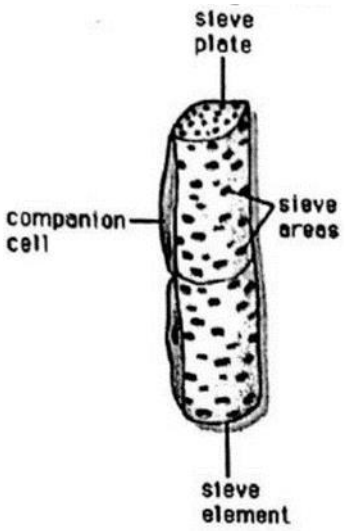
# BIOLOGY

# MID-TERM REVISION

X

## L.O.9

**Look at the following picture and answer the questions :**




**251)**If we remove the companion cell.

a) The tissue has no source of energy.
b) The tissue cannot divide.
c) The tissue will stop growing.
d) The tissue will change into xylem.

**252) The sieve tube.**

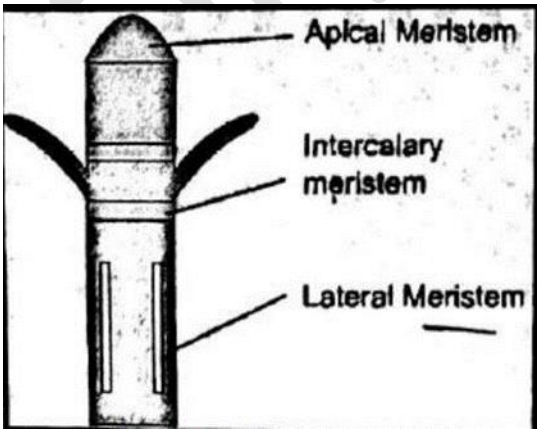
a) has cytoplasm

b) has no cytoplasm

c) has protoplasm.

d) has nucleus.

**look at the picture and answer:**



**253**) The plant won't increase in its width if we remove

**A)** The intercalary.

**b**) The apical.

**c)** The lateral.

**d)** The axillary bud**.**

**254)** Which of the following are most responsible for supporting mature, non- growing parts of the plant?

**a)** parenchyma cells

b) collenchyma cells

c) trichomes

d) tracheids and vessel elements

**255)** Compared to most animals, the growth of most plants is best described as

**a)** Perennial.

**b)** Weedy.

**c)** Indeterminate.

**d)** Derivative.

**256)** Water is most likely to enter a mesophyll cell

a) As a gas.
b) As a liquid.
c) Covalently bound to sugars
d) Coupled to ion transport.

**257**)A person working with plants may reduce the inhibition of apical dominance by auxin via which of the following?

**a)** pruning shoot tips
**b)** deep watering of the roots
**c)** fertilizing
**d)** treating the plants with auxins

**258)** which of the following would not be seen in a cross-section through the woody part of a root?

**a)** sclerenchyma cells
**b)** parenchyma cells
**c)** sieve-tube elements
**d)** root hairs

**259)** Responsible for the movement of sugars made in the leaves downward through the plant**.**

**a)** vascular cambium

**b)** ground tissue

**c)** phloem

**d)** Xylem

**260)** The reason that a modern electron microscope (TEM) can resolve biological images to the sub nanometer level, as opposed to tens of nanometers achievable for the best super-resolution light microscope?

**a)** The focal length of the electron microscope is significantly longer.

**b)** Contrast is enhanced by staining with atoms of heavy metal.

**c)** Electron beams have much shorter wavelengths than visible light.

**d)** The electron microscope has a much greater ratio of image size to real size.

**261)** The diagram shows the stem of a plant. A strip of the outer tissue including the phloem has been removed. How is transport in the plant affected?

**a)** Amino acids and sucrose cannot pass to the roots

**b)** Dissolved salts cannot pass to the leaves.

**c)** Water cannot pass to the leaves

**d)** Water cannot pass to the roots.

**262)** One of your friends start to measure the diameter of the trunk of a tree in his garden, and he found that it is increasing gradually. The increase in diameter of the trunk or this tree is produced primarily by the

