Pinnacle Academy
Vacation Homework
Subject: Chemistry
Class : XII

1. x g of trivalent metal (eq. wt= 12) is completely dissolved in 100 cc ofN/2 HCl.The volume was then made up to 500 cc .25 ccof this diluted acid required 17.5 cc of N/10 NaOH solution for complete neutralisation. Find the value of x .

2. State and explain Ostwald's dilution law. Is it applicable for Strong electrolyte?

3. Acidic, basic or neutral nature of solution can be known by pH value.
   a. Define pH.
   b. Derive the relationship between pH and pOH.
   c. Find the pH of 0.012N NaOH solution.
4. Write the basic principle for the preparation of trichloro methane in laboratory.How can you convert this compound into:
   a) chloretone   b) Ethyl isocyanide   c) chloropicrin   d) acetylene

5. Write the example of:
   a. Reimer -Tiemann reaction
   b. Sandmeyer reaction
   c. Gattermann reaction
   d. Rosenmund reduction
   e. Clemmensen reduction
6. Write the chemical reaction for the preparation of nitrobenzene in laboratory. What products are obtain by reduction of nitrobenzene in
   a. Acidic medium
   b. basic medium
   c. neutral medium
   d. electrolytic reduction
7. Convert the chlorobenzene into :
   a. DDT
   b. phenol
   c. benzene
8. What is common ion effect ? Write the example of it. Write the application of common ion effect and solubility product in qualitative salt analysis .

English

1. Pretend you woke up one day and there were no rules. People could suddenly do whatever they wanted. Explain what the world would be like. Use your imagination (about 300 words).
2. If you were a movie director, what kind of movie would you make? Write its plot.
3. Argue for or against the topic. "The society makes a lot of inference in the private life of people and it is not desirable for a developed society."

Pinnacle Academy
Vacation homework
Subject: Mathematics
Class :12

1. Make fair NOTE (teacher wish) of all taught units
2. Prepare project work of the following topics (You have to submit 5 project works   )
   - Algebra (any one topic)
   - coordinate (any one topic)
   - vector (any one topic)
   - Trigonometry (any one topic)
   - statistics and probability (any one topic)

__NOTE: while preparing project work you must follow the following criteria__
a. Topic: (You choose TOPIC yourself as class 11 you have done last year)
b. Introduction:(introduction of problem around 6,7 lines)
c. History: history of problem(around half page)
d. Main body : (around 2 pages explain about problem, theorem, examples)
e. Application: where this uses in real life (around 7,8 lines)
f. conclusion: (summary around 4to6 lines)
   If any contradiction about vacation Home work feel free to call ND sir 985-5047480)

Note: Project work must be done in A4 size paper.

Pinnacle Academy
Vacation Homework
## Class XII
Subject : Zoology

1. What is epithelial tissue? Mention its functions.
2. Give the causative agent, symptoms and control measures of any one disease you have studies.
3. Discuss the different types of tissue or organ transplantation.
4. Prepare the model of human kidney with the help of available household material (clay, Styrofoam box)
   Or,
   Draw the well labeled diagram of human kidney in chart paper and color it.

