



CAPF AC PYQ

(SUBJECT WISE)

(Institute for Defence exam)

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86. The spindle fibre is attached to which of the following specific regions of the chromosomes?

- (a) Kinetochore
- (b) Chromonema
- (c) Telomere
- (d) Centriole



87. Which one among the following statements about facilitated transport in plants is correct?

- (a) All passive transports are types of facilitated transport.
- (b) Facilitated transport is an example of active transport.
- (c) Water moves across plasma membrane by active transport.
- (d) Facilitated transport requires assistance of carrier proteins.

88. Transport of Na^+ and Ca^{2+} across the plasma membrane is an example of

- (a) antiport
- (b) symport
- (c) uniport
- (d) aquaporins



89. Which one of the following statements regarding allosteric enzymes is correct?

- (a) Like other enzymes, allosteric enzymes also obey Michaelis-Menten kinetics.
- (b) The velocity versus substrate concentration graph is a hyperbolic graph, like any other enzyme.
- (c) They are always one-subunit enzymes.
- (d) Each subunit of allosteric enzyme also contains a regulatory site in addition to the active site.

94. Cholesterol is a type of

- (a) carbohydrate
- (b) protein
- (c) lipid
- (d) nucleic acid



90. Out of different types of tissues found in plants, which one of the following is a complex tissue?

- (a) Parenchyma
- (b) Sclerenchyma
- (c) Xylem
- (d) Collenchyma

91. Which one of the following regions in plants is responsible for the growth of its roots and shoots?

- (a) Collenchyma
- (b) Endodermis
- (c) Cortex
- (d) Apical meristem

92. Which one of the following arteries supplies blood to the human heart muscle?

- (a) Pulmonary artery
- (b) Renal artery
- (c) Coronary artery
- (d) Hepatic artery

93. Which one of the following classes demonstrates double circulation of blood?

- (a) Invertebrates
- (b) Fishes
- (c) Amphibians
- (d) Mammals



96. Which one among the following statements regarding gypsum is **not** correct?

- (a) On heating gypsum at 373 K, it loses water molecules and becomes $\text{CaSO}_4 \cdot \text{H}_2\text{O}$.
- (b) On mixing with water, plaster of Paris changes to gypsum.
- (c) Plaster of Paris is used for supporting fractured bones.
- (d) Although gypsum possesses water of crystallization, it is not a liquid at room temperature.

97. Which of the following statements relating to carbon and its compounds are correct?

1. 1-Propyne has three double bonds.
2. The boiling point of acetic acid is higher than methane.
3. Ethanol reacts with sodium metal and produces hydrogen gas.
4. Esters give effervescence on reaction with sodium bicarbonate.

Select the answer using the code given below.

- (a) 1 and 3
(b) 2 and 3 only
(c) 1 and 2
(d) 2, 3 and 4



98. Which of the following reagents can cause oxidation of an alcohol?

1. Hot concentrated H_2SO_4
2. Alkaline $KMnO_4$
3. Acidified $K_2Cr_2O_7$
4. Acidified $KMnO_4$

Select the answer using the code given below.

- (a) 1, 2 and 3
(b) 1, 3 and 4
(c) 2 and 3 only
(d) 4 only

99. Which one among the following statements is **not** correct?

- (a) The reaction of methane and chlorine in sunlight produces hydrogen gas.
(b) Palladium catalyzes the addition of hydrogen gas on an alkene.
(c) Ethanol burns in oxygen to give carbon dioxide, water and releases heat and light.
(d) Unsaturated hydrocarbons burn with a sooty flame.

100. Which one of the following is **not** an exothermic reaction?

- (a) Dissolution of calcium oxide in water
(b) Decomposition of vegetable matter into compost
(c) Decomposition of lead nitrate
(d) Dilution of sodium hydroxide with water

101. Match List-I with List-II and select the answer using the code given below the Lists :

List-I (Compound)	List-II (Chemical Formula)
A. Nitrolim	1. $CO(NH_2)_2$
B. Ammonium Nitrate	2. KNO_3
C. Urea	3. $CaNCN$
D. Potassium Nitrate	4. NH_4NO_3

Code :

- (a) A B C D
1 4 3 2
(b) A B C D
3 4 1 2
(c) A B C D
3 2 1 4
(d) A B C D
1 2 3 4

102. Which of the following triads was **not** given by Dobereiner?

- (a) Ca, Sr, Ba
(b) Cl, Br, I
(c) N, P, As
(d) Be, Mg, Ca



103. Consider the following statements :

1. The circulation of nitrogen from the inorganic compounds in the soil to form protein in plants and animals and back again is known as the nitrogen cycle.
2. The preparation of ammonia by Haber process is an endothermic reaction.
3. Urea is synthetically made by the action of ammonia and carbon dioxide under high temperature and high pressure.

