



Sadiq Public School

Do the right, fear no man

Class: I1 8th Feb,2024

Mathematics

- i. Find the matrix X if $\begin{bmatrix} 5 & 2 \\ -2 & 1 \end{bmatrix} X = \begin{bmatrix} 2 & 1 \\ 5 & 10 \end{bmatrix}$
- ii. Without expansion show that $\begin{vmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \end{vmatrix} = 0$
- iii. Show that $\begin{vmatrix} 1 & 1 & 1 \\ a & b & c \\ a^2 & b^2 & c^2 \end{vmatrix} = (a - b)(b - c)(c - a)$
- iv. Prove that one complex cube root of unity is square of the other
- v. Show that $(1+\omega)(1+\omega^2)(1+\omega^4)(1+\omega^8)\dots\dots\dots 2n \text{ factors} = 1$
- vi. Discuss the nature of roots of $x^2 - 5x + 6 = 0$
- vii. A number exceeds its square root by 56..Find the number.
- viii. Convert $\frac{25\pi}{36}$ radian into the measure of sexagesimal system
- ix. prove that $\sin \frac{\pi}{9} \sin \frac{2\pi}{9} \sin \frac{\pi}{3} \sin \frac{4\pi}{9} = \frac{3}{16}$.
- x. Prove that $\frac{\sin \theta + \sin 3\theta + \sin 5\theta + \sin 7\theta}{\cos \theta + \cos 3\theta + \cos 5\theta + \cos 7\theta} = \tan 4\theta$

Biology

A: Inquiry:

Do you know glycolysis ultimately splits glucose into two pyruvate molecules. One can think of glycolysis as having two phases that occur in the cytosol of cells. The first phase is the "investment" phase due to its usage of two ATP molecules, and the second is the "payoff" phase.

B: Information

i. Glycolysis: Glycolysis is the breakdown of glucose upto the formation of pyruvic acid. Glycolysis can take place both in the absence of oxygen (anaerobic condition) or in the presence of oxygen (aerobic condition). In both, the end product of glucose breakdown is pyruvic acid. The breakdown of

glucose takes place in a series of steps, each catalyzed by a specific enzyme. All these enzymes are found dissolved in the cytosol. In addition to the enzymes, ATP and coenzyme NAD (nicotinamide adenine dinucleotide) are also essential.