1. Derive an expression of the total energy of simple harmonic oscillator. A simple pendulum has a period of 4.2 s. When the pendulum is shortened by 1m, the period is 3.7 s. From these measurements, calculate the acceleration of free fall and the original length of the pendulum.
2. Define surface tension? What is its relation with surface energy. What amount of energy will be liberated if 1000 droplets of water, each of diameter 10^{-8} m coalesce to form bigger drop? Surface tension of water is 0.075N/m.
3. Progressive wave carries energy from one place to another place
    a. In what sense is it different from stationary wave?
    b. Derive an equation for progressive wave.
4. In the given wave form,
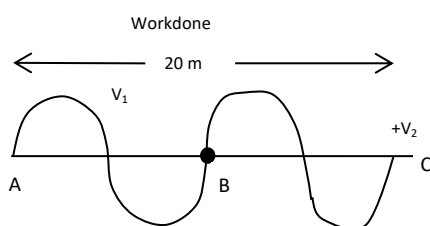
    a. What do V_1 and V_2 represent of
    b. If V_2=340 m/s, what would be the frequency.
    c. For the prescribed value of amplitude a=2mm, find the value of V max.
5. Discuss the various mode of vibration along open organ pipe.
6. A galvanometer can be converted into an ammeter or a voltmeter.
    a. Why low resistance is connected in parallel to galvanometer during the conversion to ammeter?
    b. How would you convert galvanometer into voltmeter? Explain.
    c. What happens if low resistance kept in the multiplier of voltmeter?
7. Thermoelectric effect is the mechanism of production of electricity without external driving source.
    a. Explain the mechanism of generation of thermo emf from thermocouple.
    b. How does thermo electric emf vary with temperature? Explain with necessary graph.
8. Wheat stone bridge is a good engineering of circuit designing. It has several uses and sometimes shows problem in measuring resistance.
    a. Draw Wheatstone bridge circuit diagram.
    b. State wheat stone bridge principle.
    c. Derive unknown resistance by using balance condition.
    d. Write any two application of wheat stone bridge.
    e. Write expression of resistivity of unknown wire.
9. Millikan's oil drop experiment can be considered as the ground breaking invention in modern physics.
    a. What does it measure?
    b. How can upward & downward terminal velocity of oil drop be measured.
    c. Calculate the value of charge on oil drop.
    d. How does this experiment verify the charge quantization.
10. Photoelectric effect is based on quantum nature of light.
    a. Is it essential that each one of the incident photon should eject an electron?
    b. A metal whose workfunction is 4.20 ev is irradiated by radiation whose wavelength is 2000 A°. Determine the maximum K.E of emitted electron.

Pinnacle Academy
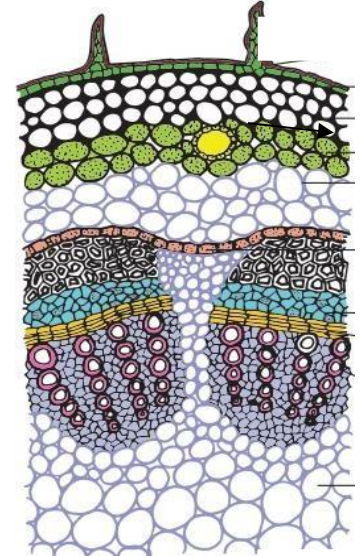**Vacation Homework**
Subject : Botany
Class: XII

1. The anatomical structure of vascular plant is given. Study the given diagram and answer thefollowing questions. (2+1+1)
   a. Mention the name of given anatomical structure and differentiate it with anatomical features of monocot stem. (2)
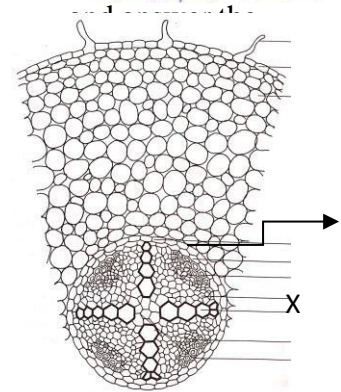
      X
   b. Write the name and main characteristics of the given layer X. (1)

   c. Write the types of vascular bundles present in given figure. (1)

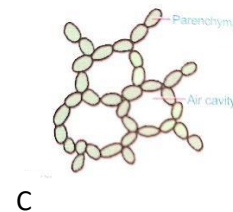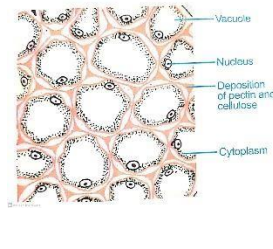2. The anatomical structure of vascular plant is given. Study the given diagramfollowing questions. (2+1+1)
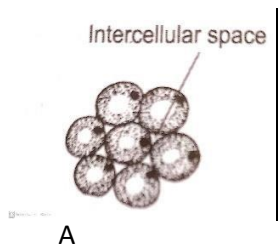
   a. Mention the name of given anatomical structure and differentiate it with anatomical features of monocot root. (2)
   b. Write the name and main characteristics of the given layer X. (1)
   c. Describe the types of vascular bundle present in given diagram(1)

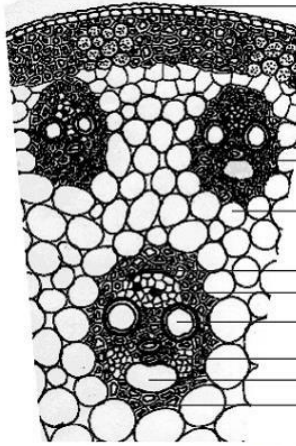3. Study the given diagram and answer the following questions. (1+1+2)
   a. Write the name of tissue given in diagram. (1)
   b. Write the function of given tissue C. (1)
   c. How does tissue A differs from tissue B (2)