**a)** Apical meristem.

**b)** Cork cambium.

**c)** Pith.

**d)** Vascular cambium.

**263)** The relationship between parenchyma cells & sclerenchyma cells.

**a)** The cell walls of parenchyma cells are thinner than those of sclerenchyma cells.

**b)** The cell walls of parenchyma cells are thicker than those of sclerenchyma cells.

**c)** The cell walls of both types of cells are roughly equal.

**d)** The thickness of the cell walls for both types of cells is too variable for a comparison to be made**.**

**264)** The cells which obtaining more light rays during photosynthesis process

**a)** Parenchyma

**b**) Xylem

**c)** Endodermis

**d**) Collenchyma

**265)** Mature sclerenchyma cells are:

**a)** Suberized and contain no living protoplasm

**b)** Thin walled and often contain chloroplast

**c)** Lignified and contain living protoplasm

**d)** Lignified and contain no living protoplasm

**266)** A person working with plants may remove apical dominance by doing which of the following?

**A)** pruning

**B)** deep watering of the roots

**C)** fertilizing

**D**) transplanting

**E)** feeding the plants′ nutrients

**267)** What effect does ″pinching back″ have on a houseplant?

**A)** increases apical dominance

**B)** inhibits the growth of lateral buds

**C)** produces a plant that will grow taller

**D)** produces a plant that will grow fuller

**E)** increases the flow of auxin down the shoot

**268**)Land plants are composed of all the following tissue types except

**A)** mesodermal.

**B)** epidermal.

**C)** meristematic.

**D)** vascular.

**E)** ground tissue

**269)** Vascular plant tissue includes all of the following cell types except

**A)** vessel elements.

**B)** sieve cells.

**C)** tracheids.

**D)** companion cells.

**E)** cambium cells.

**270)** When you eat Brussels sprouts, what are you eating?

**A)** immature flowers

**B)** large axillary buds

**C)** petioles

**D)** storage leaves

**E)** storage roots

**271)** Which cells are no longer capable of carrying out the process of DNA transcription?

**A)** xylem

**B)** sieve tube elements

**C**) companion cells

**D)** A and B only

**E**) A, B and C

**272)** ……..is to xylem as…….is to phloem.

**A)** Sclerenchyma cell; parenchyma cell

**B)** Apical meristem; vascular cambium

**C)** Vessel element; sieve-tube member

**D)** Cortex; pith

**E)** Vascular cambium; cork cambium

**273)** CO2 enters the inner the inner spaces of the leaf through the

**A)** cuticle.

**B)** epidermal trichomes.

**C**) stoma.

**D**) phloem.

**E**) walls of guard cells.

**274)** Which of the following are the water-conducting cells of xylem, have thick walls, and are dead at functional maturity?

**A)** parenchyma cells

B) collenchyma cells

**C)** clerenchyma cells

**D)** tracheids and vessel elements

**E)** sieve-tube elements

**275)** Which of the following are sugar-transporting cells in angiosperms?

**A)** parenchyma cells

**B) collenchyma cells**

**C)** clerenchyma cells

**D**) tracheids and vessel elements

**E**) sieve-tube elements

**276)** Which of the following are relatively unspecialized cells that retain the ability to divide and perform most of the plant′s metabolic functions of synthesis and storage?

**A)** parenchyma cells

**B)** collenchyma cells

**C)** clerenchyma cells

**D)** tracheids and vessel elements

**E)** sieve-tube elements

**277)** Which of the following have unevenly thickened primary walls that support young, growing parts of the plant?

**A**) parenchyma cells

**B**) collenchyma cells

**C)** clerenchyma cells

**D**) tracheids and vessel elements

**E**) sieve-tube elements

**278)** Which of the following have thick, lignified walls that help support mature, nongrowing parts of the plant?

**A**) parenchyma cells

**B**) collenchyma cells

**C**) clerenchyma cells

**D**) tracheids and vessel elements

**E)** sieve-tube elements

**279)** The vascular bundle in the shape of a single central cylinder in a root is called the

**A)** cortex.

**B)** stele.

**C)** endodermis.

**D**) periderm.

**E)** pith.

**280)** One important difference between the anatomy of roots and the anatomy of leaves is that…

**A)** only leaves have phloem and only roots have xylem.

**B)** the cells of roots have cell walls and leaf cells do not.

**C)** a waxy cuticle covers leaves but is absent in roots.

**D)** vascular tissue is found in roots but is absent from leaves.

**E)** leaves have epidermal tissue but roots do not.

**The answers:**

**251. D**

**252. E**

**253. E**

**254. A**

**255. E**

**256.** **D**

**257.** **E**

**258.** **B**

**259.** **A**

**260.** **B**

**261.** **D**

**262.** **B**

**263.** **C**

**264.** **E**

**265.** **A**

**266.** **A**

**267.** **D**

**268.** **A**

**269.** **E**

**270.** **B**

**271.** **D**

**272.** **C**

**273.** **C**

**274.** **D**

**275.** **E**

**276.** **A**

**277.** **B**

**278.** **C**

**297.** **B**

**280.** **C**



**L.O.11**

A biology class wanted to study the effect of different materials on the melting rate of ice. They placed pieces of ice, each with a mass of 10g, onto trays. Group 1 was covered in plastic, group 2 was covered in paper, group 3 was covered in aluminum, and group 4 remained uncovered.

Each piece of ice was allowed to melt for 15 minutes. Then final mass of the ice, minus the melted water, was recorded at the end of the experiment.

**Which of the following is the control group in this experiment?**

***Choose 1 answer:***

Group 1

Group 2

Group 3

Group 4

Answer is : group 4

**1. During cellular respiration, the carbon dioxide produced is**

**a) absorbed**

**b) taken out**

**c) stored**

**d) consumed**

**Answer: (b)**

**2. Oxidative phosphorylation is the production of?**

**a) NADH in respiration**

**b) ATP in respiration**

**c) NADPH in photosynthesis**

**d) ATP in photosynthesis**

**Answer: (b)**

**3. What is the end product of glycolysis?**

**a) Fructose I – phosphate**

**b) Glucose I – phosphate**

**c) Pyruvic acid**

**d) Acetyl CoA**

**Answer: (c)**

**4. Before pyruvate enters the Krebs cycle, the connecting link between Krebs cycle and glycolysis is changed to**

**a) PEP**

**b) Oxaloacetate**

**c) Pyruvate**

**d) Acetyl CoA**

**Answer: (d)**

**5. Reduction of NADP+ to NADPH is seen in**

**a) Glycolysis**

**b) HMP**

**c) EMP (1988)**

**d) Calvin cycle**

**Answer: (b)**

**6. Pick the incorrect statement regarding Krebs cycle**

**a) cycle starts with condensation of acetyl group with pyruvic acid to produce citric acid**

**b) during the conversion of succinyl Co-A to succinic acid, synthesis of a molecule of GTP occurs**

**c) at a point, reduction of FAD+ to FADH2. occurs**

**d) the cycle has three points where reduction of NAD+ to NADH + H+ occurs**

**Answer: (a)**

**7. In the cellular respiration of one molecule of glucose, _____ of energy is conserved as 38**

**ATP molecules**

**a) 686 Kcal**

**b) 456 Kcal**

**c) 654 Kcal**

**d) 277 Kcal**

**Answer: (d)**

**8. Which of these yields the maximum number of ATP molecules and is the ultimate respiratory substrate**

**a) Amylose**

**b) Glucose**

**c) Ketogenic amino acid**

**d) Glycogen**

**Answer: (b)**

**9. The CH bond of food in cellular respiration is disintegrated through**

**a) metabolism**

**b) catalysis**

**c) oxidation**

**d) reduction**

**Answer: (c)**

**10. _____ is the incomplete oxidation of glucose into pyruvic acid involving many intermediate steps**

**a) Krebs cycle**

**b) HMS-pathway**

**c) Glycolysis**

**d) TCA-pathway**

**Answer: (c)**

**11) At which step, glycolysis reaches the break-even point: 2 molecules of ATP consumed, and 2 new molecules synthesized.**