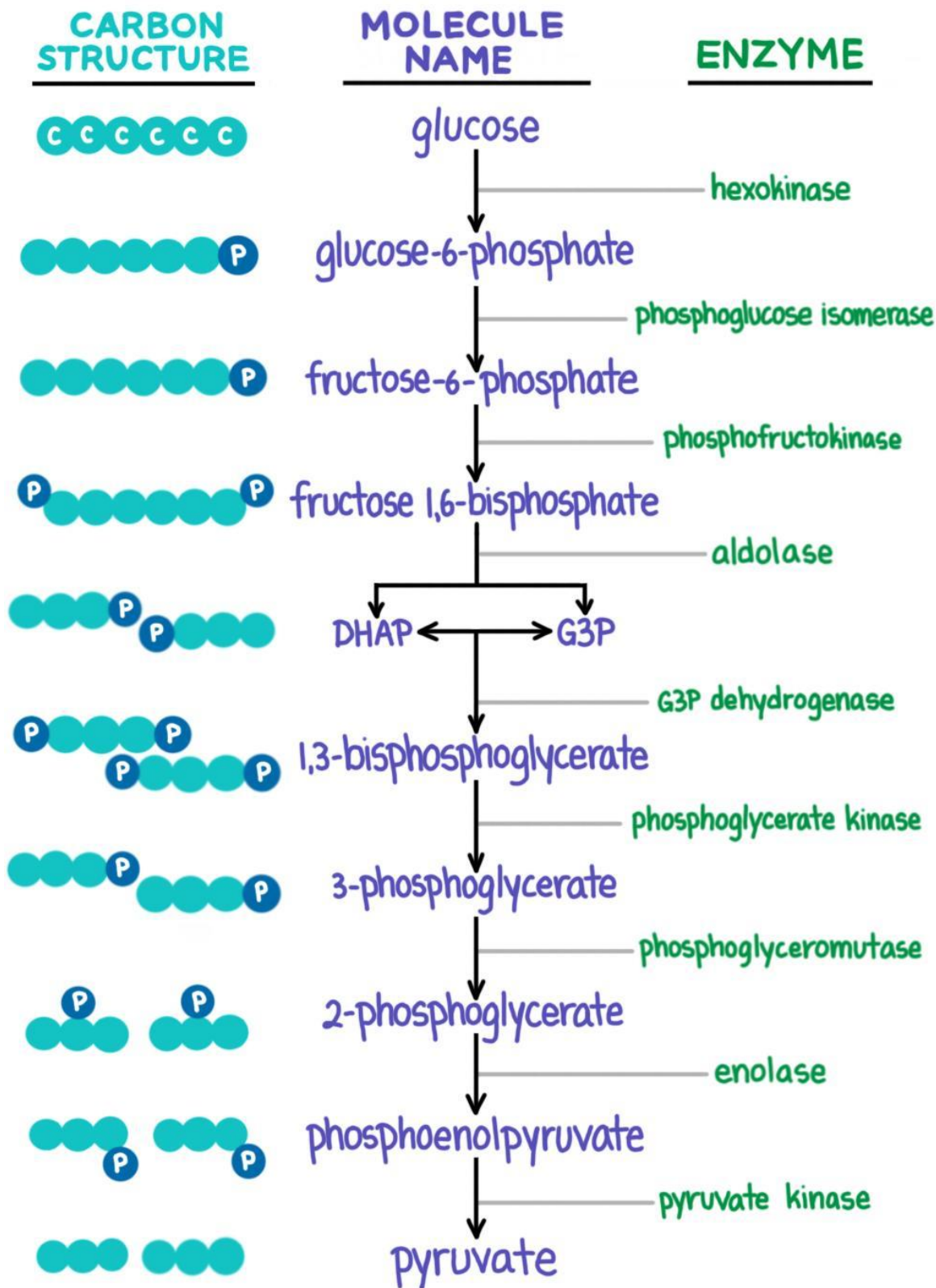
Glycolysis can be divided into two phases, a preparatory phase and an oxidative phase (Fig. 11.12). In the preparatory phase breakdown of glucose occurs and energy is expended. In the oxidative phase high energy phosphate bonds are formed and energy is stored.

Preparatory phase The first step in glycolysis is the transfer of a phosphate group from ATP to glucose. As a result a molecule of glucose-6-phosphate is formed. An enzyme catalyzes the conversion of glucose-6-phosphate to its isomer, fructose-6-phosphate. At this stage another ATP molecule transfers a second phosphate group. The product is fructose 1,6-bisphosphate. The next step in glycolysis is the enzymatic splitting of fructose 1,6-bisphosphate into two fragments. Each of these molecules contains three carbon atoms. One is called 3-phosphoglyceraldehyde, 3-PGAL or Glyceraldehyde 3-phosphate (G3P) while the other is dihydroxyacetone phosphate. These two molecules are isomers and in fact, are readily interconverted by yet another enzyme of glycolysis.

Oxidative (payoff) phase The next step in glycolysis is crucial to this process. Two electrons or two hydrogen atoms are removed from the molecule of 3-phosphoglyceraldehyde (PGAL) and transferred to a molecule of NAD. This is of course, an oxidation-reduction reaction, with the PGAL being oxidized and the NAD being reduced. During this reaction, a second phosphate group is donated to the molecule from inorganic phosphate present in the cell. The resulting molecule is called 1,3 Bisphosphoglycerate (BPG).

The oxidation of PGAL is an energy yielding process. Thus a high energy phosphate bond is created in this molecule. At the very next step in glycolysis this phosphate group is transferred to a molecule of adenosine diphosphate (ADP) converting it into ATP. The end product of this reaction is 3-phosphoglycerate (3-PG). In the next step 3-PG is converted to 2-Phosphoglycerate (2PG). From 2PG a molecule of water is removed and the product is phosphoenol pyruvate (PEP). PEP then gives up its high energy phosphate to convert a second molecule of ADP to ATP. The product is pyruvate, pyruvic acid (C, H, O). It is equivalent to half glucose molecule that has been oxidized to the extent of losing two electrons (as hydrogen atoms).

