



CAPF AC PYQ

(SUBJECT WISE)

(Institute for Defence exam)

SUBJECT : SCIENCE

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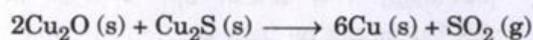
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10. Pure, demineralized water, free from all soluble mineral salts is obtained by which of the following method ?

- (a) Passing water through microfiltration membrane
- (b) Calgon's method
- (c) Passing water through a cation exchange and an anion exchange resin bed
- (d) By boiling

11. Consider the following redox reaction :



Identify the species among the following acting as oxidant and reductant, respectively :

- (a) Cu(I) and S of Cu_2S
- (b) Cu and S of SO_2
- (c) Cu and O of SO_2
- (d) Cu(I) and O of SO_2



12. Which one of the following statements is *not* correct regarding the setting of cement ?

- (a) The addition of a small percentage of gypsum (CaSO_4) lengthens the setting period of cement.
- (b) According to the colloidal theory, gels of hydrated silicates are formed and when these gels harden, the set cement loses strength.
- (c) Tricalcium silicate is responsible for initial setting of cement.
- (d) Dicalcium silicate and tricalcium silicate are responsible for the final strength which occurs in about a year.

32. The depletion in atmospheric ozone layer in last century was due to :

- (a) chlorofluorocarbon
- (b) carbon monoxide
- (c) methane
- (d) pesticides

14. Which one of the following metals does *not* react with oxygen directly ?

- (a) Ti
- (b) Fe
- (c) Pt
- (d) Zn



19. Which organelle other than nucleus in eukaryotic cells has its own DNA, ribosomes and proteins ?

- (a) Golgi
- (b) Mitochondria
- (c) Lysosomes
- (d) Nucleosomes

20. For protein synthesis, the amino acids are recognized and carried by :

- (a) mRNA
- (b) snRNA
- (c) miRNA
- (d) tRNA

21. In vertebrates, smooth endoplasmic reticulum in cells of which organ plays a crucial role in detoxification of toxic compounds ?

- (a) Spleen
- (b) Intestine
- (c) Kidney
- (d) Liver

34. A sound wave of frequency of 2 kHz has a wavelength of 35 cm in a given medium. How long will it take to travel a distance of 2.1 km through the medium ?

- (a) 30 s
- (b) 2.1 s
- (c) 3.0 s
- (d) 4.1 s



22. The rate of an enzyme catalyzed reaction depends :

- (a) upon substrate concentration, temperature and pH.
- (b) only on substrate concentration and pH, but not on temperature.
- (c) only on pH and temperature, but not on substrate concentration.
- (d) only on temperature, but not on pH and substrate concentration.

23. Both starch and glycogen are made up of glucose, however :

- (a) starch is present in liver and glycogen is present in red blood cells.
- (b) glycogen is made in animal cells, but starch is made in plant cells.
- (c) both starch and glycogen are present in animal and plant cells.
- (d) both starch and glycogen are present in plant cells only.

30. Which one of the following is the main cause of the acid rains ?

- (a) The Sun causes heating of upper layer of atmosphere.
- (b) The burning of fossil fuels releases oxides of carbon, nitrogen and sulphur in the atmosphere.
- (c) The electrical charges are produced due to friction amongst clouds.
- (d) The atmosphere of the Earth contains acids.

31. Biogas is considered to be an excellent fuel which burns without smoke. The main constituent of biogas is :

- (a) methane
- (b) hydrogen
- (c) carbon dioxide
- (d) hydrogen sulphide

33. Which one of the following holds true for a freely falling object ?

- (a) It moves with a uniform velocity.
- (b) It moves with a uniform speed.
- (c) It moves with a non-uniform acceleration.
- (d) It moves with a uniform acceleration.

35. Which one of the following conservation laws is a consequence of the Newton's third law of motion ?

- (a) Conservation of energy
- (b) Conservation of momentum
- (c) Conservation of charge
- (d) Conservation of mass

51. The method used in separating a mixture of two miscible liquids having sufficient difference in their boiling points is :

- (a) Filtration
- (b) Solvent Extraction
- (c) Centrifugation
- (d) Simple Distillation

52. Which one of the following statements is correct ?

- (a) Alloys are mixtures.
- (b) Alloys are compounds.
- (c) Alloys are always made up of metals.
- (d) All alloys contain carbon as one of their components.

53. The common element in graphite, fullerene, diamond and graphene is :

- (a) Oxygen
- (b) Nitrogen
- (c) Hydrogen
- (d) Carbon



54. The gas generated on reacting zinc with dilute sulphuric acid is :

(a) Argon
(b) Helium
(c) Hydrogen
(d) Nitrogen

55. An aqueous solution of a salt is known as brine. The salt is :

(a) Sodium chloride
(b) Potassium chloride
(c) Calcium chloride
(d) Sodium nitrate

61. In humans, urea is mainly formed from the metabolism of which one of the following components of food ?

(a) Fatty acids
(b) Vitamins
(c) Amino acids
(d) Glucose

63. For the digestion of carbohydrate, protein and fat, enzymes such as amylase, trypsin and lipase are required. It is secreted into the duodenum through :

(a) Bile
(b) Plasma
(c) Lymph
(d) Pancreatic juice



64. Lactic acid is formed in the muscles during exercise or running. It is formed :

(a) to give extra energy from fat.
(b) to give extra oxygen from lungs.
(c) to give extra energy from glucose.
(d) to give extra energy from vitamins.

70. A simple harmonic motion of a particle is represented as, $y = 10 \cos \omega t$. The acceleration of the particle at time $t = \frac{\pi}{2\omega}$ will be : (symbols here carry their usual meanings)

(a) 10ω
(b) $-10 \omega^2$
(c) 0
(d) $\frac{10}{\omega}$

71. A wire of resistance R is cut into four equal parts. These parts are then connected in parallel. If the equivalent resistance of this combination is R', then the ratio $\frac{R'}{R}$ is :

(a) $\frac{1}{16}$
(b) $\frac{1}{4}$
(c) 4
(d) 16



72. In experiment #1, a bar magnet is moved towards a conducting wire loop axially, with the magnet's north pole facing the loop. In experiment #2, the same process as in experiment #1 is repeated except that the south pole of the magnet faces the loop. Which one of the following statements is true in this context ?

(a) The direction of current in the loop will be of opposite nature in both the experiments.
(b) The direction of current in the loop will be the same in both the experiments.
(c) No current will flow in either of the two experiments.
(d) More current will flow in the loop in experiment #1.