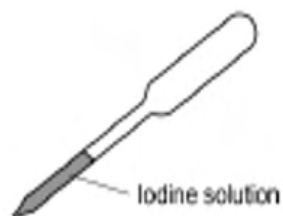
- iii. Benedict's solution needs to be warmed to at least 80°C to become active. Place all of the test-tubes into a water bath set at 80°C, or a beaker of hot water.
- iv. Start the timer and leave the test-tubes for 2 minutes.
- v. After 2 minutes carefully remove the test-tubes from the beaker using the test-tube holders. Hold the test-tubes by the rim. Handle glassware carefully to avoid breakage.

What safety precautions do you need to take when heating liquids and handling hot water?

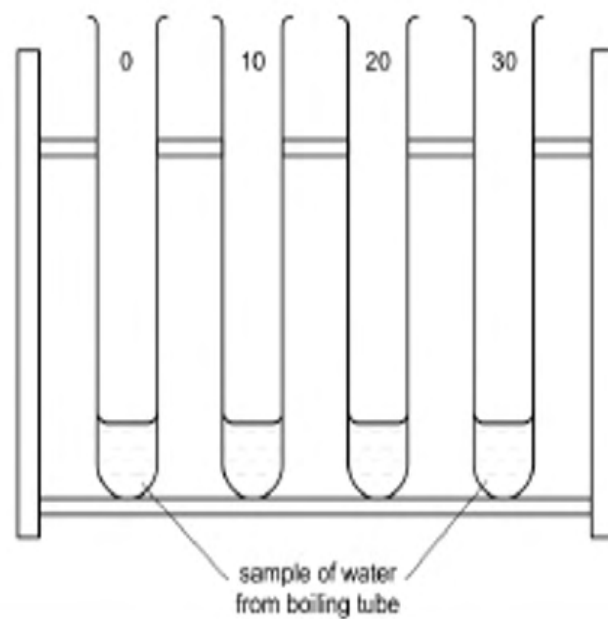
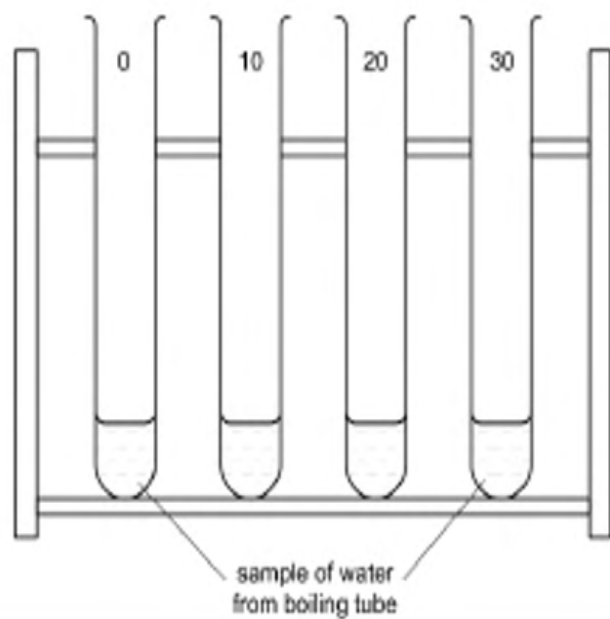
- vi. Place the test-tubes into a dry test-tube rack. Put the test-tube labelled zero in the first slot, and the rest in order from 0 to 30 as before.
- vii. Record your observations. Has there been a colour change? Record the colour of the solution, not just 'change' or 'no change'.



Iodine test
for starch



Benedict's test
for glucose



Time (minutes)	Colour observed	
	Iodine solution	Benedict's solution
0		
10		
20		
30		

Note: Do practice of past papers of chapter no 1,4, 8 and 9. Test will be taken in August. [10]

If you find any difficulty in understanding assignment or past papers you can contact me in June at 9:00 a.m