STEPS OF GLYCOLYSIS



C:Synthesising/ absorbing the information

Write your own summary-notes in your notes book based on information you read in information section and what your book says about glycolysis.

D:Practising.(Readyourtextbookfordetailedinformation)

1. What is glycolysis?
2. Write the names of phases of glycolysis.
3. What is the oxidative phase?

English

Book 1, Unit 15- The Angel and the Author-And Others

1. Solve MCQs given in Bright Grammar.
2. Punctuate the given passages in your notebook (Bright Grammar ,passage :1-3, page # 300).

Statistics

Chapter 7short numericals; Q.No. 21 to 30

Computer Science

Student Name & RollNo: _____

Lesson: Using of graphics in a document (Ch. # 8)

Inquiry:

Graphics and work art in a document

- Please read what your textbook says about Table. (Page no 247 - 248)
- Watch this brief YouTube video on how to insert graphic:
<https://www.youtube.com/watch?v=KDGiEnr3fj0>
- Watch this brief YouTube video on how to insert shapes:
<https://www.youtube.com/watch?v=KDGiEnr3fj0>

Information:

In this lesson we learned about how to insert table.

- how to insert graphic
- how to insert shapes

Practising:

Q.) Write procedure to insert graphic in a document.

Q.) Write procedure to insert shapes in a document.

Q.) What is difference between bitmap and vector graphics?

Economics

Lesson: Chapter No. 10

[Cost of Production]

A) Inquiry: Do you know what is meant by cost of production in economics? Can you give examples of costs that incurred in production of goods and services? Can you explain various variants of cost?

B) Information:

(Read your text book pages from Page no. 201 to 203)

Cost of Production:

Cost of production refers to the total cost incurred by a business to produce a specific quantity of a product or offer a service. Production costs may include things such as labor, raw materials, or consumable supplies. In economics, the cost of production is defined as the expenditures incurred to obtain the factors of production such as labor, land, and capital that are needed in the production process of a product.

Types of Costs of Production:

There are various types of costs of production that businesses may incur in the course of manufacturing a product or offering a service. They include the following:

1. Total cost

Total cost encompasses both variable and fixed costs. It takes into account all the costs incurred in the production process or when offering a service. For example, assume that a textile company incurs a production cost of \$9 per shirt, and it produced 1,000 units during the last month. The company also pays a rent of \$1,500 per month. The total cost includes the variable cost of \$9,000 ($\$9 \times 1,000$) and a fixed cost of \$1,500 per month, bringing the total cost to \$10,500.

2. Fixed costs:

Fixed costs are expenses that do not change with the amount of output produced. This means that the costs remain unchanged even when there is zero production or when the business has reached its maximum production capacity. For example, a restaurant business must pay its monthly, quarterly, or yearly rent regardless of the number of customers it serves. Other examples of fixed costs include salaries and equipment leases.

Fixed costs tend to be time-limited, and they are only fixed in relation to the production for a certain period. In the long term, the costs of producing a product are variable and will change from one period to another.

3. Variable costs:

Variable costs are costs that change with the changes in the level of production. That is, they rise as the production volume increases and decrease as the production volume decreases. If the production volume is zero, then no variable costs are incurred. Examples of variable costs include sales commissions, utility costs, raw materials, and direct labor costs.

For example, in a clothing manufacturing facility, the variable costs may include raw materials used in the production process and direct labor costs. If the raw materials and direct labor costs incurred in the production of shirts are \$9 per unit and the company produces 1000 units, then the total variable costs are \$9,000.

4. Marginal cost

Marginal cost is the cost of producing one additional unit of output. It shows the increase in total cost coming from the production of one more product unit. Since fixed costs remain constant regardless of any increase in output, marginal cost is mainly affected by changes in variable costs. The management of a company relies on marginal costing to make decisions on resource allocation, looking to allocate production resources in a way that is optimally profitable.

5. Average Total cost:

Average total cost (ATC) is also called average cost or unit cost. Average total costs are a key cost in the theory of the firm because they indicate how efficiently scarce resources are being used. Average variable costs are found by dividing total fixed variable costs by output.

- **Average fixed costs:**

Average fixed costs are found by dividing total fixed costs by output. As fixed cost is divided by a put, average fixed costs will continue to fall.