Which of the statements given above is/are **not** correct?

- (a) 1 and 3
(b) 2 and 3
(c) 2 only
(d) 1 only



105. Consider the following statements :

1. Potassium carbonate is a salt of a weak acid and a weak base.
2. Ammonium nitrate is a salt of a strong acid and a weak base.
3. Ammonium acetate is a salt of a weak acid and a weak base.

Which of the statements given above are correct?

- (a) 1 and 3 only
(b) 2 and 3 only
(c) 1 and 2 only
(d) 1, 2 and 3



104. Match List-I with List-II and select the answer using the code given below the Lists :

List-I (Reaction)	List-II (Type of Reaction)
A. $\text{CH}_4 + 2\text{O}_2 \rightarrow \text{CO}_2 + 2\text{H}_2\text{O}$ heat and light	1. Combustion
B. $\text{Mg} + \text{H}_2\text{SO}_4 \rightarrow \text{MgSO}_4 + \text{H}_2$	2. Double displacement
C. $2\text{NaOH} + \text{H}_2\text{SO}_4 \rightarrow \text{Na}_2\text{SO}_4 + 2\text{H}_2\text{O}$	3. Displacement
D. $\text{NaCl} + \text{AgNO}_3 \rightarrow \text{NaNO}_3 + \text{AgCl}$	4. Neutralization

Code :

- (a) A B C D
1 3 4 2
(b) A B C D
1 4 3 2
(c) A B C D
2 3 4 1
(d) A B C D
2 4 3 1

106. Which one of the following principles of physics is primarily used in sonography, a medical diagnostic process?

- (a) Resonance
(b) Superposition of waves
(c) Doppler effect
(d) Standing wave



109. The working principle of refrigerator is based on the

- (a) first law of thermodynamics
(b) second law of thermodynamics
(c) Planck's radiation law
(d) Rayleigh-Jeans law

108. The larger area under the hysteresis curve ($B-H$) of a ferromagnetic material depicts

- (a) maximum magnetization
- (b) extent of demagnetization
- (c) extent of lagging
- (d) minimum energy

110. When sunlight (white light) falls on a triangular glass prism, a band of colours called a spectrum is obtained. Which one among the following represents this effect appropriately?

- (a) Reflection
- (b) Diffraction
- (c) Refraction
- (d) Dispersion



111. Which one among the following statements related to human eye is correct?

- (a) For a person suffering from short-sight defect, the image of a distant object is focused behind the retina.
- (b) Short-sight defect can be corrected by a converging spectacle lens.
- (c) For a person suffering from long-sight defect, the image of a near object is focused behind the retina.
- (d) Long-sight defect can be corrected by a diverging spectacle lens.

112. The potential difference between the terminals of an electrical heating device is 40 V, when it draws a current of 2 A from the source. Which one of the following is the correct value of current drawn by the heating device if the potential is increased to 140 V?

- (a) 7 A
- (b) 5 A
- (c) 4 A
- (d) 2 A



113. A beam of positively charged particles, say A , is going from north to south. On the other hand, a beam of negatively charged particles, say B , is going from south to north. Which one of the following in this respect is correct?

- (a) B is deflected towards A .
- (b) B is deflected away from A .
- (c) B is deflected upwards.
- (d) B is deflected downwards.

114. Match List-I with List-II and select the answer using the code given below the Lists :

<i>List-I</i> (Device)	<i>List-II</i> (Phenomenon)
A. Periscope	1. Conduction and convection minimization
B. Lightning conductors	2. Moment of a force
C. Thermos flask	3. Reflection by plane mirrors
D. Levers	4. Static electricity

Code :

(a) A B C D
2 4 1 3

(b) A B C D
3 1 4 2

(c) A B C D
3 4 1 2

(d) A B C D
2 1 4 3



115. Consider the following statements regarding mechanical properties of solids :

1. The ratio of tensile stress to longitudinal strain is defined as bulk modulus.
2. The ratio of hydraulic stress to corresponding hydraulic strain is called Young's modulus.
3. The ratio of shearing stress to corresponding shearing strain is called modulus of rigidity.

Which of the statements given above is/are correct?

- (a) 1 and 2 only
- (b) 2 and 3 only
- (c) 3 only
- (d) 1, 2 and 3

