# RESPIRATION & ENZYMES EXERCISE

1. What is the important of respiration in organisms. ?
   (1) It provides oxygen to plant
   (2) It liberates energy
   (3) It liberates $CO_2$
   (4) All the above

2. An indispensable role in energy metabolism is played by
   (1) Phosphorus (2) Lithium
   (3) Sodium (4) Calcium

3. Energy obtained by a cell from catabolic reaction is stored immediately in the form of
   (1) Pyrivic acid (2) Glucose
   (3) ATP (4) DNA

4. Which component of ETS is mobile, $e^-$ carrier ?
   (1) UQ (CO - Q) (2) Cyto a
   (3) Cyto – b (4) Cyto -

5. Which of the following is the source of respiration ?
   (1) Stored food (2) RNA
   (3) DNA (4) ATP

6. R.Q. is les than one at the time of respiration of -
   (1) Starch (2) Sugarcane
   (3) Glucose (4) Ground nut

7. Number of ATP produced from one pyruvic acid during conversion to acetyl Co - A - **[MP PMT 96]**
   (1) 6 (2) 3
   (3) 12 (4) 15

8. In succulent plants R.Q. is less than one because of
   (1) Complete oxidation (2) Complete Reduction
   (3) Incomplete reduction (4) Incomplete oxidation

9. The link between Glycolysis and Krebs cycle is
   (1) Citric acid (2) malic acid
   (3) Fumaric acid (4) Acetyl co-enzyme

10. Aerobic respiration of glucose produces energy
    (1) 637 K.Cal (2) 640 K.cal
    (3) 686 K.Cal (4) 693 K. cal

11. Succinyl Co-A is related to :
    (1) Krebs cycle (2) Calvin cycle
    (3) Glycolate cycle (4) HMP - cycle

12. According to chemiosmotic theory of P. Mitchel (1978), ATP, are synthesised on membranes due to the :
    (1) Proton gradient (2) Electron gradient
    (3) Osmosis (4) From $H_2SO_4$

13. A reduction of NADP to NADP.$H_2$ is associated with
    (1) EMP-pathway (2) HMP shunt
    (3) Calving cycle (4) Glycolysis

14. Cut surfaces of fruits and vegetables often become dark because
    (1) Dirty knie makes it dark
    (2) Oxidation of tannic acid in the presence of trace of iron from the knife makes it dark
    (3) Dust of the air makes it dark
    (4) None of the above

15. Mineral activator needed for the enzymes Aconitase of TCA cycle is
    (1) mn (2) Fe
    (3) Mg (4) Cu

16. An example of competitive inhibition of an enzyme is the inhibition of : **[AIIMS 2003]**
    (1) Succinic dehydrogenase by malonic acid
    (2) Cytochrome oxidase by cyanide
    (3) Hexokinase by glucose - 6 phosphate
    (4) Carbonic anhydrae by carbon - diozide

17. If the temperature in increased above $35^0C$ **[RPMT 2003]**
    (1) Rate of decline of respiration will be earlier than decline of photosynthesis
    (2) Rate of decline of photosynthesis will be earlier than
    decline of respiration
    (3) Both decline simultatneously
    (4) Both do not show any fixed pattern

18. In hezose monophospahte shunt the number of $CO_2$ molecules evolved is
    (1) Same an in glycolysis (2) Less than glycolysis
    (3) More than glyolysis
    (4) Much less than glycolysis

19. Conversion of pyruvic acid into ethyl alcohol is mediated by -
    (1) Phosphatase

(2) Dehydrogenase
(3) Decarboylase & dehydrogenase
(4) Catalase

20. The commonest living, which can respire in the absence of $O_2$ is -
(1) Fish (2) Yeast
(3) Potato (4) Chlorella

21. The formatiion of Acetyl Co-A from pyruvic acid is the result of its
(1) Reduction
(2) Dehydration
(3) Phosphorylation
(4) Oxidative decarboxylation

22. Which of the following is link between carbohydrate and fat metabolism ?
(1) $CO_2$ (2) Acetyl Co-A
(3) Pyruvic acid (4) Citric acid

23. Pyruvate dehydrogenase complex is sued in converting -
(1) Pyruvate to glucose
(2) Glucose to pyruvate
(3) Pyruvic acid to lactic acid
(4) Pyruvate to acetyl CO-A

24. The first compound of TCA cycle is
(1) Oxalo succinic acid` (2) Oxalo acetic acid
(3) Citric acid (4) Cis aconitic acid

25. Which of the following is coenzyme - II ?
(1) NAD (2) NADP
(3) FAD (4) None of the above

26. Where does the synthesis of enzyme occur in a cell
(1) Inside the nucleus
(2) In lysosomes
(3) On the surface ribosome
(4) Inside the vacuole

27. Excess of ATP inhibits the enzyme-
(1) Phophofructokinase
(2) Hexokinase
(3) Aldolase (Lyases)
(4) Pyruvate decarboxylase

28. End product of glycolysis is
(1) Citric acid (2) Glyceraledhyde
(3) Phosphogylceraldhyde (4) Pyruvic acid

29. First reaction in pentose phosphate pathway is -
(1) Oxidation of glucose-6-phosphate
(2) 6-Phosphogluconic acid
(3) Ribose-5-phosphate
(4) Fructose-5-phosphate