- **Average variable costs:**

Average variable costs are found by dividing total fixed variable costs by output.

C) Synthesizing / Absorbing information

- Differentiate between fixed cost and variable cost.
- Define marginal cost and total cost of a firm?
- How average total cost is calculated?

D) Practising:

For practice read your textbook chapter No. 8 Page No. 201 to 203

Watch this video to more learn about:

[Cost of Production](#)

Chemistry

Lesson: In this worksheet we will learn about Experimental techniques chapter-2

- 1) Differentiate between stationary phase and mobile *phase*?
- 2) What is Rf value?
- 3) Give the main uses of paper chromatography?
- 4) Mention the major steps involved in the crystallization?
- 5) Repeated extraction by using small portions of solvent are more efficient than using a single but larger volume of solvent?
-) What is solvent extraction?
- 7) How the decolourization of undesirable colours is carried out for freshly prepared crystalline substances?
- 8) What is ether extraction?
- 9) How many crucibles are used?

- 10) How the rate of filtration increased?
- 11) What is vacuum desiccator?
- 12) Define sublimand?
- 13) Define solvent extraction?
- 14) What are the steps of quantitative analysis?
- 15) Define sublimation?
- 16) Name the drying agents used in desiccators?
- 17) What is the principle of crystallization & why it is performed?
- 18) Define filtrate and residue?
- 19) Define sublimation?
- 20) Give the main characteristics of the solvent used for crystallization?
- 21) What is difference between gooch crucible and sintered glass crucible?
- 22) Which solvents are mostly used in crystallization?
- 23) Concentrated HCl and $KMnO_4$ solutions can not be filtered by gooch crucible. Give reason?
- 24) How does Gooch crucible increases the rate of filtration?
- 25) How desiccators is used to dry the crystals?

Feedback

Solve the above practicing questions on your note book and attendance of those students will mark as absent who will not complete work on note book.

Urdu

<p>”داستان گوئی بنی نوع انسان کے قدیم ترین مشاغل میں سے ایک ہے۔ داستان کہنے اور سنانے کا شغل دنیا کے ہر ملک اور ہر قوم میں کسی نہ کسی صورت میں ہمیشہ موجود رہا ہے۔ غور کیا جائے تو داستان گوئی ہی دنیا کے تمام تراثی کارناموں کی بنیاد ٹھہرتی ہے۔ ہر علاقے اور ہر خطے میں سنائی جانے والی داستانوں کے رنگ دوسرے علاقے یا خطے کی داستانوں سے مختلف رہے ہیں۔ یورپ کے تین مشہور سلسلے تھے۔ روم، فرانس اور برطانیہ کی داستانیں۔ اسی طرح برصغیر پاک و ہند میں اردو داستانوں کے بھی تین ماخذ قرار دیے جاسکتے ہیں۔ عربی، فارسی اور ہندی یا ہندوستانی ماخذ“۔</p>	<p>دیئے گئے پیراگراف کی تلخیص کریں اور مناسب عنوان تجویز کریں۔</p>	<p>تلخیص</p>	<p>8 فروری بروز جمعرات</p>
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Islamiat/ Tarjuma tul Quran

تفصیلی جواب دیں۔

سوال: سورہ انفال کے بنیادی مضامین تحریر کریں۔

Physics

Subject: Physics Class: I1

Date: Thursday 8th February 2024

Topic: Optical Instruments (Topic 10.4)

A: Inquiry:

In this topic we will be able to learn what is compound microscope. How can we draw ray diagram and derive expression for the magnification of compound microscope.

B: Information:

Topic 10.4 Compound Microscope

Definition

An optical device that is used for high magnification of near objects.