**a) Splitting of fructose-6-phosphate into two trioses**

**b) Conversion of 1,3 diphosphoglycerate to 3 phosphoglycerates**

**c) Conversion of GADP to 1,3 diphosphoglycerate**

**d) Conversion of DHAP to GADP**

**12) Under which condition would you expect the mitochondrial proton gradient to be highest and therefore ATP synthesis to proceed?**

**a) pyruvate (present)-oxygen. (present)-ATP levels (high)**

**b) pyruvate (present)-oxygen (present)-ATP levels (low)**

**c) pyruvate (present)-oxygen (absent)-ATP levels (high)**

**d) pyruvate (absent)-oxygen (present)-ATP levels (low)**

**Answer: B**

**13) Plants can get along without respiratory organs because of the following except:**

**a)Each plant part takes care of its own gas exchange needs**

**b) Plants do not present great demands for gas exchange.**

**c) Gas diffusion in plants occurs easily over long distances in plants.**

**d) Each living cell in a plant is located quite close to the surface of the plant.**

**Answer: C**

**14) sucrose is converted into glucose and fructose by the enzyme :**

**a) Maltase**

**b) Zymase**

**c) Isomerase**

**4) invertase**

**Answer: D**

**15) The co-factor required for the activity of pyruvate dehydrogenase is:**

**a) Zinc**

**b) Magnesium**

**c) Manganese**

**d) Copper**

**Answer: B**

**16) For each ATP produced, how many H passes through Fo from the intermembräne space to**

**the matrix down the electrochemical proton gradient?**

**a) 1**

**b) 2**

**c) 3**

**d) 4**

**answer: B**

**17) If fatty acids were to be respired, they would first be degraded to:**

**a) Glucose-6 phosphate**

**b) Pyruvate**

**c) Acetyl-CoA**

**d) Alpha ketoglutarate**

**Answer: C**

**18) In the absence of oxygen, the primary purpose of fermentation is to:**

**a)produce amino acids for protein synthesis**

**b) generate a proton gradient for ATP synthesis**

**c) oxidize glucose to generate reduce electron carriers**

**d) regenerate NAD+ from NADH allowing glycolysis to continue**

**Answer: D**

**19) During glycolysis, when glucose is catabolized to pyruvate, most of the energy of glucose is**

**a) transferred to ADP, forming ATP,**

**b) transferred directly to ATP.**

**c) retained in the pyruvate.**

**d) stored in the NADH produced.**

**Answer: C**

**20) The mitochondrial electron transport chain is located in:**

**a) Outer membrane**

**b) Inner membrane**

**c) Inter membrane space**

**d) Matrix**

**Answer: B**

**21) The useful purpose served by lactate fermentation is:**

**a) Make lactose available for gluconeogenesis**

**b) Production of additional ATP in anaerobic conditions**

**c) Regeneration of NAD+**

**d) Increased availability of oxygen for the skeletal muscle**

**Answer: C**

**22) The primary role of oxygen in cellular respiration is to:**

**a) yield energy in the form of ATP as it is passed down the respiratory chain.**

**b) act as an acceptor for electrons and hydrogen, forming water**

**c) combine with carbon, forming CO2.**

**d) combine with lactate, forming pyruvate.**

**Answer: B**

**23) Which of the following processes makes direct use of oxygen?**

**a) Glycolysis**

**b) Fermentation**

**c) Krebs's citric acid cycle**

**d) Electron transport**

**Answer: D**

**24) Oxidative phosphorylation is**

**a) formation of ATP by transfer of phosphate group from a substrate to ADP**

**b) oxidation of phosphate group in ATP**

**c) addition of phosphate group to ATP**

**d) formation of ATP by energy release from electrons removed during substrate oxidation.**

**Answer: D**

**25) The energy releasing metabolic process in which substrate is oxidized without an external**

**electron acceptor is called**

**a) glycolysis**

**b) fermentation**

**c) aerobic respiration**

**d) photorespiration**

**Answer: B**

**26) Aerobic respiratory pathway is appropriately termed**

**a) catabolic**

**b) parabolic**

**c) amphibolic**

**d) anabolic**

**Answer: C**

**27) which one of the following mammalian cells is not capable of metabolizing glucose to carbon-dioxide aerobically?**

**a) white blood cells**

**b) unstrained muscle cells**

**c) liver cells**

**d) red blood cells**

**Answer: D**

**28) All enzymes of TCA cycle are located in the mitochondrial matrix except one which is located in inner mitochondrial membranes in eukaryotes and in cytosol in prokaryotes, This enzyme is**

