



**TAMIL NADU CLASS 10 SSLC BIOLOGY
SOLVED PREVIOUS YEAR PAPER-2019**

Time: 2.30 Hours

Total Marks: 75

Instructions:

- First 15 minutes is given as Cool-off time.
- Answer only on the basis of instructions and questions given.
- Consider Score and time while answering..

Section- I

Note: (i) Answer all the **15** question

15×1 = 15

(ii) Choose the **correct** answer from the alternatives given in the bracelet

1. Which of the following is inheritable?

(an altered gene in sperm,
an altered gene in liver cells,
an altered gene in skin cells,
an altered gene in udder cells.)

Solution

An altered gene in sperm

2. Which one of the following is not a hereditary disease?

(Thalassemia, Down's syndrome, Alzheimer's disease, Haemophilia)

Solution

Alzheimer's disease

3. Spinal nerves are ____

(Sensory nerves, motor nerves, mixed nerves, innervating the brain)

Solution

Mixed nerves

4. During post fertilization, the ovule changes into a/an ____

(seed, fruit, endosperm, pericarp)

Solution

Seed

5. Carnivorous animals use ____ teeth to tear flesh.

(incisors, canines, premolars, molars)

Solution

Canines

6. ____ of green plants are called 'factories of food production'.



(Mitochondria, Chloroplasts, Endoplasmic Reticulum, Nucleus)

Solution

Chloroplasts

7. Find the odd one out.

(bio-alcohol, green diesel, bio-ethers, petroleum)

Solution

Petroleum

8. Dispersed medium+ Dispersion medium =

(True Solution, Colloidal Solution, Suspension, All)

Solution

Colloidal Solution

9. When aqueous solution of Silver Nitrate and Sodium chloride are mixed, _____ precipitate is immediately formed.

(white, yellow, red, blue)

Solution

White

10. _____ is used in making electromagnets.

(Pig iron, Steel, Wrought iron, Nickel steel)

Solution

Wrought iron

11. _____ is the functional group of ketones.

(-OH, -CHO, $\text{>C}=\text{O}$, -COOH)

Solution

$\text{>C}=\text{O}$

12. One light year is equal to _____

($365.25 \times 24 \times 60 \times 60 \times 3 \times 10^8 \text{ m}$, $60 \times 60 \times 3 \times 10^8 \text{ m}$, $1 \times 24 \times 60 \times 60 \times 3 \times 10^8 \text{ m}$, $360 \times 24 \times 60 \times 60 \times 3 \times 10^8 \text{ m}$)

Solution

$365.25 \times 24 \times 60 \times 60 \times 3 \times 10^8 \text{ m}$

13. The value of 'G' is

$6.673 \times 10^{-11} \text{ Nm}^2 \text{ kg}^{-2}$, $6.673 \times 10^{-11} \text{ Nm}^2 \text{ kg}^{-2}$, $6.673 \times 10^{11} \text{ Nm}^{-2} \text{ kg}^{-2}$, $6.673 \times 10^{-11} \text{ Nm}^2 \text{ kg}^2$

Solution

$6.673 \times 10^{-11} \text{ Nm}^2 \text{ kg}^{-2}$

14. How much work is done in moving a charge of 2C across two points having a potential difference 10 V?

(5 J, 20 J, 0.2 J, 2 J)

Solution

20 J



15. A device that reverses the direction of flow of current through a circuit is called _____.
(Voltmeter, Ammeter, Commutator, Transformer)

Solution

Commutator

SECTION - II

Answer **any twenty** questions.

20×2 = 40

16. Name the sources of somatic stem cells.

Solution

- (i) Bone Marrow
- (ii) Embryos
- (iii) Amniotic fluid
- (iv) Umbilical cord

17. Find out who am I.

- (i) I was born when the diploid nucleus of the udder cells injected into the cytoplasm of the enucleated ovum and implanted into the uterus of the surrogate mother.
- (ii) I coined the term vaccine and vaccination for protective inoculation.

Solution

- i: Dolly
- ii: Edward Jenner

18. Fill in the blanks:

- (i) The first vaccine which is produced by Biotechnology was used against _____.
- (ii) Biotechnologically synthesized _____ is used to cure pernicious anemia.