30. Oxidation of one molecule of glucose in aerobic respiration result s in the formation of
(1) 36 ATP molecules (2) 38 ATP molecules
(3) 3 ATP molecules (4) 15 ATP molecules

31. Enzyme cytochrome oxidase can be inhibited by :
(1) Iodo acetae (2) Azides & Cyanides
(3) Oligomycins (4) Dinitrophenol

32. In the electron transport chain during terminal oxidation, the cytochrome, which donates electrons to $O_2$ is ?
(1) Cytochrome –b (2) Cyto-C
(3) Cyto-$a_3$ (4) Cyto - f

33. Number of oxygen atoms required for aerobic oxidation if **one pyruvate -**
(1) 5 (2) 8
(3) 10 (4) 12

34. Alternate name of Krebs cycle is -
(1) Glyocylate cycle (2) Glycolate cycle
(3) Citric acid cycle (4) EMP Pathway0

35. Respiration in plants
(1) Occurs only during day
(2) Results in the formation of vitamins
(3) Is characteristic of all living cells
(4) Often requires $CO_2$

36. In plants energy is produced during the process of
(1) Photosynthesis (2) Transpiration
(3) Respiration (4) Water absorption

37. A very important feature of respiration is that
(1) It liberates energy
(2) It provides $O_2$
(3) Utilize $CO_2$
(4) Synthesize complex compounds

38. Complete oxidation of 1 gm mol of glucose gives rise to
(1) 6860000 cals (2) 686000 cals
(3) 68600 cals (4) 6860 cals

39. The cell organelle in, which aerobic respiration occurs in cell -

(1) Ribosome (2) Mitrochondria
(3) Lysosomes (4) Chloroplast

40. For the purpose of respiration in plants
(1) Light in necessary
(2) $CO_2$ is necessary
(3) $O_2$ is necesary
(4) Chlorophyll is necessary

41. The end products of respiration in plans are
(1) $CO_2$, $H_2O$ and energy
(2) Starch and $O_2$
(3) Sugar and oxygen
(4) $H_2O$ and energy

42. The incomplete breakdown of sugars in anaerobic respiration results in the formation of
(1) Fructose and water
(2) Glucose and carbon dioxide
(3) Alcohol and $CO_2$
(4) Water and $CO_2$

43. Carbon dioxide is liberated during
(1) Photosynthesis (2) Transpiration
(3) Ascent of sap (4) Respiration

44. Common immediate source of energy in cellular activity is
(1) glucose (2) aldohexose
(3) ATP (4) NAD

45. Different steps in respiration are controlled by
(1) Enzymes (2) Auxins
(3) Sugars (4) Kinins

46. Energy obtained by a cell from catabolic reaction is stored immediately in the form of
(1) Glucose (2) Pyruvic acid
(3) ADP (4) ATP

47. A.T.P. is
(1) A hormone
(2) A protein
(3) An enzyme which brings about oxidation
(4) A molecule which contain high energy bond

48. In anaerobic respiration seeds respire
(1) In presence of $O_2$ (2) In presence of $CO_2$
(3) In absence of $O_2$ (4) In absence of $CO_2$

49. Which one of both structural & functional (catalytic) protein :
(1) Hexokinase (2) Myosine
(3) Ribozyme (4) Acetyl Co-A

50. The following is required both by the process of respiration and photosynthesis
(1) Carbohydrates (2) Sunlight
(3) Chlorophyll (4) Cytochromes

51. The net gain of ATP molecules in glycolysis is
(1) Zero (2) Two
(3) Four (4) Eight

52. Cytochromes are concerned with
(1) Protein synthesis
(2) Cellular digestion
(3) Cell division
(4) Cell - respiration

53. Which one of the following is no true for iso enzymes ?
(1) iso enzymes are quaternary proteins
(2) all forms synthesized by different genes
(3) increases activation energy of substrate.
(4) All the above

54. Number of every cytochrome molecule require for transfer of $2e^-$ in ETS :
(1) 2 (2) 4
(3) 1 (4) 10

55. Kre's cycle takes place in
(1) Vesicles of E.R.
(2) Mitochondrial matrix
(3) Dictyosomes
(4) Lysosomes

56. The respiration in germinating seeds produces energy, which can be deflected in the form of
(1) water (2) $O_2$
(3) Heat (4) $CO_2$

57. In respiration pyruvic acid is
(1) Formed only when oxygen is available
(2) One of product of Krebs cycle
(3) Broken down into Acetyl Co-A and $CO_2$
(4) a result of protein break down

58. Most of the energy of the carbohydrates is released by oxidation when
(1) Pyruvic acid is converted into $CO_2$ and H32O
(2) Pyruvic acid is converted into acetly Co-A
(3) Sugar is converted into pyruvic acid
(4) Glucose is converted into alcohol and $CO_2$

59. Glcolysis takes place in
(1) Cytoplasm (2) Chloroplast
(3) Ribosome (4) Mitochondria

60. The universal hydrogen acceptor is
(1) NAD (2) ATP
(3) Co-A (4) FMN

61. The end product of fermentation when sugar are used as raw materials are
(1) Alcohol and $CO_2$
(2) Alcohol, Pyruvate
(3) $CO_2$
(4) Alcohol