Construction

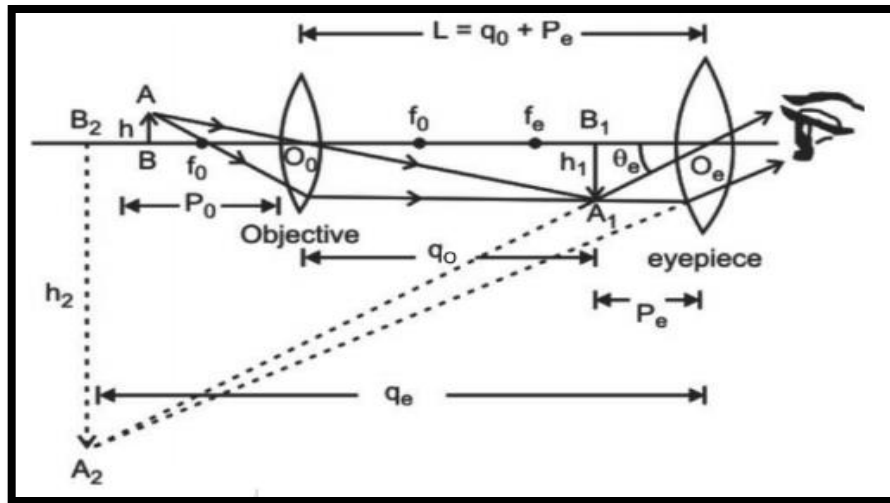
It consists of two convex lenses.

- (i) **Objective:** It is of short focal length.
- (ii) **Eyepiece:** It is of relatively large focal length and large aperture.

Working Principle

- (i) First, a magnified, inverted and real image is formed by objective when object is beyond f .
- (ii) Second, this image is served as object of eyepiece and it is formed within the focal length of eyepiece.
- (iii) Finally, a magnified, inverted and virtual image is obtained.

Ray Diagram



Derivation of Angular Magnification

Here,
$$M = \frac{\tan \theta_e}{\tan \theta}$$

Where ' θ_e ' is the angle subtended by the final image ' h_2 ' and ' θ ' is the angle subtended by the object at eye h , if placed at ' d '.

From Fig. '1' and '2'.

$$\tan \theta_e = \frac{h_2}{d} \quad \text{and} \quad \tan \theta = \frac{h}{d}$$

$$\therefore M = \frac{h_2/d}{h/d}$$

$$M = \frac{h_2}{d} \times \frac{d}{h}$$

$$M = \frac{h_2}{h}$$

or
$$M = \frac{h_1}{h} \times \frac{h_2}{h_1}$$



Where ' $\frac{h_1}{h}$ ' is the linear magnification ' M_1 ' of the objective and ' $\frac{h_2}{h_1}$ ' is the magnification ' M_2 ' of the eye piece.

Since $M_1 = \frac{q_0}{p_0}$

and $M_2 = 1 + \frac{d}{f_e}$ (\because eye piece is working as a simple microscope)

$\therefore M = \frac{q_0}{p_0} \left(1 + \frac{d}{f_e} \right)$

Note Since the object is placed just beyond the principle focus of the objective.

$\therefore p_0 \approx f_0$

As, $L = q_0 + p_e$

As the image h_1 is placed very closed to eye piece

$\therefore p_e \approx 0$

$\therefore L = q_0$

$\therefore M = \frac{L}{f_0} \left(1 + \frac{d}{f_e} \right)$

The limit to which a microscope can be used to resolve details, depends on the width of the objective. A wider objective and use of blue light of short wavelength produces less diffraction and allows more details to be seen.

- Read pages # 218-219 of textbook.
- Watch the following videos for further understanding:
<https://youtu.be/4x-2GHBeIOA?feature=shared>
https://youtu.be/iNnX_mJHKlO?feature=shared
<https://youtu.be/cmzWDkOYTjM?feature=shared>

C: Synthesising/absorbing information:

In your notebooks,

- What is compound microscope? Draw ray diagram and derive expression for the magnification of compound microscope.
- Solve the following problem in your notebooks:
 A compound microscope has lenses of focal length 1.0 cm and 3.0. An object is placed 1.2 cm from the object lens. If a virtual image is formed, 25 cm from the eye, calculate the separation of the lenses and the magnification of the instrument.

D: Practicing:

1. Answer the following questions and write in your notebooks.

- i. How can we increase resolving power of compound microscope?
- ii. Why would it be advantageous to use blue light with a compound microscope?
- iii. A magnifying glass gives five times enlarged image at a distance of 25 cm from the lens. Find, by ray diagram, the focal length of the lens.
- iv. Describe with the help of diagrams, how
 - (a) A single biconvex lens can be used as a magnifying glass.
 - (b) Biconvex lenses can be arranged to form a microscope.