

TENTH PUBLIC EXAMINATION – 2023

PART – III – SCIENCE

ANSWER KEY

PREPARED BY:

SUNDARAM M (BT ASSISTANT)

CHANDRIKADEVI P(BT ASSISTANT)

SAVITHRIVIJAYALAKSHMI K(BT ASSISTANT)

SUBASHINI B(BT ASSISTANT)

MUTHUTHEVAR MUKKULATHORE HIGHER SECONDARY SCHOOL, THIRUNAGAR MADURAI

PART - I

1. Either positive or negative
2. α decay
3. 18 g
4. Water
5. -al
6. 3
7. Mitochondrial matrix
8. Retina of eye
9. Zygote
10. 1-(iii), 2-(iv), 3(ii), 4(i)
11. Independent assortment
12. J.W. Harshberger

PART -II

13. Any body would like to continue to be in its state of rest or the state of the motion.
Types: inertia of rest, inertia of motion, inertia of direction.
14. When sunlight passes through the atmosphere the blue colour is Scattered to a greater extent than the red colour.
15. One calorie is defined as the amount of heat energy required to rise the temperature of 1 gram of water through 1 degree celcius.
16. (Any two) It explains Gay Lussac's Law , Molecular formula of gases can be derived using Avagadro's law.
17. (Any two) Blood is sucked by the pharynx. Parapodia and setae are completely absent.
18. (i) Duramater (ii) Arachnoid membrane (iii) Piamater.
19. A – Exine B – Intine C – Generative cell D – vegetative nucleus.
20. Genetic engineering is the manipulation and transfer of genes from one organism to another organism.

21. The characters on the background of a Scratch window are known as Sprite.
22. $E = mc^2$
 $E = 2 \times (3 \times 10^8)^2$
 $E = 1.8 \times 10^{17}$.

PART – III

23. The force acting of a body is directly proportional to the rate of change of linear momentum of the body and the change in momentum takes place in the direction of the force.

Initial momentum $P_i = mu$

Final momentum $P_f = mv$

Change in momentum $\Delta = P_f - P_i$

$F = m (v-u)/ t$

$F = m \times a$.

24.

Myopia	Hypermeteropia
Short sightedness	Long sightedness
Lengthening of eye ball	Shortening of eye ball
Distant object cannot be seen clearly	Nearby object cannot be seen clearly
Focal length of eye lens is reduced	The distance between eye lens and retina decreases

25. (a) Ultrasonic vibrations are vibration with frequency greater than 20 kHz.
 (b) When sound waves travel in a given medium and strike the surface of another medium, they can be bounced back into the first medium.
26. (a) An amalgam is an alloy of mercury with another metal.
 (b) It is used in electroplating .
 It is alloyed with gold and silver for making coins and jewels.

27. A soap molecule contains two chemically distinct parts.

Hydrophilic:

This polar end is a short head with a carboxylate group

Hydrophobic:

The nonpolar end having the long tail made up of the hydrocarbon chain.

Mechanism: Explanation.

28. (a) Dermal tissue system, Ground tissue system, Vascular tissue system.

(b) Internal factor: Pigments, leaf age, Accumulation of carbohydrates, Hormones
 External factors: Light, Carbondioxide, temperature, water, Mineral elements.

29. Transport of respiratory gases, Transport of digested food material, Transport of hormones, maintains proper water balance.

30. Method of rainwater harvesting:

Roof top rainwater harvesting.

Recharge pit.

Rural areas:

Digging of tanks or lakes

Ooranis.

31.(a) Phenotype : External expression of a particular trait. Genotype : genetic expression.

(b) Responsible for determining the sex of an individual.

32. (a) $\text{pH} = -\log_{10}[\text{H}^+]$

$$\text{pH} = -\log_{10}[0.01]$$

$$\text{pH} = -\log_{10}[1 \times 10^{-2}]$$

$$\text{pH} = 2.$$

(b) Mass percentage = (Mass of the solute / Mass of the solution)x100

$$= (25/125) \times 100$$

$$= 20\%.$$

PART – IV

33. (a) (i) $H = I^2RT$

(ii) High resistivity, High melting point, not easily oxidized.

(iii) When a large current passes through the wire the fuse wire melts and disconnected.

(b) (i) A wave in which the particles of a medium vibrate along the direction of propagation of the wave.

(ii) A device in which the nuclear fission reaction takes place in a self – sustained and controlled manner to produce electricity.

Essential parts: Fuel, Moderator, Control rod, Coolant, Protection wall.

34. (a) (i) Number of atom present in a molecule.

(ii) Molecular mass of $\text{H}_2\text{SO}_4 = 98\text{g}$

$$\% \text{ of } \text{H}_2\text{SO}_4 = 32.65\%$$

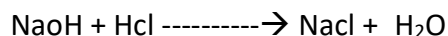
(iii)

Hygroscopic Substances	Deliquescence Substances
Do not change in physical state	Change their physical state
Amorphous solids	Crystalline solids
Used as a drying agents	They dissolved in water

(b) (i)

Reversible Reaction	Irreversible Reaction
It can be reversed	It cannot be reversed
It attain equilibrium	Equilibrium is not attained
It is slow	It is fast.

(ii) Acid + Base -----→ Salt + Water.



(iii) Same elements and same functional group.

General molecular formula.

Chemical properties are similar.

35 (a) (i) Gibberellins.

(ii) Essential for normal physical, mental and personality development.

(iii) Internal vital force, Environment and new needs, Use and disuse theory, theory of inheritance of acquired characters.

35. (b) (i) Restriction endonucleases

(ii) Protina, Shakti

(iii) Lungs and oral cancer, Bronchitis, Pulmonary tuberculosis, Hypoxia, Heart diseases.

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