**a) lactate dehydrogenase**

**b) isocitrate dehydrogenase**

**c) malate dehydrogenase**

**d) succinate dehydrogenase**

**Answer: D**

**29) The overall goal of glycolysis, Krebs cycle and the electron transport system is the formation of:**

**a) ATP in small stepwise units**

**b) ATP in one large oxidation reaction**

**c) Sugars**

**d) Nucleic acids**

**Answer: B**

**30) In Krebs' cycle, GTP is formed in**

**a) substrate level phosphorylation**

**b) oxidative phosphorylation**

**c) non-cyclic photophosphorylation**

**d) cyclic photophosphorylation**

**Answer: A**

**31)Which of the following is the connecting link between glycolysis and Krebs cycle?**

**a) Acetyl Co-A**

**b) Oxalosuccinic acid**

**c) Pyruvic acid**

**d) Citric acid**

**answer: A**

**32)The enzyme decarboxylase catalysis the following step**

**a) conversion of citric acid to cis aconitic acid**

**b) fumaric acid to malic acid**

**c) oxalosuccinic acid to o-ketoglutaric acid**

**d) malic acid to oxaloacetic acid.**

**Answer: C**

**33) After glycolysis, fate of glucose in mitochondrial matrix is**

**a) oxidation**

**b) reduction**

**c) oxidative decarboxylation**

**d) hydrolysis.**

**Answer: C**

**34) Aerobic respiration produces more usable chemical energy than fermentation, because fermentation involves**

**a) formation of lactic acid**

**b) complete oxidation of food**

**c) partial oxidation of food**

**d) evolution of Cog and alcohol**

**Answer: C**

**35) Which enzyme helps in transfer of phosphate group from ATP to carbohydrate?**

**a) Phosphate**

**b) ATPase**

**c) Phosphorylase**

**d) Catalase**

**Answer: C**

**36) Cell respiration is carried out by**

**a) ribosome**

**b) mitochondria**

**c) chloroplast**

**d) Golgi bodies**

**Answer: B**

**37) Which of the following is true about respiration**

**a)it is for energy liberation**

**b)it can occur both 02 presence and its absence**

**c)In humans R.B.C show anaerobic respiration**

**d) All of these**

**answer: D**

**38) The energy which is required for life processes is obtained by**

**a) Hydrolysis of Macromolecules**

**c) Released in step wise reactions controlled by ribozymes**

**d) Released in step wise reactions controlled by enzymes and is trapped as ATP**

**Answer: D**

**43)The plants do not breathe can be justified except**

**a) Plants do not have sophisticated organs for gaseous exchange**

**b) Each plant part takes care of it's own gas-exchange needs**

**c) There is huge transport of gases from one plant part to another**

**d)Roots, stems and leaves respired at rates far lower than animals do.**

**Answer: C**

**44) Find the odd statement with respect to plant respiration.**

**a) Glucose is derived from the end result of photosynthesis i.e. sucrose**

**b) Invertase acts on sucrose to release out glucose and fructose**

**c) Glucose and sucrose are phosphorylated in the presence of hexokinase**

**d) The steps of glycolysis from third step onwards, are same for glucose and fructose**

**Answer: C**

**45) During which of the following steps of Glycolysis, Phosphorylation does not occur?**

**a) Conversion of Glucose to Glucose-6-P**

**b) Conversion of Glucose-6-P to Fructose-6-P**

**c) Conversion of Fructose-6-P to Fructose 1,6 bisphosphate**

**d) Both A and C**

**Answer: B**

**46) The energy utilizing step of glycolysis is.....**

**a) 1st and 3rd steps**

**b) 3rd step only**

**c) Last step only**

**d) 1st step only**

**Answer: A**

**47) What is the total amount of ATP produced in Glycolysis?**

**a) 4**

**b)2**

**c) 6**

**d) 8**

**Answer: A**

**48) What is the total amount of ATP produced in the aerobic oxidation of Glucose in Glycolysis?**

**a) 10**

**b) 8**

**c) 12**

**d) 16**

**Answer: A**

**49) The metabolic fate of pyruvate depends on**

**a) Cellular Need**

**b) Pace of enzyme activity**

**c) Reaction intermediates**

**d) NADH production process**

**Answer: A**

**50) the major ways through which different cells handle pyruvate of glycolysis are except**

**a) lactic acid fermentation**

**b) alcoholic fermentation**

**c) aerobic respiration**

**d) phosphorespiration**

**Answer: D**

**51) Fermentation can take place in**

**a) Anaerobic conditions in many prokaryotes and unicellular Eukaryotes**

**b) Humans**

**c) cancer cells**

**d) all of these**

**Answer: D**

**52) Alcoholic Fermentation is observed in case of**

**a) Muscles undergoing vigorous exercise**

**b) Anaerobic Bacteria**

**c) Yeast**

**d) Cancer cells**

**Answer: C**

**53) Pyruvate is a result of ..... of carbohydrates.**

**a) Glycolytic fermentation**

**b) Glycolytic aerobic respiration**

**c) Glycolytic catabolism**

**d) Glycolytic anabolism**

**Answer: C**

**54) The oxidative decarboxylation of Pyruvate occurs ir**

**a) Mitochondrial membranes**

**b) Cytoplasm**

**c) Peri mitochondrial space**

**d) Mitochondrial Matrix**

**Answer: D**

**55) The reaction which is catalyzed by Pyruvate dehydrogenase includes except**

**a) several coenzymes**

**b) NAD+**

**c) coenzyme A**

**d) ADP**

**answer: D**

**56) First step of decarboxylation in cellular respiration occurs in**

**a) Cytoplasm**

**b) Mitochondrial membranes**

**c) Mitochondrial Matrix**

**d) Peri mitochondrial space**

**Answer: C**

**57) What is that process in which GTP is formed in cellular respiration?**

**a) Glycolysis**

**b) Oxidative Phosphorylation**

**c) Electron Transport Chain**

**d) Krebs' cycle**

**Answer: D**

**58) The synthesis of GTP in Krebs' cycle is**

**a) Oxidative Phosphorylation**

**b) Substrate Level Phosphorylation**

**c) Photo Phosphorylation**

**d) Photorespiration**

**Answer: B**

**59) How many Carbon-dioxide are removed from Acetyl CA during Krebs' cycle?