   A

   B

   C

4.Study the given diagram and answer the following questions. (1+1+2)
   a. Write the name of given diagram and differentiate it with dicot stem (1+1)
   b. Describe the types of vascular bundle present in given anatomical diagram (2)

5. Study the given diagram and answer the following questions. (1+1+2)
   a. Give the name and characteristics features of given layer X (1)
   b. Draw the given diagram and label the tissue responsible for secondary growth.Elaborate the activities of this tissue up to the formation of cambial ring (3)

X
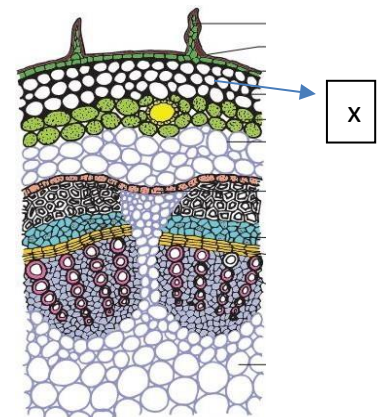
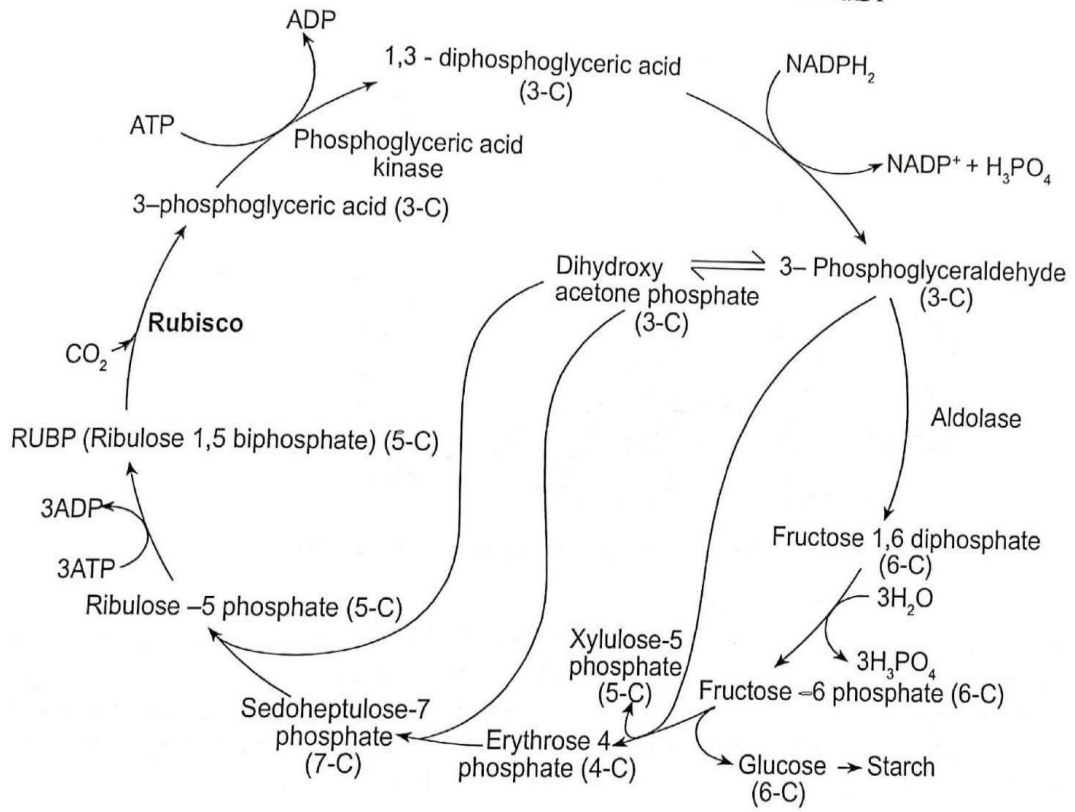**Draw given cycle in copy (5 times each)**