62. Iron-porphyrin protein complex occurs in -
(1) phytochrome (2) cytochrome
(3) chlorophyll (4) both (1) and (3)

63. Fermentation is conducted by
(1) All bacteria
(2) All fungi
(3) Some fungi and some bacteria
(4) All microorganism

64. In the process of Respiration in plants 180 gm of Glucose plus 192 gm of oxygen produce -
(1) 132 gm of $CO_2$, 54 gm of $H_2O$ & 483 Cal. E.
(2) 264 gm of $CO_2$, 108 gm of $H_2O$ & 686 K. Cal. E.
(3) 200 gm f $C_2H_5OH$, 72 gm of $H_2O$ & 21 K. Cal E.
(4) None

65. Respiratory enzymes are localised in
(1) Ribosomes
(2) Chloroplast
(3) Mitochondria
(4) none of the above

66. Respiration is an
(1) Exothermic process (2) Endothermic process
(3) Anabolic process (4) None of these

67. In Opuntia the R.Q. will be
(1) 1 (2) less than 1
(3) more than 1 (4) 0

68. Number of ATP molecules formed during aerobic respiration in break down of one glucose molecule via malate aspartate shuttle.
(1) 38 (2) 18
(3) 28 (4) 4

69. During respiration pyruvic acid is formed by
(1) Glycolysis (2) Kreb's cycle
(3) TCA cycle (4) None of the above

70. Enzyme involved in alcoholi fermentation -
(1) Pyruvate decarboxylase
(2) Lactate dehydrogenase
(3) Hexoisomerase
(4) Both decarboxylase and dehydrogenase

71. Kreb's cycle is
(1) Aerobic respiration
(2) Photosynthesis
(3) Transpiration
(4) Anaerobic respiration

72. The organism in which Kreb's cycle does not occur i mitochondria is
(1) Yeast (2) E.coli
(3) Ulothrix (4) Molds

73. Citric acid is produced in
(1) Bacterial episome
(2) Kreb's cycle
(3) Calvin cycle
(4) Calvin + HSK cycle

74. How many times $CO_2$ released in aerobic respiration
(1) One or two (2) Three
(3) Six (4) Twelve

75. Raw material for respiration is
(1) Glucose & $O_2$ (2) Glucose & $CO_2$
(3) Glucose & Carbon (4) Glucose & sucrose

76. Slow respiring plant or plants tissue are
(1) Promeristem
(2) Cambium
(3) Leaf primordia & young plant
(4) Adult plants & matured tissues

77. The tissue of highest respiratory activity is
(1) Meristem
(2) Ground tissue
(3) Phloem
(4) mechanical tissue

78. Respiratory quotient is expressed as
(1) $O_2/CO_2$ (2) $CO_2/O_2$
(3) $O_2/H_2O$ (4) $CO_2 - O_2$

79. What causes R.Q. to vary
(1) Resp. Substrate
(2) Light & $O_2$
(3) Respi. Product
(4) Temperature

80. The first preferred respiratory substrate is
(1) Glucose (2) Fats
(3) Proteins (4) Polypeptide

81. Respiration result into -
(1) Gain in weight
(2) Los in weight
(3) No change in weight
(4) Loss of ATP

82. Respiration occurs in
(1) All living cells both in lights & dark
(2) Non green cells only in light
(3) Non green cells in light and dark
(4) All living cells in light only

83. The value of RQ for protein is
(1) One
(2) More than one
(3) Les than one
(4) Infinite

84. The value of RQ at compensation point is
(1) Unity (2) Two
(3) > 1 (4) Zero

85. The value of RQ os starved cell is
(1) zero (2) 0.8/Less than one
(3) 1 /unity (4) infinite

86. RQ of an actively photosynthesizing tissue is
(1) Unity (2) < 1
(3) > 1 (4) 0

87. R.Q. of germinating ground nut & castor seed is
(1) 1 (2) <1
(3) >1 (4) 0

88. The value of RQ of a ripening fatty seed is
(1) < 1 (2) > 1
(3) zero (4) Unity

89. When the evolution of $CO_2$ is more than the intake of $O_2$, the respired substrate should be
(1) Fatty acid (2) organic acid
(3) Glucose (4) Polysaccharides

90. The value of R.W. of a succulent plant at night is
(1) unity (2) >1
(3) Zero (4) Infinite

91. Protein is used a respiratory substrate only when
(1) Carbohydrates are absent
(2) Fats are absent
(3) Both 1 & 2 are absent
(4) Fats & carbohydrates are abundant

92. There term "Protoplasmic respiration" is used when the respiratory substrate is
(1) Carbohydrates
(2) Protein
(3) Organic acid
(4) Lipid

93. The term "Floating respiration" is used when the resp. substrate is
(1) Carbohydrates
(2) Fats
(3) Both 1 and 2
(4) Protein

94. Respiration may take place -
(1) In the presence of $O_2$
(2) In the absence of $O_2$
(3) In the presence or absence of $O_2$
(4) In the presence of $CO_2$

95. Apparatus used to measure Respiratory quotient -
(1) Photometer
(2) Auxanometer
(3) Respirometer
(4) Warburg's apparatus

96. Glycolysis involves the conversion of
(1) Protein into glucose
(2) Glucose into fructose
(3) Starch into glucose
(4) Glucose into pyruvic acid

97. The end product of glycolysis is
(1) Glycolate & ethanol
(2) Glyoxylic acid & $CO_2$
(3) Glucose or hexse units
(4) Pyruvate

