

## X – STD

### PUBLIC EXAM SCIENCE EXAM(ANSWER KEY)

23-03-2017(2017)

#### I.CHOOSE IT ;

1. Beta
2. BCG
3. Thymus
4. Micropyle
5. Left auricle and left ventricle
6. Mycorrhizal root
7. Primary treatment
8. Helium-oxygen
9. Lactic acid
10. 14th group
11. Ethanoic acid
12. 0.01 mm
13. Force
14. Electric energy
15. Magnetic field

#### II.TWO MARKS;

16. Intra specific, Inter specific or inter generic
17. Genetic engineering is the modification of the genetic information of living organisms by manipulation of DNA i.e. by adding, removing or repairing part of genetic material (DNA) and changing the phenotype of the organism.  
It is also known as gene manipulation or Recombinant DNA Technology (r-DNA Technology)
18. i) Vaccine - microbes                      ii) natural gas - fuel  
      iii) citric acid - organic acids    iv) vitamins -. Metabolism
19. No, the given symptoms are in case of Kwashiorkor is correct.  
Marasmus-1. The child loses weight and suffers severe diarrhoea. 2. It appears as though bones are covered by the skin.

- 20.(i) Adrenal Gland (Supra renal gland) (ii) Adrenal cortex
21. Refer –Text book pageno-63
22. The skin of the camel is doubly thick and contains water-storing osmotic cells to conserve water, as they live in deserts. They have thick bushy eyebrows covering the eyes to protect their eyes from sand storms. Their nostrils can be closed during desert storms to prevent the entry of sand particles.
- 23.(i)Glomerulus (ii) seal ( Refer page no – 81 ;High mountains - mountain goat, big-horned sheep, grizzly bear)
24. Kidneys - Urine -Nitrogenous waste products – urea,uric acid, creatinine, etc,  
Lungs- Exhaled / Expired air - Carbondioxide and water-vapour  
Skin - Sweat - Excess water and salt
25. (i)A – Geotropism. B – Phototropism  
(ii) movements dependant on growth mimosa - movements independant on growth
26. (i)Fermentation (ii) Yeast
- 27.Fish,mammal,birds,annelids
28. Grass→ grasshopper→frog→ snake → eagle(Draw pyramid also)
29. 1. Bio-alcohol 2. Green diesel 3. Bio-diesel 4. Vegetable oil  
5. Bio-ethers 6. Bio-gas (Any four)
- 30.Renewable-hydrogen-wind-solar energy  
Non-Renewable-coal-natural gas-petroleum
31. Coal , Petroleum
32. The phenomenon by which the colloidal particles are in continuous random motion is called Brownian movement.
33. Weight of solute  
Weight percent =  $\frac{\text{Weight of solute}}{\text{Weight of solute} + \text{weight of solvent}} \times 100$   
$$= \frac{20}{20+50} \times 100 ; \frac{20}{70} \times 100 = 28.57\%$$
$$= 28.6 \%$$
34. Number of moles of atoms  
= Number of atoms/Avogadro Number  
=  $12.046 \times 10^{22} / 6.023 \times 10^{23} = 0.2$  moles

35.(i) A- Weak Acid ; B-Strong Acids

(ii) Weak Acids -HCOOH,CH<sub>3</sub>COOH; StrongAcids-H<sub>2</sub>SO<sub>4</sub>,HCl,HNO<sub>3</sub>

36.(i) HCOOH –it is organic (ii)Vinegar – it is acidic

37.(i) Second period is a short period. It contains eight elements

(ii) Group 18 elements - noble gases or inert gases.

38.(a) Assertion and reason are correct and relevant to each other.

39.(i)A - Acetic acid ; B - ethyl ethanoate(ii)Esterification;



40.(d) A is correct and R supports A.

$$\begin{aligned} 41. m &= 1 \text{ kg} & h &= 20\text{m} \\ &= mv_2 - mv_1 & &= [1X(-20)] - [1X20] , \\ & & &= -20 - 20 = (-) 40 \end{aligned}$$

Magnitude of change in momentum is  $40 \text{ kg ms}^{-2}$

42. Electric cell -  ; Plug key or switch (closed)- 

A wire joint -  ; A resistor of resistance R- 

43. (i)Ammeter (ii) Non conventional source.

44. Ocean Thermal Energy(Refer page no-268)

The water at the surface of the sea or ocean is heated by the sun while the water in deeper sections is relatively cooler. This difference in temperature is exploited to obtain energy in ocean-thermal-energy conversion plants

45.(a) Refer page no-285

(b)A ray passing through the principal focus of a concave mirror, after reflection, will emerge parallel to the principal axis

46. Stretch the thumb, fore finger and middle finger of your left

hand such that they are mutually perpendicular. If the,

i) forefinger points in the direction of magnetic field.

ii) The middle finger points in the direction of current.

iii) Then the thumb will point in the direction of motion or the force acting on the conductor.

$$47. f = 100/9 = 11.11\text{cm}$$

III.FIVE MARKS;

48.(a) 1) Sanitary measures include ground fogging with disinfectants.

