DPP
DAILY PRACTICE PROBLEMS

Class : XIth
Date :

Solutions

Subject : BIOLOGY
DPP No. : 4

Topic :- Respiration in Plants

1 **(a)**
Krebs' cycle takes place in matrix of mitochondria. Largest amount of phosphate bond energy is produced in Krebs' cycle due to oxidation by O_2. We get $6CO_2$, $8NADH_2$, $2FADH_2$ and 2ATP molecules in Krebs' cycle.

2 **(a)**
In electron transport system, last electron acceptor is oxygen

3 **(a)**
Glucose and fructose are both converted to ethanol and carbon dioxide in presence of Zymase enzyme.

$C_6H_{12}O_6 \xrightarrow{\text{Zymase}} 2C_2H_5OH + 2CO_2$

Glucose or Fructose — Ethanol

4 **(c)**
Glycolysis is the degradation of glucose molecule with net gain of 2ATP molecules per glucose molecule. It occurs both in **aerobic** and **anaerobic** conditions.

5 **(d)**
For fatty substances, RQ is generally less than one.

$2C_{51}H_{96}O_6 + 145O_2 \rightarrow 102CO_2 + 98H_2O$

$RQ = \frac{co_2}{O_2} = \frac{102}{145} = 0.7$ (less than unity)

6 **(a)**
DCMU is a herbicide which acts as an inhibitor of non-cyclic electron transport; PMA is fungicide which reduces transpiration; colchicines is an antimicrobial drug, it causes prevention of mitotic spindle formation thus blocking the mitosis.

7 **(a)**
With the complete oxidation of pyruvate by the stepwise removal of all the hydrogen atoms form 3 molecules of CO_2, which occurs in matrix of the mitochondria

8 **(a)**
In anaerobic respiration bacteria produce lactic acid from pyruvic acid

9 **(a)**
Strains of Saccharomyces cerevisiae (yeast) are extensively used for leavening of bread. During fermentation, the yeasts produce alcohol and carbon dioxide, which leave and the leavened bread becomes porous.

10 **(c)**
Before entering respiratory pathway amino acids are deaminated

11 **(b)**
Pyruvic acid is an intermediate compound common for aerobic and anaerobic respiration because it is the end product in glycolysis and initial product in anaerobic respiration.

12 **(a)**
During alcoholic fermentation of glucose molecule, pyruvic acid is first decarboxylated to form acetaldehyde and CO_2, which is then changed to ethyl alcohol with help of NADH. Net gain is 2ATP molecules per glucose molecule.

$C_6H_{12}O_6 + 2ADP + 2Pi \rightarrow 2C_2H_5OH$

Glucose Ethyl alcohol

$+ 2CO_2 + 2ATP + 2H_2O$

13 **(b)**
4 ATP are formed in glycolysis but 2 ATP used
2 ATP in Krebs' cycle
34 ATP from electron transport chain
40 ATP

14 **(c)**
It is a fact that the living cells are organised in thin layers inside and beneath the bark. They also have dead cells in the interior which provide mechanical support

15 **(a)**
Sunlight is the ultimate source of energy on earth. Green plants converted sunlight in form of sucrose. Animals take food from plants and get energy by oxidation of glucose.

16 **(b)**
Dough kept overnight in warm weather becomes soft and spongy due to fermentation.

17 **(d)**
RQ is the ratio of volume of carbon dioxide evolved and volume of oxygen consumed.

18 **(a)**
On oxidation of fats, maximum amount of energy is liberated.

19 **(d)**
$NADH_2 \rightarrow NAD \rightarrow NADH_2$
$NADH_2 \rightarrow FAD \rightarrow FADH_2$
The former operates in liver heart and kidney cells and no energy is spent, while the second operates in muscle and nerve cells and lowers the energy level of $2NADH_2$ by 2 ATP molecules

20 **(a)**
Krebs 'cycle involves 8 steps to oxidize 2 molecules of acetyl Co-A produced in transition reaction completely into $4CO_2$, $10H_2O$, 2ATP, $2FADH_2$ and $6NADH+H^+$

ANSWER-KEY										
Q.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
A.	**A**	**A**	**A**	**C**	**D**	**A**	**A**	**A**	**A**	**C**
Q.	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
A.	**B**	**A**	**B**	**C**	**A**	**B**	**D**	**A**	**D**	**A**