Solution

- i: Hepatitis B Virus
- ii: Vitamin b-12 shots/injections

19. What are the symptoms of malaria?

Solution

- (i) Chills, Shivering and rise in temperature
- (ii) Distension of spleen and destruction of liver tissues

20. What is Corpora quadrigemina? Name the functions associated with it.

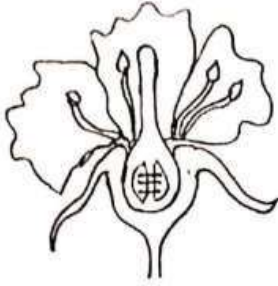
Solution

The dorsal portion of the midbrain consist of four hemispherical bodies called Corpora quadrigemina.

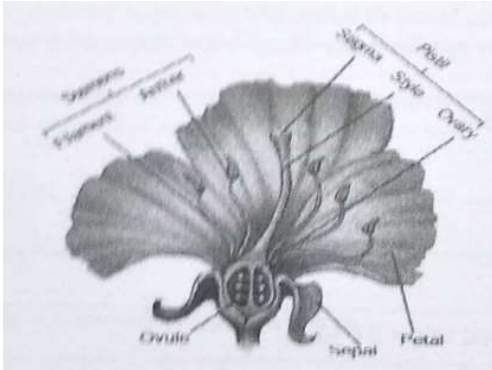
Functions:

Control and regulates visual reflexes and optical orientation.

21. Draw the given diagram and label the parts.



Solution



22. Assertion (A): In summer, we sweat more.

Reason (R): The kidneys expel less urine, since much of water is lost in the form of sweat.

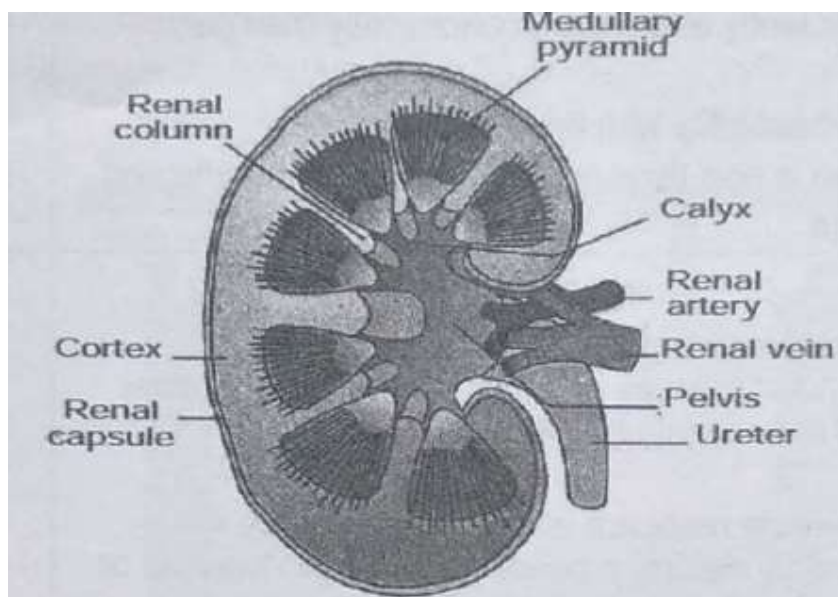
- (a) Both (A) and (R) are true and (R) explains (A).
- (b) Both (A) and (R) are true but (R) doesn't explain (A).
- (c) (A) is true but (R) is false.
- (d) (A) is false but (R) is true.

Solution

Both (A) and (R) are true and (R) explains (A).