98. The common phase between aerobic respiration is
(1) TCA cycle (2) Kreb's cycle
(3) Glycolysis (4) Photo respiration

99. Which of the following scientist discovered the conventional path of anaerobic glycolysis
(1) Embeden, Myerhof and Parnas
(2) Emerson, Hoffman and Peterson
(3) Embeden, Morrison and Pitcher
(4) Warburg, Dickens and Horecker

100. What is active glucose
(1) FAD glucose (2) NAD glucose
(3) Glucose-6-P (4) Glycerophosphate

101. The enzyme which converts glucose to glucose-66 phosphate -
(1) Phosphorylase
(2) Gluco-phosphorylase
(3) Hexokinase
(4) Phospho glucomutase

102. Glycolysis give rise to
(1) 8ATP, $2NADH_2$, Pyruvate
(2) 2ATP, 2CoA, $2NADH_2$
(3) 2ATP, $2NADH_2$, 2 Pyruvate
(4) 2ATP, 2 cetate, $2NADPH_2$

103. The inhibitory effect of the presence of $O_2$ on anaerobic respiration is termed :
(1) Warburg effect
(2) Pasteur effect
(3) Emerson's effect
(4) Oxygen effect

104. During glycolysis the mineral needed as an enzyme activator is
(1) $Mn^{++}$ (2) $Fe^{++}$
(3) $Ca^{++}$ (4) $Mg^{++}$

105. Green plants keps in light produce ATP from the glucose. This process is :
(1) Phtophophorylation
(2) Hill reaction
(3) Oxidative phosphorylation
(4) $\beta$ -oxidation

106. Anerobic respiration was reported for the first time by
(1) Pasteur (2) Kosty chev
(3) Klein (4) Pfeffer

107. Which of the following ETS complex is inhibited by cyanide -
(1) Complex II (2) Complex V
(3) Complex IV (4) Complex III

108. Final $e^-$ acceptor of mitochondria is
(1) Pyruvate (2) NADP
(3) $O_2$ (4) OAA

109. The number of ATP molecules produced from one Kreb's ccle are
(1) 15 (2) 30
(3) 38 (4) 40

110. How many molecules of ATP are produced per molecule of $FADH_2$ oxidised
(1) One (2) Two
(3) Three (4) four

111. Which of the following cytochrome donates electron to oxygen
(1) cyt-$a_1$ (2) cyt-$a_3$
(3) cyt-b (4) cyt-c

112. The amount of energy given by one ATP molecule is
(1) 67 K cal (2) 6.7 K cal
(3) 7.6 K cal (4) 75 K cal

113. The full form of NAD is
(1) Nicotine adenosine diphophate
(2) Nicotinamide adenosine dinucleotide
(3) Nicotinamide adenine dinucleotide
(4) Nicotinamide adenine diphosphate

114. How many ATP molecules produced from the complete oxidation of a molecule of active acetate or acetyl Co-A
(1) 38 ATP (2) 15 ATP
(3) 12 ATP (4) 4 ATP

115. How many ATP equivalents are produced by the oxidation of succinate into fumarate
(1) 1 ATP (2) 2 ATP
(3) 3 ATP (4) 4 ATP

116. The product of aerobic respiration of glucose is
(1) $CO_2 + H_2O + ATP$
(2) $CO_2$ + Pyruvic acid
(3) $CO_2$ + ethyl alcohol
(4) $CO_2$ + Pyruvic acid + citric acid

117. Product formed by the activity of malic dehydrogenase is
(1) Fumaric acid (2) Malic acid
(3) Oxaloacetic acid (4) Succinic acid

118. Which of the following is 5 - carbon compound of Kreb's cycle
(1) Citric acid (2) Fumaric acid
(3) Oxalosuccinic acid (4) $\alpha$ - Ketoglutaric acid

119. Firdt discovered Enzyme was
(1) Isomerase (2) Transaminase
(3) Zymase (4) Transferase

120. Enzyme were discovered for the first time in
(1) Bacteria (2) yeast
(3) Algae (4) Spinach

121. Who conined the term enzyme
(1) Pasteur (2) Buchner
(3) Kuhne (4) Sumner

122. Vitamin serves the function of
(1) An enzyme (2) A coenzyme
(3) A substrate (4) A hormone

123. Which of the following is a coenzyme
(1) NAD (2) NADP
(3) FAD (4) All the above

124. What is NADP
(1) An enzyme
(2) An ion carrier
(3) $H_2$ acceptor coenzyme
(4) A part of t-RNA

125. The prosthetic group of various respiratory enzymes is
(1) Ca (2) B
(3) Mg (4) Mo

126. Most enzymes consist of two parts these are
(1) Enzyme & substrate
(2) Enzyme & coenzyme
(3) Apoenzyme and enzyme
(4) Apoenzyme & prosthetic group

127. The first enzyme isolated in cystalline form was
(1) Catalase (2) Urease
(3) Perozidase (4) Amylase

128. In plants enzymes are present in
(1) Only in flowers
(2) Only in leaves
(3) All the living cells of plant body
(4) Only in parenchyma