Photosynthesis
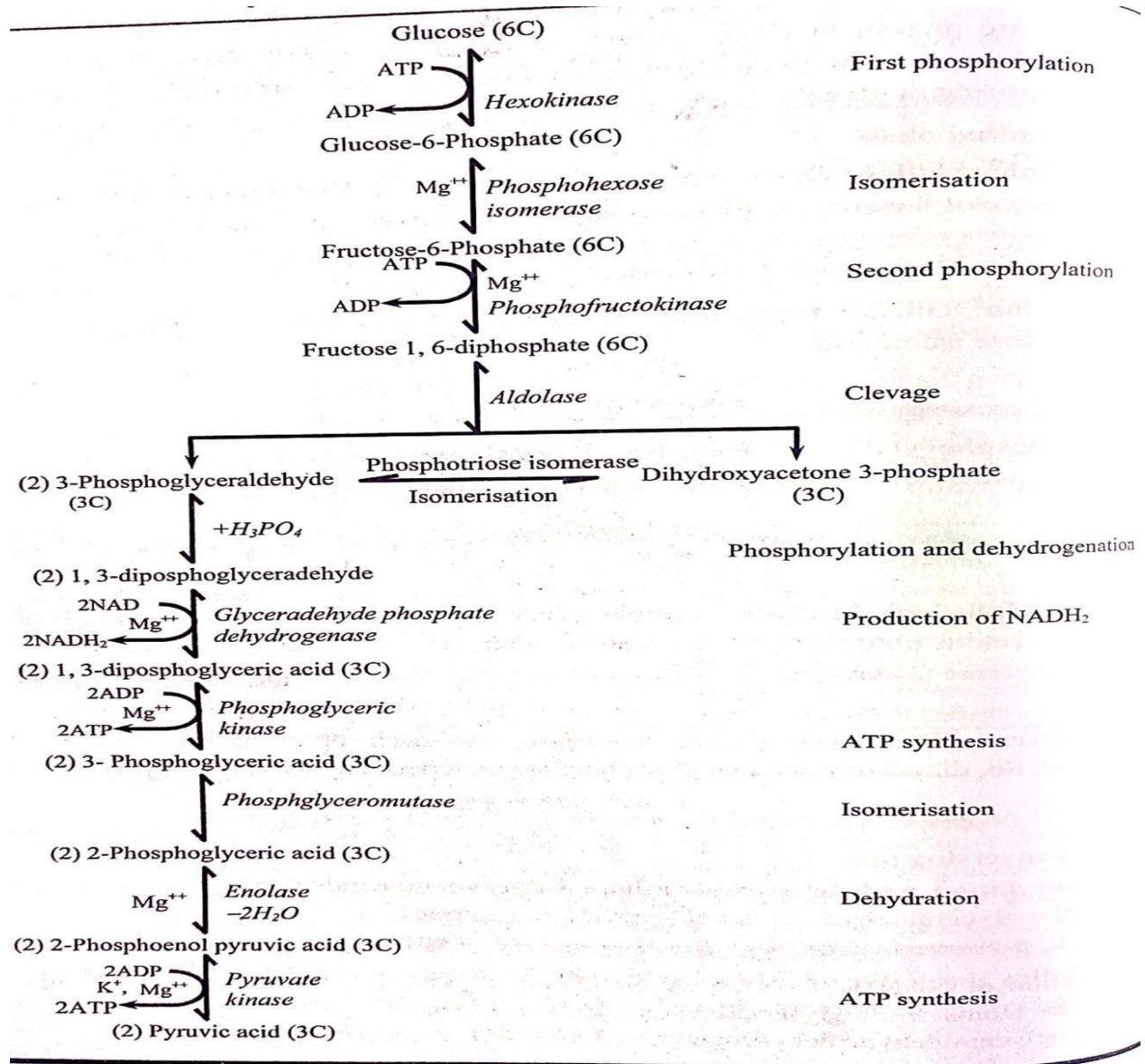

Fig.2.11: Calvin cycle (C_3 Cycle)
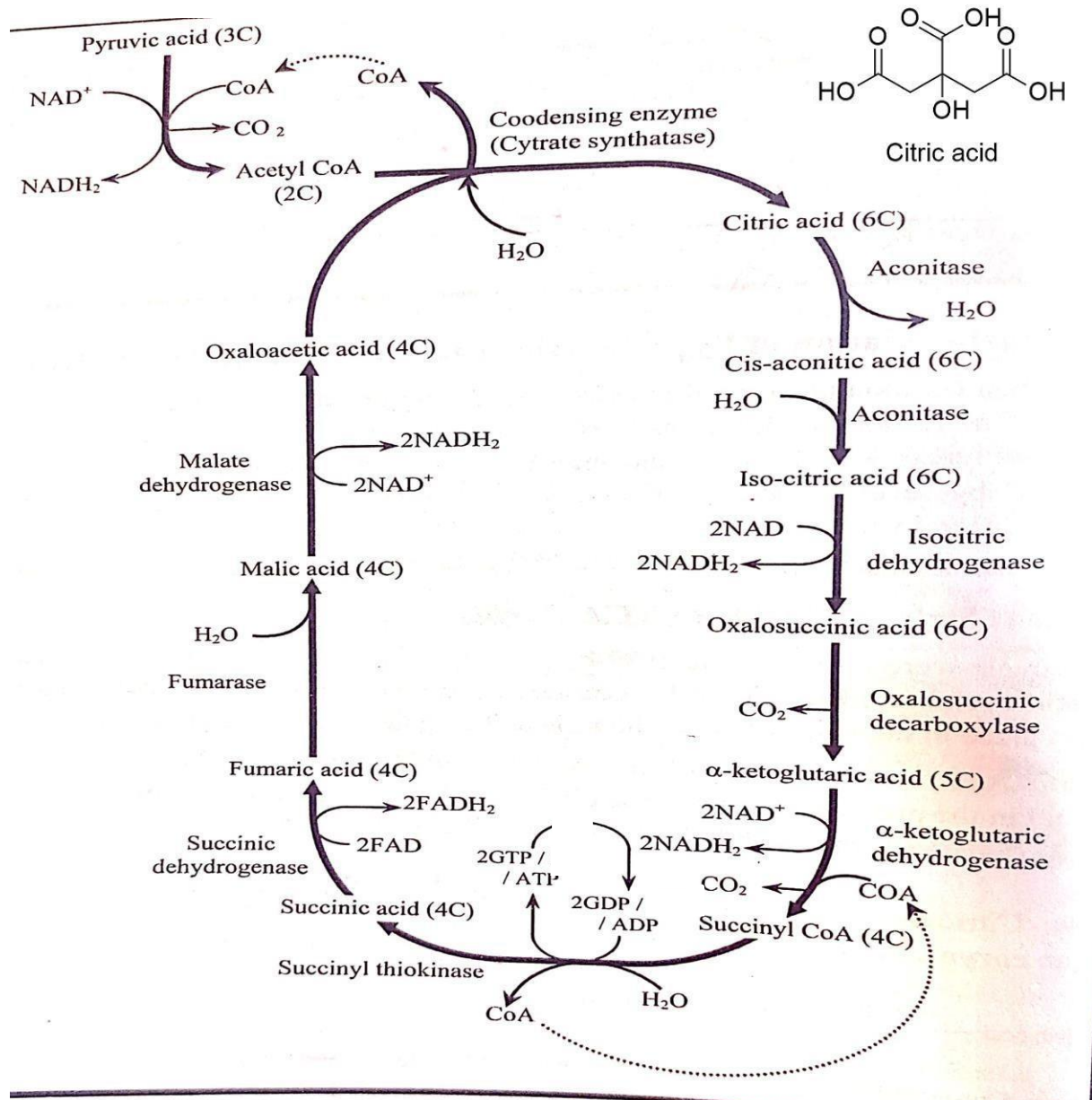
Respiration

Fig.4.1: Glycolysis (EMP-Pathway)

Pyruvic acid (3C)

NAD^+

CoA

CoA

CO_2

Coodensing enzyme
(Cytrate synthatase)

$NADH_2$

Acetyl CoA
(2C)

Citric acid

H_2O

Citric acid (6C)

Aconitase

H_2O

Oxaloacetic acid (4C)

Cis-aconitic acid (6C)

H_2O

Aconitase

$2NADH_2$

Malate
dehydrogenase

$2NAD^+$

Iso-citric acid (6C)

2NAD

Isocitric
dehydrogenase

$2NADH_2$

Malic acid (4C)

Oxalosuccinic acid (6C)

H_2O

CO_2

Oxalosuccinic
decarboxylase

Fumarase

Fumaric acid (4C)

α-ketoglutaric acid (5C)

$2FADH_2$

$2NAD^+$

α-ketoglutaric
dehydrogenase

Succinic
dehydrogenase

2FAD

2GTP /
/ ATP

$2NADH_2$

CO_2

COA

Succinic acid (4C)

2GDP /
/ ADP

Succinyl CoA (4C)

Succinyl thiokinase

H_2O

CoA

Fig. 4.2: Krebs cycle