23. Draw the L.S. of kidney and label the parts.

Solution



24. Mention any four adaptations seen in the Camel so that it can live successfully in deserts.

Solution

- (i) Doubly thick skin
- (ii) Water – Storing osmotic cells
- (iii) Thick bushy eyebrows
- (iv) Nostrils which can be closed during desert storms

25. Why diffusion process is not suitable for transportation in multicellular organisms?

Solution

- ❖ In multicellular organisms, cells would be tightly packed.
- ❖ Those in the middle region would not get enough oxygen

26. What are Saprophytes? Give two examples.

Solution

Some plants obtain nutrients from non living organic matter.
E.g. Most of the fungi and bacteria are saprophytes

27. Match the methods of nutrition of special organs with suitable examples.

Autotrophs	Mycorrhiza	Cuscuta
Parasites	Chlorophyll	Monotropa
Saprophytes	Haustoria	Hibiscus

Solution

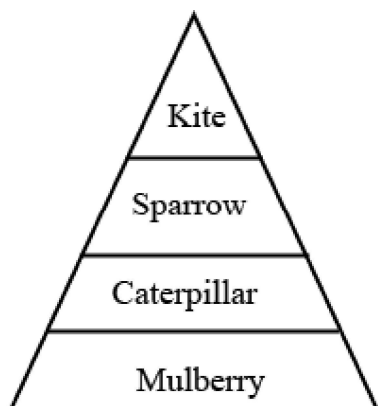
Autotrophs	Chlorophyll	Hibiscus
Parasites	Haustoria	Cuscuta

Saprophytes	Mycorrhiza	Monotropa
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28. Study the food chain below, correct it and convert it into a pyramid of energy.
 Mulberry → Sparrow → Caterpillar → Kite.

Solution

Mulberry → Caterpillar → Sparrow → Kite



29. Why 'Hydrogen' is considered to be the best choice among all the alternative fuel options?

Solution

- (i) Hydrogen can meet all the energy needs of human society including power generation.
- (ii) More efficiently and more economically than petro fuels.
- (iii) Total compatibility with the environment
- (iv) Hydrogen is non toxic reasonably safe to handle and distribute

30. A non-renewable resource is a natural resource. It can be replaced by natural process at a rate equal to or faster than its rate of consumption by humans.
 Read this statement and say whether it is correct or incorrect. If it is incorrect, give the correct statement.

Solution

Incorrect

A renewable resource is a natural resource if it is replaced by natural process at a rate comparable or faster than its rate of consumption by humans.

(OR)

A non-renewable resource is a natural resource if it cannot be replaced by natural process at a rate comparable or faster than its rate of consumption by humans.

31. How will you reuse the waste water in your houses?

Solution

- ❖ Watering yards and gardens
- ❖ Filtering septic systems
- ❖ Irrigating field

32. What is called Brownian movement?

Solution

The phenomenon by which the colloidal particles are in continuous random motion is called Brownian movement.

33. Fill in the blanks

Solute	Solvent,	Example
Solid	Smoke
.....	Solid	Cork

Solution

<u>Solute</u>	<u>Solvent</u>	<u>Example</u>
Solid	<u>Gas</u>	Smoke
<u>Gas</u>	Solid	Cork

34. Identify and correct the mistake if any:

(i) $2 \times R.M.M = V.D$

(ii) The molar volume of gas at STP is 22.4 cm^3

Solution

(i) $2 \times V.D = R.M.M$

(ii) The molar volume of gas at STP is 22.4 lit or 22400 cm^3

35. The hydroxide ion concentration of a solution $1.0 \times 10^{-8} \text{ M}$. What is the pH of the solution?

Solution

$$p^{OH} = -\log_{10} [OH^-]$$

$$p^{OH} = -\log_{10} (1.0 \times 10^{-8})$$

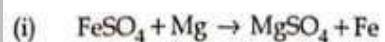
$$p^{OH} = 8$$

$$p^H = 14 - p^{OH}$$

$$p^H = 14 - 8$$

$$p^H = 6$$

36. Which of the following reactions does not take place? State the reason.



Solution



This reaction does not take place

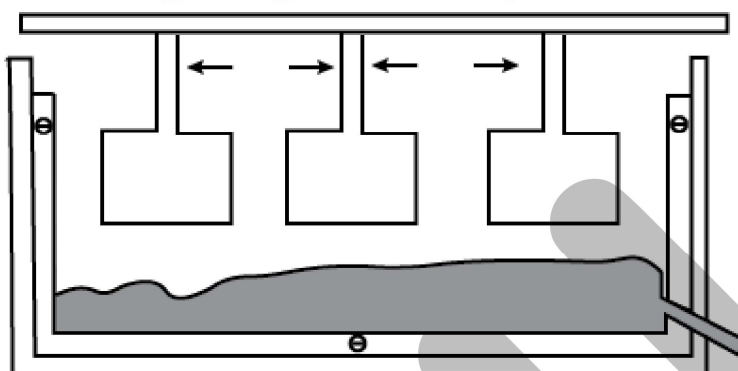
Reason: Copper is less reactive than Zinc