129. An enzyme is made up of :
(1) Vitamin (2) Growth factor
(3) Protein (4) Carbohydrates

130. Which of the following is not enzyme ?
(1) Oxidase (2) Pepsin
(3) Auxin (4) Trypsin

131. Enzyme capable of changing their shape are called
(1) Apoenzyme (2) Coenzyme
(3) Allosteric enzyme (4) Co-factor

132. What is the chemical nature of the majority of prothetic groups ?
(1) Lipoidal (2) Organic
(3) Metallic (4) Alkaloidal

133. Which of the following coenzyme is a derivative of pantothenic acid ? (vit - B complex)
(1) NAD (2) NADP
(3) FAD (4) Co-A

134. Which of the following is not consumed in a biochemical process ?
(1) Hormone (2) Enzyme
(3) vitamin (4) Nucleotide

135. How the presence of an enzyme affects the activation energy of a reaction ?
(1) It becoems increased
(2) It becomes decreased
(3) It is first increased and then decreased
(4) Activation energy in not affected at all

136. The chief enzyme found in yeast cell is ?
(1) Invertase (2) Maltase
(3) Zymase (4) Amylase

137. Which of the enzyme joins the broken strands of DNA ?
(1) Nuclease (2) Kinase
(3) Ligase (4) Endonuclease

138. Inhibitiion of succinic dehydrogenase by malonate is an example of
(1) Competitive inhibitioin
(2) Non competitive inhibitioin
(3) Allosteric inhibition
(4) Enzyme repression

139. At a temprature below the freezing point an enzyme is
(1) Unaffected (2) Inactivated
(3) Slightly inactivated (4) Killed

140. Enzyme inhibition caused by a substrate analog is
(1) Competitive (2) Non competitive
(3) In competitive (4) Semi - competitive

141. At boiling temperature and enzyme is
(1) Denatured (2) Unaffected
(3) Inactivated (4) Killed

142. Engery for ATP synthesis is obtained from -
(1) Oxygen ion gradient
(2) heavy water gradient
(3) Uranium ion gradient
(4) Hydrogen ion gradient

143. Enzyme have very narrow optima for
(1) Light (2) Temperature
(3) pH (4) Humudity

144. Mitochondir ais th esite of -
(1) CO production
(2) Cell divisioin
(3) The release of energy during respiration
(4) None of the aboven

145. Substrate level ATP molecules during complete oxidation of 1 molecule of glucose -
(1) 8 ATP (2) 6 ATP
(3) 4 ATP (4) 2 ATP

146. How many ATP generated in aerobic respiration via glycerol phosphate shuttle in eukaryotes ?
(1) 38 ATP (2) 36 ATP
(3) 40 ATP (4) 80 ATP

147. How many ATP generates in aerobic respiration of eukaryotic cell ?
(1) 28 ATP (2) 36 ATP
(3) 20 ATP (4) 40 ATP

148. Respiration differs from burning in which os the following ?
(1) Energy released in respiration
(2) Oxidation of substance occurs
(3) Enzymes are involved
(4) All the above

149. Energy produced per gram in highest in -
(1) Starch (2) Sucrose
(3) Protein (4) Lipid

150. Site of Kre's cycle in respiration & ATP synthesis is -
(1) Mitochondrial stroma (2) Matrix & oxysome
(3) Cytoplasm (4) None of the above

151. Minimum respiration rate found in -
(1) Leaves (2) Stem
(3) Parenchyma (4) Seeds

152. Cynaide resistant respiration is found in -
(1) Homo sapiens (2) Brassica
(3) Sinacea (4) Bacteria

153. Gango's respirometer used for -
(1) Respirator measuring
(2) R.Q. measuring
(3) Transpiration measuring
(4) all of the above

154. Direct gain of ATP from one mole of blucose during glycolysis or EMP pathway -
(1) 2 ATP (2) 6 ATP
(3) 36 ATP (4) 38 ATP

155. In glycolysis of aerobic respiration the ATP synthesized are -
(1) 2 ATP (2) 6 ATP
(3) 8 ATP (4) 30 ATP

156. $FADH_2$ produced in Kreb's cycle from -
(1) Isocitrate (2) $\alpha$-ketoglutarate
(3) succinate (4) malate

157. Which 5-carbon organic acid of TCA-cycle is key compound in $N_2$-metabolism ?
(1) Critic acid
(2) Fumaric acid
(3) OSA
(4) $\alpha$-ketoglutaric acid

158. 1 mole of glucose when oxidised through EMP & TCA- cycle would yield -
(1) 30 ATP gross (2) 40 ATP net
(3) 36 or 38 ATP net (4) 38 ATP only

159. When 100% carbon is oxidised to $CO_2$ the efficienty of such a respiration is ?
(1) 40% (2) 60%
(3) 80% (4) 100%

160. What is true for Kreb's cycle ?
(1) GTP/ATP is formed
(2) 2 Decarboxylation
(3) Acetyl Co-A acceptor is O.A.A.
(4) All the above

161. Which enzyme is without protein ?
(1) Hexokinase (2) Synthetase
(3) Endonuclease (4) Ribozome

162. Allosteric inhibition of enzyme was discovered by -
(1) Kuhne (2) Krebs
(3) Jaboc & Monad (4) Buchner

163. $\beta$-oxidation take palce in -
(1) Cell Membrane
(2) Mitochondrial Membrane
(3) Oxyomes Head
(4) Perimitochondiral space