2) Closure of stagnant pools of water and covering ditches.

**3) Using mosquito nets and repellants**

**(b) Chill and Shivering and a rise in temperature**

**49. (a) The central nervous system is covered by three protective coverings collectively called Meninges. The outermost cover lying below the Skull and Vertebral column double thick and is called Duramater. The middle covering is thin and vascularised and is called Arachnoid membrane. The innermost cover is a very thin delicate membrane and is closely stretched over the outer surface of Brain and Spinal cord and is called Piamater**

**(b) Types of nerve cell**

**a) Myelinated or Medullated or White neurons:**

**b) Non- Myelinated or Non-Medullated or Grey neurons:**

**c) Unipolar neurons: d) Bipolar neurons: e) Multipolar neuron**

**50. 1) The seed is bulky, oval and slightly indented on one side.**

**2) There is a short longitudinal whitish ridge called raphae.**

**3) At one end of the raphae there is a minute opening called micropyle or germ pore.**

**4) If a water soaked seed is pressed gently a small drop of water comes through this micropyle.**

**5) The embryo is enclosed by the seed coat.**

**6) It consists of cotyledons attached to the primary axis which has a rudimentary root portion called radical and a rudimentary stem portion known as plumule.**

**7) The tip of the radical projects outside and is nearer to the micropyle.**

**8) The plumule is placed between the two cotyledons and consists of short axis, and a small bud having two tiny little folded leaves. ( Draw the diagram)**

**51. (a) Green chemistry is the design of chemical products and the processes to reduce or eliminate the use and generation of hazardous substances**

**(b) Future Products**

- A raw material feedstock should be renewable rather than depleting, whenever technically and economically practical.
- Catalytic reagents are superior to stoichiometric reagents.

• Green Chemistry is applicable to all aspects of the product life cycle as well. Finally, the definition of green chemistry includes the term “hazardous”. It is important to note that green chemistry is a way of dealing with risk reduction and pollution prevention.

52. 1) Atom is considered to be a divisible particle.

Eg : Isotopes :  $_{17}\text{Cl}^{35}$  ,  $_{17}\text{Cl}^{37}$

2) Atom of the same element may not be similar in all respects.

3) Atoms of different elements may be similar in all respects.

Eg : Isobars :  $_{18}\text{Ar}^{40}$  ,  $_{20}\text{Ca}^{40}$

4) Atom is the smallest particle which takes part in chemical reactions.

5) The ratio of atoms in a molecule may be fixed and integral but may not be simple.

Eg :  $\text{C}_{12}\text{H}_{22}\text{O}_{11}$  is not a simple ratio (sucrose)

6) Atoms of one element can be changed into atoms of other element by transmutation.

7) The mass of an atom can be converted into energy. This is in accordance with Einstein equation.  $E = mc^2$

53. Molasses is a dark coloured syrupy liquid left after the crystallization of sugar from the concentrated sugarcane juice. Molasses still contain about 30% of sucrose which cannot be separated by crystallization. It is converted into ethanol by the following steps:

(i) Dilution; Molasses is first diluted with water to bring down the concentration of sugar to about 8 to 10 percent.

(ii) Addition of Ammonium Salts; Molasses usually contains enough nitrogenous matter to act as food for yeast during fermentation. If the nitrogen content of the molasses is poor, it may be fortified by the addition of ammonium sulphate or ammonium phosphate.

(iii) Addition of Yeast; The solution from step (ii) is collected in large fermentation tank and yeast is added to it. The mixture is kept at about 303K for a few days. During this period, the enzymes invertase and zymase present in yeast, bring about the conversion of sucrose into ethanol. The fermented liquid is technically called

wash.

(iv) **Distillation of Wash**; The fermented liquid containing 15 to 18 percent alcohol and the rest of the water, is now subjected to fractional distillation. The main fraction drawn, is an aqueous solution of ethanol which contains 95.5% of ethanol and 4.5% of water. This is called rectified spirit. This mixture is then heated under reflux over quicklime for about 5 to 6 hours and then allowed to stand for 12 hours. On distillation of this mixture, pure alcohol (100%) is obtained. This is called absolute alcohol. **(write the equations)**

54.(a) Newton's first law is a qualitative definition of force because it explains about the force and the factors on which it depends upon. It also gives the definition of force and also explains the property of inertia and momentum. First law states that an object remains in the state of rest or of uniform motion in a straight line unless compelled to change that state by an applied unbalanced force. Inertia is the inability of the body to change its state of rest or of uniform motion by itself in a straight line

(b)  $F_1 = 30 \text{ N}$  ;  $F_2 = -30 \text{ N}$

55. REFER TEXT BOOK PAGE NOS.- 298, 299

**PREPARED FOR THE BETTERMENT OF ALL CHILDREN**

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