37. To design the body of an aircraft, aluminum alloys are used. Give reasons.

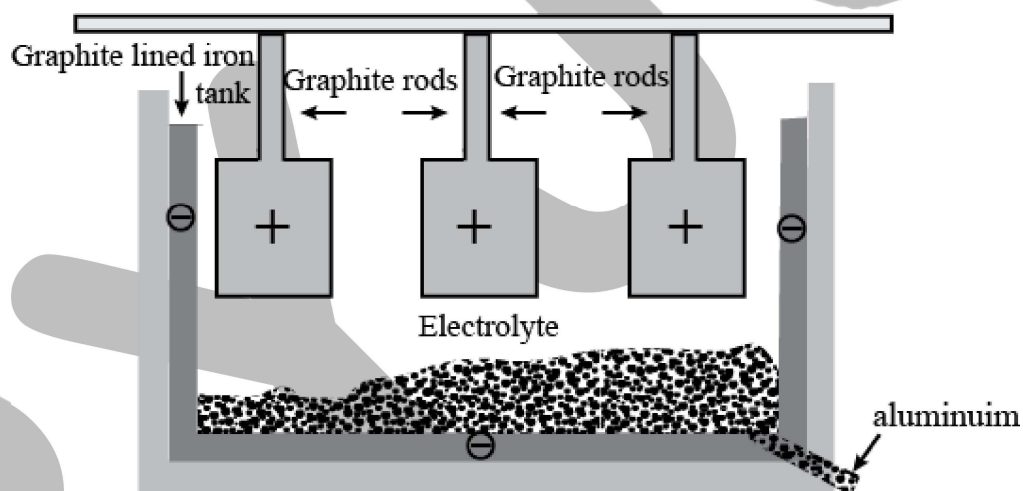
Solution

- (i) Light
- (ii) Strong
- (iii) Resistant to corrosion
- (iv) Stronger than aluminium

38. Draw the given diagram and label the parts.



Solution



39. Assertion: Chemical bonds in organic compounds are covalent in nature.

Reason : Covalent bond is formed by the sharing of electrons in the bonding atoms Does the reason satisfy the assertion?

Solution

Yes,

40. List out the names of the organisations which are not associated with Chandrayaan -I mission from the following:

(ISRO, BARC, NASA, ESA, WHO, ONGC)

Solution

BARC

WHO

ONGC

41. Two similar trucks are moving with the same velocity on a road. One of them is loaded while the other is empty. Which of the two will require a large force to stop it?

Solution

The loaded truck will require a larger force to stop it.

42. An electric bulb is connected to a 240 V generator. The current is 0.65 A. What is the power of the bulb?

Solution

$$V = 240 \text{ V, } I = 0.65 \text{ A}$$

The power of the bulb

$$P = VI$$

$$P = 240 \times 0.65$$

$$P = 156 \text{ W}$$

43. What are the limitations in harnessing wind energy?

Solution

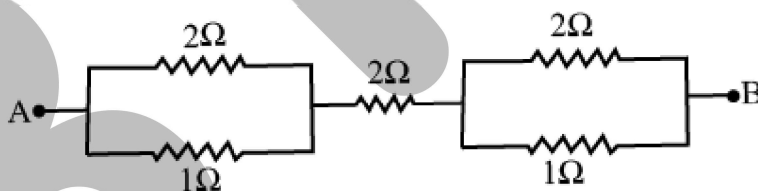
(i) Wind energy is an environment friendly

(ii) Efficient source of renewable energy

(iii) It requires no recurring expenses for the production of electricity

(iv) The wind speed should be higher than 15 km per hour to maintain the required speed of the turbine.