164. Warburg-Dickens pathway is -
(1) PPP (2) TCA-cycle
(3) EMP pathway (4) None

165. Which enxyme break down the fructose-1, 6-Diphosphate ?
(1) Hexokinase (2) Phosphatase
(3) Aldolase (4) None

166. How many ATP will be produced by HMP shunt ?
(1) 40 ATP (2) 38 ATP
(3) 36 ATP (4) 8 ATP

167. Link between glycolyis & TCA cycle is -
(1) Pyruvic acid (2) Acetyl Co-A
(3) Citric acid (4) None

168. Acceptor of acetyl CO-A in Kreb's cycle is
(1) Malic acid (2) Fumaric acid
(3) $\alpha$-ketoglutaric acid (4) Oxalo acetic acid

169. Enzyme alternate oxidate is inhibited by :
(1) NADP
(2) SHAM (Salicyl hydromaxic acid)
(3) m-ClLAM (m-chloro-benhydroxamic acid)
(4) 2 & 3

170. When 2-pyruvic acids forms two lactic sacid by anaerobic respiration then ?
(1) One ATP is lost (2) 3 ATP is lost
(3) 6 ATP is lost (4) None

171. During oxidative phosphorylation following provides energy for the ATP formation -
(1) Co-A
(2) NADPH
(3) Efflux of proton to PMS
(4) Pyruvic acid

172. Enxyme concerned with transfer of electrons are **[MP PMT 2002]**
(1) Hydrolasase (2) Dehydrogenase
(3) Transaminase (4) Protease

173. Anaerobic respiratio takes place in : **[MP PMT 2002]**
(1) Ribosome (2) Nucleus
(3) Cytoplasm (4) Vacuole

174. What is the energy coin of a cell ? **[MP PMT 2002]**
(1) DNA (2) RNA
(3) ATP (4) Minerals

175. At which pH enxymes of lysosomes are usually active ? **[MP PMT 2002]**
(1) pH 5 (2) pH 7
(3) pH 8 (4) In any pH

176. The process of oxidative phosphorylation takes place in : **[MP PMT 2002]**
(1) Mitochondria (2) Chloroplasts
(3) Ribosomes (4) Cytoplasm

177. R.Q. of which diet is less than unit ? **[RPMT 2002]**
(1) Carbohydrate (2) Fats
(3) Organic acid (4) Sugar

178. Pyrubic acid is the end product of which process ? **[RPMT 2002]**
(1) Kreb's cycle
(2) Calvin cycle
(3) Pentose phosphate pathway
(4) Glycolysis

179. 1 molecule glucose + 6 molecule of $O_2$ and 38 ADP combined to form 6 $H_2O$, 6 $CO_2$ and : **[RPMT 2002]**
(1) 38 molecules of ATP (2) 28 ATP
(3) 38 ADP (4) 28 ADP

180. Number of ATP obtained at the end of Kreb's cycle **[RPMT 2002]**
(1) 2 ATP (2) 4 ATP
(3) 36 ATP (4) 38 ATP

181. Enzymes are made up of : **[CPMT 2002]**
(1) Edible proteins
(2) Proteins with specific structure
(3) Nitrogen containing carbohydrates
(4) Carbohydrates

182. Hydrolytic enzymes, which act on low pH are called as ? **[CPMT 2002]**
(1) Protease
(2) $\alpha$-Amylase
(3) Hydrolases
(4) Peroxidase

183. During the formation of bread, it becomes porous due to release of $CO_2$ by the action of : **[CPMT 2002]**
(1) Yeast (2) Bacteria
(3) Virus (4) Protozoans

184. How many ATP molecules produces by aerobic oxidation of one molecule of glucose ? **[CPMT 2002]**
(1) 2 (2) 4
(3) 38 (4) 34

185. Allosteric enzymes have allosteric sites for -
(1) Inhibition ony
(2) Activation only
(3) Reduction in activation energy
(4) Both activation and inhibition

186. Substrate concentration at which an enzyme attains half of its max. velocity is ?
(1) Half life of enzyme
(2) Km-constant of enzyme
(3) Concentration ratio
(4) None

187. Energy required for start of biochemical reaction is
(1) Potential energy (2) Entropy
(3) Activation enrgy (4) Kinetic energy

188. Part of active site of enzyme, where substrate is supported :
(1) Catalytic group
(2) Buttressing group
(3) Activation chamber
(4) Ki - constant

189. R.Q. of maturing fatty seeds will be -
(1) 1 (2) More than one
(3) 0 (4) 0.7

190. Anaerobic degradation of proteins by microbes is known as -
(1) Putreification (2) Degradation
(3) Decompoition (4) None

191. In which one of the following do the two name refer to one and the same thing : **[CPMT 2003]**
(1) Kreb's cycle and Calvin cycle
(2) Tricarboxylic acid cycle and citric acid cycle
(3) Citric acid cycle and Calvin cycle
(4) Tricarboxylic acid cycle and urea cycle

192. In alcohol fermentation : **[CPMT 2003]**
(1) Triose phosphte is the electron donor, while acetaldehyde is the electron acceptor
(2) Triose phosphate is the electron donor, while pyruvic acid is the electron acceptor
(3) There is no electron donor
(4) Oxygen is the electron acceptor