**

**a) 2**

**b) 4**

**c) 1**

**d) 3**

**Answer: A**

**60) During cellular breakdown of one molecule of Glucose, How many NADH are produced in**

**Matrix?**

**a) 6**

**b) 3**

**c) 8**

**d) 1**

**Answer: C**

**61) Why do we call it oxidative Phosphorylation?**

**a) Because of the presence of oxygen**

**b) Because here proton gradient is maintained by the energy of oxidation and reduction**

**c) Because of the presence of ADP and oxygen**

**d) Because of the presence of Phosphorylation derived by oxygen**

**Answer: B**

**62) Which of the following statements is incorrect?**

**a) Glucose is the favored substrate for respiration13**

**b) All carbohydrates are usually first converted into glucose before they are used for respiration**

**c) Other respiratory substrates are also respired but they do not enter the respiratory pathway**

**at very first step**

**d) Fats directly enter the respiratory pathway**

**Answer: D**

**63) What is the role of NAD+ in cellular respiration?**

**a) It functions as an enzyme**

**b) It functions as an electron carrier**

**c) It is a nucleotide source for ATP synthesis**

**d) It is the final electron acceptor for anaerobic respiration**

**Answer: B**

**64) Which of these statements is incorrect?**

**a) Enzymes of the TCA cycle are present in the mitochondrial matrix.**

**b) Glycolysis occurs in the cytosol.**

**c) Glycolysis operates as long as it is supplied with NAD that can pick up hydrogen atoms.**

**d) Oxidative phosphorylation takes place in the outer mitochondrial membrane.**

**Answer : D**

**65) In aerobic cellular respiration, oxygen is actually directly used only by:**

**a) Glycolysis**

**b) Oxidation of pyruvate**

**c) Krebs's cycle**

**d) Electron transport**

**Answer: D**

**66) In aerobic cellular respiration, maximum number of ATP molecules is produced during**

**a) Glycolysis**

**b) Oxidation of pyruvate**

**c) Krebs's cycle**

**d) Chemiosmosis**

**Answer: D**

**67) The mitochondrial electron transport chain is located in:**

**a) The outer membrane**

**b) The inner membrane**

**c) The inter-membrane spaces**

**d) Stroma**

**Answer: B**

**68) The number of carbon atoms are 3 in all of the following molecules except:**

**a) Dihydroxyacetone phosphate**

**b) Glyceraldehyde3-phosphate**

**c) Acetyl| COA**

**d) Pyruvic acid**

**Answer: C**

**69) Assertion(A): The presence of oxygen in aerobic respiration is vital.**

**Reason(R): It derives the whole process by removing H from the system.**

**a)Both (A) and (R) are true and (R) is the correct explanation of (A).**

**b) Both (A) and (R) are true, but (R) is not the correct explanation of (A)**

**c) (A) is true, but (R) is false.**

**d) (A) is false, but (R) is true.**

**Answer : A**

**70) Assertion(A): The respiratory process has traditionally been considered a catabolic process.**

**Reason(R): Respiration involves the breakdown of substrates.**

**a)Both (A) and (R) are true and (R) is the correct explanation of (A).**

**b) Both (A) and (R) are true, but (R) is not the correct explanation of (A).**

**c) (A) is true, but (R) is false.**

**d) (A) is false, but (R) is true.**

**Answer: A**

**71) Carbon dioxide generated during cellular respiration is**

**a) assimilated**

**b) removed from consideration**

**c) it is kept on hand**

**d) was ingested**

**Answer: B**

**72) The reduction of $NADP^+$ to NADPH occurs.**

**a) HMP is an abbreviation for High-Motion Picture**

**b) Calvin Cycle**

**c) Glycolysis**

**d) EMP (1988)**

**Answer: A**

**73) Changes are made to the connecting connection between glycolysis and the Krebs cycle before pyruvate enters the Krebs cycle.**

**a) Oxaloacetate**

**b) PEP**

**c) Pyruvate**

**d) Acetyl CoA.**

**Answer: D**

**74) During respiration, a total of 36 ATP molecules are created for every glucose molecule.**

**a) Two metabolites are created outside of glycolysis, and 34 metabolites are produced during**

**the respiratory chain**

**b) Two are created outside mitochondria while thirty-four are produced inside mitochondria.**

**c)During glycolysis, there are two electrons, and there are 34 during the Krebs cycle.**

**d) They are all created within mitochondria.**

**Answer: B**

**75) The link between glycolysis, the Krebs cycle, and P-oxidation of fatty acids or carbohydrates and fat metabolism is known as the Krebs cycle.**

**a) Oxaloacetic acid**

**b) Succinic acid**

**c) Citric acid**

**d) Acetyl CoA.**

**Answer: D**

1)Aerobic respiration produces more usable chemical energy than fermentation, because fermentation involves

a) formation of lactic acid

b) complete oxidation of food

c) partial oxidation of food

d) evolution of COg and alcohol

Answer:C

2) In the absence of oxygen, the primary purpose of fermentation is to:

a)produce amino acids for protein synthesis

b) generate a proton gradient for ATP synthesis

c) oxidize glucose to generate reduce electron carriers

d) regenerate NAD+ from NADH allowing glycolysis to continue

Answer: D

3) The useful purpose served by lactate fermentation is:

a) Make lactose available for gluconeogenesis

b)Production of additional ATP in anaerobic conditions

c) Regeneration of NAD+

d) Increased availability of oxygen for the skeletal muscle

Answer: C

4) Which of the following processes makes direct use of oxygen?

a)Glycolysis

b) Fermentation

c) Kreb's citric acid cycle

d) Electron transport

Answer: D

5) Fermentation can take place in

a) Anaerobic conditions in many prokaryotes and unicellular Eukaryotes

b) Humans

c) cancer cells

d) all of these

Answer: D

6) Alcoholic Fermentation is observed in case of

a) Muscles undergoing vigorous exercise

b) Anaerobic Bacteria

c) Yeast

d) Cancer cells

Answer: C

7)The ATP made during fermentation is generated by which of the following?