44. Find the effective resistance between A and B in the given circuit

**Solution**



R_1, R_2 are connected in parallel

The effective resistance,

$$\frac{1}{R_{p1}} = \frac{1}{R_1} + \frac{1}{R_2}$$

$$= \frac{1}{2} + \frac{1}{1}$$

$$\frac{1}{R_{p1}} = \frac{3}{2} \Omega$$

Similarly, $R_{p2} = \frac{2}{3} \Omega$

R_{p1}, R_3, R_{p2} are connected in series

The effective resistance of series

$$R = R_{p1} + R_3 + R_{p2}$$

$$= \frac{2}{3} + 2 + \frac{2}{3} = \frac{10}{3} = 3.33 \Omega$$

The effective resistance between A and B = 3.33Ω

45. Define Power of Lens. Give its units.

Solution

The power of a lens is defined as the reciprocal of its focal length.

Unit: 'diopetre'

46. How can an AC generator be converted into a DC generator?

Solution

AC generator can be converted into DC generator by changing slip rings into split ring commutator.

47. Assertion (A): When white light is allowed to pass through a prism, it splits into seven colours.

Reason (R): This is due to reflection of light.

Solution

Mere attempt mark will be given.

SECTION - III PART - I

$4 \times 5 = 20$

**Note: (i) Answer any four questions by choosing one question from each part
(ii) Draw diagrams wherever necessary**

48. Explain elaborately about Typhoid fever.

Solution

Causative agent - Salmonella typhi

Symptoms

(i) Persistent fever



- (ii) Inflammation and ulceration of the intestine
- (iii) Enlargement of spleen and a characteristic red spot eruption on the abdomen

Transmission

- (i) Through water and food contaminated with the germ.
- (ii) Through personal contact with patients and carriers.
- (iii) The Housefly is also an important transmitting agent of this disease.

Prevention and control

- (i) Isolation of the patient
- (ii) Control of flies
- (iii) Hygienic of food habits
- (iv) Proper sanitation
- (v) Artificial Immunization with typhoid vaccine.

49. Explain the Peripheral Nervous System

Solution

The nerves arising from the brain and spinal cord constitute the PNS

- Types: (i) Cranial nerves
(ii) Spinal nerves

Cranial Nerves:

- ❖ Twelve pairs of cranial nerves arise from the brain
- ❖ Sensory nerves. Eg:- optic nerves
- ❖ Motor nerves. Eg:- Oculomotor nerve
- ❖ Sensory and motor functions. Eg:- Facial nerves and vagus nerve.

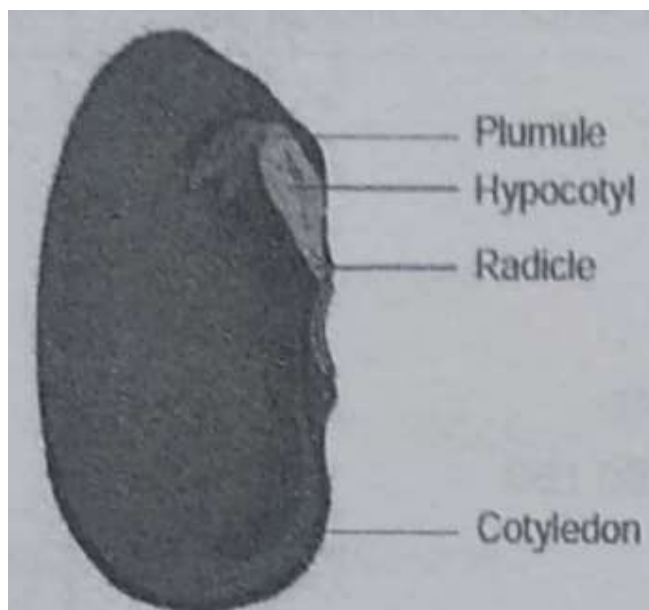
Spinal nerves

- ❖ Thirty one pairs of spinal nerves arise from the spinal cord
- ❖ Each spinal nerve has a sensory root and a motor root thus, all spinal nerves are mixed nerves.