193. In glycolysis during oxidatiion electrons are removed by : **[CPMT 2004]**
(1) Molecular oxygen (2) ATP
(3) Glyceraldehyde (4) $NAD^+$

194. Aerobic respiration is how many times useful than anaerobic respiration : **[RPMT 2004]**
(1) 2 (2) 8
(3) 19 (4) 38

195. For retting of jute, the fermentting mircrobe used is : **[AIPMT 2005]**
(1) Helicobactor pylori
(2) Methophilic bacteria
(3) Streptococcus lactin
(4) Butyric acide bacteria

196. Enzymes, vitamins and hormones can be classified into a single category of biological chemicals, because of all of these : **[AIPMT 2005]**
(1) echance oxiative metabolism
(2) re conjugated proteins
(3) are exclusively synthesized the body of a living organism
(4) help in regulating metabolism

197. During which stage in the complete oxidation of glucose are the greatest number of ATP molecules formed from ADP ? **[AIPMT 2005]**
(1) Conversion of pyruric acid to acetyl Co A
(2) Electron transport chain
(3) Glycolysis
(4) Krebs cycle

198. The deficiencies of micronutrients, not only affects growth of plants, but also vital functions such as photosythetic and mitochondrial electron flow. Among the list given below, which group of three elements shall affect most, both photosynthetic and mitochondrial electron transport : **[AIPMT 2005]**
(1) Cu, Mn, Fe (2) Co, Ni, Mo7
(3) Mn, Co, Ca (4) Ca, K, Na

199. Chemiosmotic theory of ATP synthesis is the chloroplast and mitochondria is based on : **[AIPMT 2005]**
(1) Proton gradient
(2) Accumulation of K ions
(3) Accumulation of Na ions
(4) Membrane potential

200. Which of the following statements regarding enzyme inhibition is correct ? **[AIPMT 2005]**
(1) Non-competitive inhibitioin of any enxyme can

Be overcome by adding large amount of substrate
(2) Competititve inhibition is seen, when a Substrate competees with an enzyme for bidning to a an inhi bitor protein
(3) Competitive inhibition is seen, when the subtrate and the inhibitor compete for the active site on the enzyme
(4) Non competitive inhibitors often bind to the enzyme ireversibly.

201. The catalytic efficiency of two different enzyme can be compared by the : **[AIPMT 2005]**
(1) The Km value
(2) The pH optimum value
(3) Formation of the product
(4) Molecular size of the enzyme

202. The graph given below show the effect of substrate concentration on teh rate of reaction of the enzyme green-gram-phosphatase. What does the graph indicates ? **[AIPMT 2005]**
(1) The rate of enzyme reaction is directly proportional to the substrate concentration
(2) Presence of an enzyme inhibitor in the reaction mixture
(3) Formation of an enzyme substrate complex
(4) At higher substrate concentration the pH increases

203. Respiration is which type of process - **[RPMT 2005]**
(1) Catabolic (2) Metabolic
(3) Anabolic (4) none

204. R.Q. is represetned by - **[RPMT 2005]**
(1) $O_2/CO_2$ (2) $CO_21/O_2$
(3) $V_2/V_2\text{-}V_1$ (4) $O_2$ taken in

205. Which is the site of Kreb's cycle - **[RPMT 2005]**
(1) Chloroplast
(2) Golgibody
(3) Mitochondria
(4) Endoplasmic reticulum

206. Curing of tea leaves is brought about by the activity of - **[AIPMT 2006]**
(1) viruses (2) fungi
(3) bacteria (4) mycorrhiza

207. Which of the following statements regarding mitochondrial membrane is **NOT** correct ? **[AIPMT 2006]**
(1) The inner membrane is highly convoluted forming a series of infoldings
(2) The outer membrane resembles a sieve
(3) The outer membrane is permeable to all kinds of molecules
(4) The enzymes of the electron transfer chain are embedded in the outer membrane.

208. How many ATP molecules could maximally be generated from one molecule of glucose, if the complete oxidation of one mole of clucose to $CO_2$ and $H_2O$ yields 686 kcal and the useful chemical energyavailable in the high energy phosphate bond of one mole of ATP is 12 Kcal ? **[AIPMT 2006]**
(1) 57 (2) 1
(3) 2 (4) 30

209. An organic substance bound to an enxyme and essential for its activity is called **[AIPMT 2006]**
(1) Apoenzyme (2) Isoenzyme
(3) Coenzyme (4) Holoenzyme

210. The overal goald of glycolysis, Krebs cycle and the electron transport system is the formation of : **[AIPMT 2007]**
(1) Nucleic acids
(2) ATP in small stepsise units
(3) ATP in one large oxidation reaction
(4) Sugars

211. All enzymes of TCA cycle are located in the mitochondrial martix except one which is located in inner mitochondiral membrane in eukaryotes and in cytosol in prokaryotes. This enzyme is : **[AIPMT 2007]**
(1) Succinate dehydrogenase
(2) Lactate dehydrogenase
(3) Isocitrate dehydrogenase
(4) Malate dehydrogenase

212. Which one of the following mammalian cells are not capable of metabolising glucose to carbon-diozide aerobically ? **[AIPMT 2007]**
(1) Rd blood cells
(2) White blood cells
(3) Unstriated mucsle cells
(4) Liver cells

213. A competitive inhibitor of succinic dehydrogenase is : **[AIPMT 2008]**
(1) $\propto$ - ketoglutarate (2) Malate
(3) Malonate (4) Oxaloacetate