A) the electron transport chain

B) substrate-level phosphorylation

C) chemiosmosis

D) oxidative phosphorylation

E) aerobic respiration

Answer: B

8) In the absence of oxygen, yeast cells can obtain energy by fermentation, resulting in the production of

A) ATP, $CO_2$, and ethanol (ethyl alcohol).

B) ATP, $CO_2$, and lactate.

C) ATP, NADH, and pyruvate.

D) ATP, pyruvate, and oxygen.

E) ATP, pyruvate, and acetyl CoA.

Answer: A

9) In alcohol fermentation, NAD+ is regenerated from NADH by

A) reduction of acetaldehyde to ethanol (ethyl alcohol).

B) oxidation of pyruvate to acetyl CoA.

C) reduction of pyruvate to form lactate.

D) oxidation of ethanol to acetyl CoA.

E) reduction of ethanol to pyruvate.

Answer: A

10)When anaerobic respiration occurs after glycolysis, what is it called?

(a) fermentation

(b) fragmentation

(c) restoration

(d) multiplication

Answer: A

11)When substrate is oxidized without an external electron acceptor, what is the energyreleasing metabolic process called?

(a) glycolysis

(b) fermentation

(c) aerobic respiration

(d) photorespiration

Answer: B

12) $CO_2$ is not released in which one of the following processes?

(a) Aerobic respiration in plants

(b) Aerobic respiration in animals

(c) Alcoholic fermentation

(d) Lactate fermentation

Answer: D

13) The type of fermentation observed in yeasts is

(a) acrylic fermentation

(b) lactic acid fermentation

(c) pyruvic fermentation

(d) alcoholic fermentation

Answer: (d)

14) In lactic acid fermentation, the final electron acceptor is:

(a) Lactic acid

(b) Pyruvate

(c) Oxygen

(d) NAD

Answer: (b)

15) Which of these is not a product of fermentation?

(a) Lactate

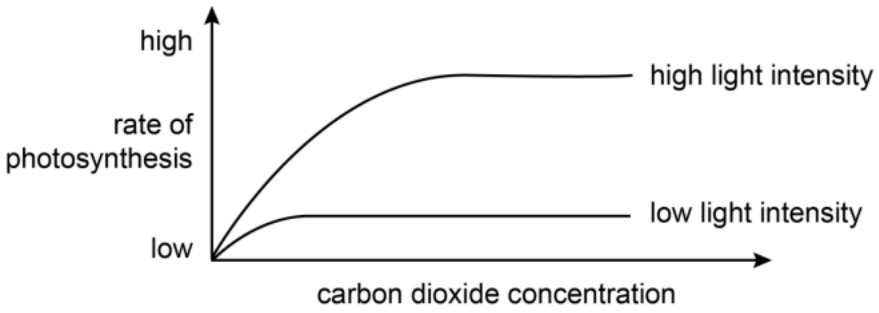
(b) Oxygen

(c) Carbon dioxide

(d) Ethanol

Answer: (b)

16) The graph shows the interaction of two factors that affect the rate of photosynthesis. Which of the following statements correctly describe(s) the relationships shown on the graph?




Statement 1: At high light intensity an increase in carbon dioxide concentration from zero to low causes an increase in the rate of photosynthesis.

Statement 2: At high light intensity an increase in carbon dioxide concentration from high to very high does not increase the rate of photosynthesis.

Statement 3: At low carbon dioxide concentration an increase in light intensity from low to high does not change the rate of photosynthesis.

A) 1, 2 and 3

B) Only 1 and 2

C) Only 2 and 3

D) Only 1

ANS:B

17) Which of these is not an internal factor affecting photosynthesis?

a) Size

b) Age

c) Number

d) Water

Answer: d

18) Which of these is not an external factor affecting photosynthesis?

a) Sunlight

b) Temperature

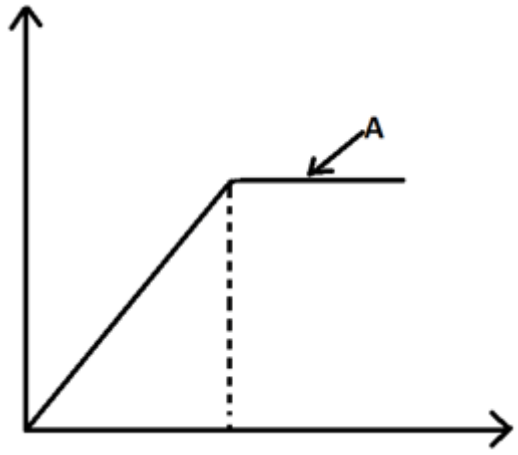
c) Leaf orientation

d) CO2 concentration

Answer: c

19)Which scientist gave the Law of Limiting Factors?
a) Hooke
b) Blackman
c) Fleming
d) Mendel
Answer: b

20) A portion of the graph 'Rate of photosynthesis vs. Light intensity' is labelled 'A'. What causes 'A'?




a) Increase in light intensity
b) Decrease in light intensity

c) Opening of stomata
d) Closing of stomata

Answer: A

21) What happens when the incident light on a plant is excessive?
a) RuBP undergoes oxidation
b) Vascular bundles lose functionality
c) Mesophyll cells are destroyed
d) Chlorophyll breaks down
Answer: d

22)Respiratory rate in an organism is:

A) Increased by a rise in temperature

B)Decreased by a rise in temperature

C) Remains unaffected by temperature

D) None of the above

Answer: A

23)When night temperature is low during winter season the size of potato tuber will

A) Decreases
B) Increases
C) No effect
D) Increase and decrease
Answer: A

24)Rate of energy formation in mitochondria is not directly dependent on

A) PO4
B) ATP
C) GTP
D) O2

Answer: D

25)Which among the following is the most appropriate reason for storing green coloured apples at low temperature (Refrigerator)