PART- II

50. Describe the structure of a dicot seed.

Solution



Explanation

- (1) Kidney shape
- (2) Raphae
- (3) Micropyle
- (4) Rudimentary root (radicle)
- (5) Rudimentary stem (Plumule)
- (6) Shoot axis

51. Explain the components of Pond eco-system.

Solution

Pond eco-system

❖ An example for aquatic ecosystem is a pond

Components

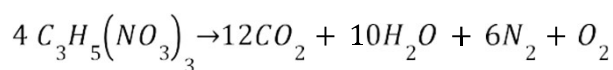
- (i) Abiotic factors
- (ii) Biotic factors

Explanation

- ❖ Abiotic – Light, temperature
- ❖ Biotic
 - (i) Producer Eg:- Phytoplanktons, Hydrilla
 - (ii) Consumer
 - ❖ Primary Consumer Eg:- Insects
 - ❖ Secondary Consumers Eg:- Fishes
 - ❖ Tertiary Consumers Eg:- Big Fish, Kingfisher
 - ❖ Decomposers Eg:- Bacteria and Fungi

PART- III

52. Nitroglycerine is used as an explosive. -The-equation for the explosive reaction is:



(l) (g) (l) (g) (g)

(Atomic mass of C = 12, H = 1, N = 14, O = 16)

(a) How many moles does the equation show for

(i) Nitroglycerine

(ii) Gas molecules produced?

(b) How many moles of gas molecules are obtained from 1 mole of nitroglycerine?

(c) What is the mass of 1 mole of nitroglycerine?

Solution

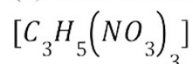
(a) (i) Number of moles in Nitroglycerine -4

(ii) Number of moles in gas molecules

C -	12
N_2 -	6
O_2 -	1
	19 moles

(b) 1 mole of nitroglycerine = $\frac{19}{4} = 4.75$ moles

(c) Mass of nitroglycerine



$$= [(3 \times 12) + (5 \times 1)] + 3[(1 \times 14) + (3 \times 16)]$$

$$= 36 + 5 + 3(14 + 48)$$

$$= 36 + 5 + 186$$

$$= 227g$$

53. (a) What are alkynes? Give an example.

(b) If the molecular mass of an alkynes is 54, then its molecular formula is.....

Solution

Alkynes are hydrocarbon which contain carbon to carbon triple

(a) bonds - $C \equiv C$ -

Example: Ethyne

(b) $H_3C - C \equiv C - CH_3$ (or) $H_3C - CH_2 - C \equiv CH$ (or) C_4H_6

Part-IV

54. (a) A and B are two objects. What happens to the force between two objects, if:



- (i) the mass of A is doubled.
 - (ii) the distance between A and B is doubled
 - (iii) the mass of both A and B are doubled.
- (b) What is the relation between 'g' and 'G'?

Solution

(a) Force between the two objects is

$$F = \frac{Gm_1 m_2}{r^2}$$

- (i) If the mass of A is doubled force will be doubled (2F).
- (ii) if the distance between A and B are doubled, the value of force will be one fourth of the force (F/4)
- (iii) If the masses both A and B are doubled , the value of force will be four times that of the force (4F).

(b) $g = \frac{GM}{R^2}$

Where

g is acceleration due to gravity

G is the universal gravitational constant

M is Mass of the earth

R is radius of the earth

55. (a) Write the sign convention for reflection by spherical mirrors.
(b) Why convex mirrors are used as rear-view mirrors in vehicles?

Solution

(a)

- ❖ The object is always placed to the left of the mirror.
- ❖ All distances parallel to the principal axis are measured from the pole of the mirror.
- ❖ All the distances measured to the right of the origin (along +X axis) are taken as positive
- ❖ While those measured to the left of the origin (along -X axis) are taken as negative
- ❖ Distances measured perpendicular to and above the principal axis (along +Y axis) are taken as positive.
- ❖ Distances measured perpendicular to and below the principal axis (along -Y axis) are taken as negative.

(b)

- ❖ Convex mirrors facilitate safe driving
- ❖ They always give an erect image and have a wider field of view.