214. The chemiosmotic coupling hypothesis of oxiative phosphorylation proposes that adenosine triphospahte (TP) is forme because : **[AIPMT 2008]**
(1) A protin gradient forms across the inner membrane
(2) There is ahcnage in the permeability of the Inner mitochondiral membrance towards adenosine diphosphate (ADP)
(3) High energy bonds are formed in mitochondrial proteins

(4) ADP is pumped out of the matrix into the intermembrane space

215. The energy - releasing process in which the substrate is oxidised without an external electron acceptor is called : **[AIPMT 2008]**
(1) Aerobic respiration (B) Glycolysis
(3) Fermentation (4) Photorespiration

216. In germinating seeds fatty acdis are degraded exclusively in the : **[AIPMT 2008]**
(1) Peroxisomes (B) Mitochondria
(3) Proplastids (4) Glyoxysomes

# RESPIRATION & ENZYMES ANSWER KEY

| Que. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Ans.** | **2** | **1** | **3** | **1** | **1** | **4** | **2** | **4** | **4** | **3** | **1** | **1** | **2** | **2** | **2** |
| Que. | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 |
| **Ans.** | **1** | **2** | **3** | **3** | **2** | **4** | **2** | **4** | **3** | **2** | **3** | **1** | **4** | **1** | **2** |
| Que. | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | 42 | 43 | 44 | 45 |
| **Ans.** | **2** | **3** | **1** | **3** | **3** | **3** | **1** | **2** | **2** | **3** | **1** | **3** | **4** | **3** | **1** |
| Que. | 46 | 47 | 48 | 49 | 50 | 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 60 |
| **Ans.** | **4** | **4** | **3** | **2** | **4** | **4** | **4** | **3** | **1** | **2** | **3** | **3** | **1** | **1** | **1** |
| Que. | 61 | 62 | 63 | 64 | 65 | 66 | 67 | 68 | 69 | 70 | 71 | 72 | 73 | 74 | 75 |
| **Ans.** | **1** | **2** | **3** | **2** | **3** | **1** | **4** | **1** | **1** | **4** | **1** | **2** | **2** | **2** | **1** |
| Que. | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 |
| **Ans.** | **4** | **1** | **2** | **1** | **1** | **2** | **1** | **3** | **4** | **2** | **1** | **2** | **2** | **2** | **3** |
| Que. | 91 | 92 | 93 | 94 | 95 | 96 | 97 | 98 | 99 | 100 | 101 | 102 | 103 | 104 | 105 |
| **Ans.** | **3** | **2** | **3** | **3** | **3** | **4** | **4** | **3** | **1** | **3** | **3** | **3** | **2** | **4** | **3** |
| Que. | 106 | 107 | 108 | 109 | 110 | 111 | 112 | 113 | 114 | 115 | 116 | 117 | 118 | 119 | 120 |
| **Ans.** | **2** | **3** | **3** | **1** | **2** | **2** | **3** | **3** | **3** | **2** | **1** | **3** | **4** | **3** | **2** |
| Que. | 121 | 122 | 123 | 124 | 125 | 126 | 127 | 128 | 129 | 130 | 131 | 132 | 133 | 134 | 135 |
| **Ans.** | **3** | **2** | **4** | **3** | **3** | **4** | **2** | **3** | **3** | **3** | **3** | **2** | **4** | **2** | **2** |
| Que. | 136 | 137 | 138 | 139 | 140 | 141 | 142 | 143 | 144 | 145 | 146 | 147 | 148 | 149 | 150 |
| **Ans.** | **3** | **3** | **1** | **2** | **1** | **1** | **4** | **3** | **3** | **3** | **2** | **2** | **3** | **4** | **2** |
| Que. | 151 | 152 | 153 | 154 | 155 | 156 | 157 | 158 | 159 | 160 | 161 | 162 | 163 | 164 | 165 |
| **Ans.** | **4** | **3** | **2** | **1** | **3** | **3** | **4** | **3** | **1** | **4** | **4** | **3** | **4** | **1** | **3** |
| Que. | 166 | 167 | 168 | 169 | 170 | 171 | 172 | 173 | 174 | 175 | 176 | 177 | 178 | 179 | 180 |
| **Ans.** | **3** | **2** | **4** | **4** | **3** | **3** | **2** | **3** | **3** | **1** | **1** | **2** | **4** | **1** | **4** |
| Que. | 181 | 182 | 183 | 184 | 185 | 186 | 187 | 188 | 189 | 190 | 191 | 192 | 193 | 194 | 195 |
| **Ans.** | **2** | **3** | **1** | **3** | **4** | **2** | **3** | **2** | **2** | **1** | **2** | **1** | **4** | **3** | **4** |
| Que. | 196 | 197 | 198 | 199 | 200 | 201 | 202 | 203 | 204 | 205 | 206 | 207 | 208 | 209 | 210 |
| **Ans.** | **4** | **2** | **1** | **1** | **3** | **1** | **4** | **1** | **2** | **3** | **3** | **4** | **1** | **3** | **2** |
| Que. | 211 | 212 | 213 | 214 | 215 | 216 | | | | | | | | | |
| **Ans.** | **1** | **1** | **3** | **1** | **3** | **4** | | | | | | | | | |