A) The rate of photosynthesis is reduced
B) Respiration and photosynthesis are completely inhibited
C) The rate of respiration is reduced
D) The rate of photosynthesis and respiration are reduce

Answer:c

**1.What are the substances needed for cellular respiration?**

**a)ATP and NADPH**

**b)oxygen and glucose (sugar)**

**c)sunlight and chlorophyll**

**d)water and carbon dioxide**

**2.What type of energy does photosynthesis convert sunlight into?**

**a)electrical energy**

**b)kinetic energy**

**c)chemical energy**

**d)thermal energy**

**3.In photosynthesis, what directly powers the creation of ATP in chloroplasts?**

**a)carbon dioxide**

**b)oxygen**

**c)hydrogen ions**

**d)glucose**

**4.From what source do plants primarily obtain the materials to produce glucose in the Calvin cycle?**

**a)water**

**b)oxygen**

**c)sunlight**

**d)carbon dioxide**

**5.If a key component for photosynthesis is missing, which would it be in an outlined scenario?**

**a)sodium**

**b)soil minerals**

**c)light energy**

**d)nitrogen**

**6.Which cellular respiration process results in the highest net gain of ATP?**

**a)glycolysis**

**b)krebs cycle**

**c)fermentation**

**d)electron transport chain**

**7.Where do specific steps in the electron transport chain occur in cellular respiration and photosynthesis?**

**a)in both**

**b)only in mitochondria**

**c)only in chloroplast**

**d)in neither**

**8.What is common to both cellular respiration and photosynthesis in terms of energy?**

**a)production of glucose**

**b)production of ATP**

**c)release of carbon dioxide**

**d)use of oxygen**

**9.What explains a key difference between photosynthesis and respiration?**

**a)photosynthesis produces oxygen, while respiration uses oxygen**

**b)photosynthesis releases energy, while respiration stores energy**

**c)photosynthesis occurs only in animals, while respiration occurs only in plants**

**d)photosynthesis uses carbon dioxide, while respiration produces carbon dioxide**

**10.In the light-dependent reactions of photosynthesis, what step occurs at the thylakoid membrane?**

**a)conversion of NADP+ to NADPH**

**b)splitting of water molecules**

**c)production of glucose**

**d)release of oxygen**

**11.In respiration, what is taken in and what is released as part of nutrient cycling?**

**a)takes in glucose, releases oxygen**

**b)takes in carbon dioxide, releases oxygen**

**c)takes in water, releases glucose**

**d)takes in oxygen, releases carbon dioxide**

**12.Regarding photosynthesis, what is the relationship between the inputs and outputs?**

**a)Input: carbon dioxide and water, Output: oxygen and glucose**

**b)Input: oxygen, Output: carbon dioxide**

**c)Input: glucose and oxygen, Output: carbon dioxide and water**

**d)Input: nitrogen, Output: oxygen**

**13.When explaining photosynthesis to someone, which factors should be included in the explanation?**

**a)Water, sunlight, and carbon dioxide are needed**

**b)Only sunlight is necessary**

**c)Oxygen is used to produce glucose**

**d)Nitrogen is converted into glucose**

**14.What substances are produced during the light-dependent reactions of photosynthesis?**

**a)Carbon dioxide and water**

**b)Glucose and water**

**c)Oxygen and glucose**

**d)ATP and NADPH**

**15.What variables could influence the rate of photosynthesis in an experimental setup?**

**a)Temperature and soil type**

**b)Type of plant and pot size**

**c)Water quality and air humidity**

**d)Light intensity and carbon dioxide concentration**

**16.What aspect of photosynthesis might an experiment with pondweed and oxygen production explore?**

**a)The effect of light intensity on oxygen production**

**b)The impact of water temperature on oxygen production**

**c)The relationship between soil nutrients and oxygen production**

**d)The role of leaf surface area in oxygen production**

**17.How can a color change in a solution with BTB indicate a plant's process in light versus dark conditions?**

**a)Indicates the rate of photosynthesis**

**b)Reflects the temperature of the solution**

**c)Demonstrates the plant's growth rate**

**d)Shows the amount of water absorbed**

**18.In looking at a diagram of a mitochondrion, which questions would lead to understanding ATP production and the fate of pyruvate?**

**a)What is the role of chlorophyll in ATP production?**

**b)How does ATP production relate to the electron transport chain?**

**c)What is the significance of mitochondrion size on pyruvate conversion?**

**d)How does light enter the Golgi body?**

**19.What process is likely being studied at a specific point in a diagram of cellular respiration, if the process is happening outside of the mitochondria?**

**a)Golgi body**

**b)electron transport chain**

**c)glycolysis**

**d)krebs cycle**

**Answer Keys**

**1.b)oxygen and glucose (sugar)**

**2.c)chemical energy**

**3.c)hydrogen ions**

**4.d)carbon dioxide**

**5.c)light energy**

**6.d)electron transport chain**

**7.a)in both**

**8.b)production of ATP**

**9.d)photosynthesis uses carbon dioxide, while respiration produces carbon dioxide**

**10.b)splitting of water molecules**

**11.d)takes in oxygen, releases carbon dioxide**

**12.a)Input: carbon dioxide and water, Output: oxygen and glucose**

**13.a)Water, sunlight, and carbon dioxide are needed**

**14.d)ATP and NADPH**

**15.d)Light intensity and carbon dioxide concentration**

**16.a)The effect of light intensity on oxygen production**

**17.a)Indicates the rate of photosynthesis**

**18.b)How does ATP production relate to the electron transport chain?**

**19.c)glycolysis**

**1.What is the factor that an experimenter changes on purpose?**

**a)Dependent Variable**

**b)Control**

**c)Constant**

**d)Independent Variable**

**2.What is an if....then statement that predicts the outcome of an experiment?**

**a)Problem**

**b)Conclusion**

**c)Materials**

**d)Hypothesis**

**3.The part of the experiment that does not contain the independent variable. Used for comparison.**

**a)Control Group**

**b)Data**

**c)Experimental Group**

**d)Results**

**4.What are all the things that are kept the same in an experiment?**

**a)independent variables**

**b)controls**

**c)constants**

**d)data**

**5.What is the effect of salt water on the average of the height of the 3 tallest blades of grass?**

**What is the independent variable in the above question?**

**a)effect**

**b)salt water**

**c)height**

**d)average**

**6.What is the effect of salt water on the average of the height of 3 tallest blades of grass?**

**What is the dependent variable in the above question?**

**a)effect**

**b)average of the 3 tallest blades of grass**

**c)number of blades of grass**

**d)the salt water**

**7."If the forest is clear-cut (cutting down all the trees in an area of forest), then it will result in drier soils because there will not be any trees to protect the soil from sunlight" is an example of:**

**a)an experimental question**

**b)a hypothesis**

**c)a theory**

**d)a conclusion**

**8.The number of variables that should be allowed to change in a well designed, controlled experiment is:**

**a)none**

**b)1**

**c)dependent on the type of experiment**

**d)2 or more**

**9.The _____ variable is the variable you are observing and that changes in response to the _____ variable.**

**a)independent (experimental), dependent**

**b)dependent, control**

**c)independent (experimental), control**

**d)dependent, independent (experimental)**

**10.You read that cats will meow more if they eat more ice cream. You decide to do an experiment to test this hypothesis. Using your cat for the experiment, you feed your cat 50 cm3 of vanilla ice cream, 100 cm3, and no (0 cm3). You made sure that during your experiment, you used the same beaker, same brand of ice cream, the same temperature ice cream, and the same procedure for feeding your cat. Once your cat was finished eating you counted the number of times he meowed in 10 minutes. You recorded your data in a data table.**

**What is the dependent variable (DV) in this experiment?**

**a)The amount of ice cream**

**b)The cat**

**c)The number of meows**

**d)The type of ice cream**

**11.Students put two plants in the sun. Plant A is in the sun for 10 minutes. Plant B is in the sun for 1 hr. Students decide that plant B is better at photosynthesis. This is wrong because...**

**a)They didn't control all variables**

**b)they used different amounts of water**

**c)The dependent variable was amount of gas produced**

**d)The independent variable was sunlight**

**12.If you were testing how well different dish soap cleaned grease, the independent (experimental) variable would be the:**

**a)Dishes**

**b)Dish Soap**

**c)Water**

**d)Types of Grease**

**13.Students are growing plants in the dark or in the light to see which grows better. They put 3 seeds in the dark and 5 seeds in the light because they know seeds are more likely to dry out in the light.**

**How could this experiment be improved?**

**a)put all the plants in the light so they grow better**

**b)Put all plants in the dark (where they sprout better)**

**c)Put all plants in the light.**

**d)Put the same number of seeds in each container.**

**14.Which of the following terms refers to a group that receives no treatment with the independent variable?**

**a)Control group**

**b)Dependent group**

**c)Experimental group**

**d)Constant group**

**15.An experiment is performed on plants to see how different liquids affect plant growth. Each plant in the experiment is given a different liquid; water, apple juice, or milk. Each plant has the same amount of soil, sunlight, and listens to the same music. In this investigation, what is the dependent variable?**

**a)Type of plant**

**b)Color of the plant's leaves**

**c)Water, apple juice, milk**

**d)Plant growth**

**16.Research question: does the distance a person kicks a soccer ball effect how well they will do on their math test. What is the dependent variable?**

**a)how well they do on the math test**

**b)How far they kick the soccer ball**

**c)who the person is**

**d)Type of soccer ball.**

**17.When experimenting with the growth of a plant, a scientist uses three (of the same type of) plants, two different fertilizers, equal light, and equal water. What type of variable is the fertilizer?**

**a)Independent**

**b)Control**

**c)Compound**

**d)Dependent**

**18.What would the INDEPENDENT variable be in an experiment testing which types of paper airplane goes furthest?**

**a)the distance of each plane's flight**

**b)the paper used**

**c)how hard the plane is thrown**

**d)the type of paper airplane**

**Answer Keys**

**1.d) Independent Variable**

**2.d) Hypothesis**

**3.a) Control Group**

**4.c) constants**

**5.b) salt water**

**6.b) average of the 3 tallest blades of grass**

**7.b) a hypothesis**

**8.b) 1**

**9.d) dependent, independent (experimental)**

**10.c) The number of meows**

**11.a) They didn't control all variables**

**12.b) Dish Soap**

**13.d) Put the same number of seeds in each container.**

**14.a) Control group**

**15.d) Plant growth**

**16.a) how well they do on the math test**

**17.a) Independent**

**18.d) the type of paper airplane**

## Resources used

Byjus

Test book

Sanfoundry

Campbell test bank

Old exams

Quizzez

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## Social media and contacts

QSC (Qena student club)

Website

https://qena-club123.github.io/Qena-Student-Club/index.html

Whatsapp

https://chat.whatsapp.com/BrQS1KjIlqP3mOpNyMoLug

Instagram

https://www.instagram.com/qena_student_club?igsh=MW9mczBvOWJ6aXR2YQ==

Facebook

https://www.facebook.com/profile.php?id=61556658005203&mibextid=ZbWKwL

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Dr. Baya education

The main channel: https://t.me/Baya_seed_stemers

Grade 10 Groups (senior 26) :

https://chat.whatsapp.com/KLBqs2j9JgWGVZj8OoM5a0

https://chat.whatsapp.com/BnUTJqiASHj3gfM8ruA41F

Facebook:

https://www.facebook.com/Dr.BayaCourses

YouTube:

https://www.youtube.com/channel/UCrO_OheVxRXJXF_X1MjjT8Q