



## BIOLOGY

# BOOKS - SURA BIOLOGY (TAMIL ENGLISH)

## SELF-EVALUATION 7 MARKS

Answer All The Questions Physics

1.  ${}_{88}\text{Ra}^{226}$  experiences three  $\alpha$ -decay . Find the number of neutrons in the daughter element.



[Watch Video Solution](#)

2. Explain the working of the eye.



[Watch Video Solution](#)

3. (a) Why does sound travel faster on a rainy day than on a dry day?

(b) Write the use of radioactive isotopes used in industries?



[Watch Video Solution](#)

4. (a) What do you understand by the term 'ultrasonic vibration'?

(b) State three uses of ultrasonic vibrations.

(c) Name three animals which can hear ultrasonic vibrations.



[Watch Video Solution](#)

5. Compare the properties of alpha, beta, and gamma radiations.



[Watch Video Solution](#)

6. State the universal law of gravitation and derive its mathematical expression .



[Watch Video Solution](#)

7. What is meant by mass defect?

(b) 100 W bulb draws 680 mA current. How much time will be required to pass 30 C of charge through the bulb?



[Watch Video Solution](#)

8. A bullet of mass 50 g moving with a speed of  $300 \text{ ms}^{-1}$  is brought to rest in 1 s . Find the impulse and the force .



[Watch Video Solution](#)

9. An object of height 3 cm is placed at 10 cm from a concave lens of focal length 15 cm. find the size of the image.



[Watch Video Solution](#)

10. (a) Find the final temperature of a copper rod. Whose area of cross section changes from  $10\text{m}^2$  to  $11\text{m}^2$  due to heating. The copper rod is initially kept at  $90\text{K}$ . (Coefficient of superficial expansion is  $0.0021/\text{K}$ ).

(b) The far position of a myopic person is  $90\text{cm}$  in front of the eye. What is the nature and power of the lens required to correct the problem?



[Watch Video Solution](#)

**11.** State Soddy and Fajan's displacement law.



**Watch Video Solution**

**12.** Explain the process of controlled and uncontrolled chain reactions.



**Watch Video Solution**

**13.** Define electric potential and potential difference.





[Watch Video Solution](#)

**14.** What is a nuclear reactor ? Explain its essential parts with their functions.



[Watch Video Solution](#)

**15.** Explain the experiment of measuring the real and apparent expansion of a liquid with a neat diagram.



[Watch Video Solution](#)



**16.** (a) Classify the types of force based on their application.

(b) Define coefficient of linear expansion. Write its equation.

(b) Define coefficient of linear expansion. Write its equation.



**Watch Video Solution**

**17.** State Joule's law of heating.



**Watch Video Solution**

**18.** How will you determine the velocity of sound by echo method?



**Watch Video Solution**

**19.** Distinguish between the resistivity and conductivity of a conductor .



**Watch Video Solution**

20. A person who is sitting at a distance of 400 m from a source of sound is listening to a sound of 600 Hz. Find the time period between successive compressions from the source?



[Watch Video Solution](#)

21. Explain the principle & structure of atom bomb.



[Watch Video Solution](#)

**22.** (a) Derive the Magnification of a compound.

(b) Two block of masses 8 kg and 2 kg respectively lie on a smooth horizontal surface in contact with one other. They are pushed by a horizontally applied force of 15 N. calculate the force exerted on the 2 kg mass.



**Watch Video Solution**

**23.** (a) Define the unit of current.

(b) How do we see distant and closer objects?



**Watch Video Solution**

**24.** Derive the ideal gas equation by combining the empirical gas laws.



**Watch Video Solution**

**25.** Explain about domestic electric circuits.

(circuit diagram not required)



**Watch Video Solution**

**26. (a)** A cricket ball of mass 100g moving with a speed of  $20\text{ms}^{-1}$  is brought to rest by a player. Find the change in momentum of ball.

**(b)** Draw a ray diagram of formation of images by a convex lens.



**Watch Video Solution**

**27. (a)** State boyle's law.

**(b)** State Newton's second law.



**Watch Video Solution**

**28.** State and prove the law of conservation of linear momentum.



**Watch Video Solution**

**29.** (a) State Rayleigh's law of scattering.

(b) Calculate the energy consumed by 120 w toaster in 20 min.



**Watch Video Solution**

**30.** List any five properties of light.



**Watch Video Solution**



**31. (a)** Define dispersion of light.

(b) Give the application of torque.



**Watch Video Solution**

**32. (a)** What are the medical applications of echo?

(b) How can you calculate the speed of sound using echo?



**Watch Video Solution**

**33.** With an illustration, explain the method of calculation for areal expansion of an object.



**Watch Video Solution**

**34.** Write any five electrical components used in electrical circuit and draw its symbol.



**Watch Video Solution**

**35.** (a) A body of mass 2 kg moving with uniform velocity of  $40 \text{ ms}^{-1}$  collides with another body at rest if two bodies move together with a velocity of  $20 \text{ ms}^{-1}$ . Find the mass of the other body.

(b) Distinguish between linear, areal (or) superficial expansion.



**Watch Video Solution**

**36.** (a) Air temperature in the Rajasthan desert can reach  $46^{\circ}C$ . What is the velocity of sound in air at that temperature ? ( $V_0 = 331ms^{-1}$ ).

(b) A sound wave has a frequency of 200 Hz and a speed of  $400ms^{-1}$  in a medium. Find the wavelength of the sound wave.



**Watch Video Solution**

**37.** Explain the construction and working of a 'Compound Microscope'.





[Watch Video Solution](#)

**38.** What happens to the resistance, as the conductor is made thicker ?



[Watch Video Solution](#)

**Answer All The Questions Chemistry**

**1.** (a) What is a polytomic molecule?

(b) When an aqueous solution of potassium chloride is added to an aqueous solution of

silver nitrate, a white precipitate is formed.

Give the chemical equation of this reaction.



[Watch Video Solution](#)

2. Classify the following compounds based on the patterns of carbon chain and give their structural formula : (i) Propane (ii) Benzene (iii) Cyclobutane (iv) Furan



[Watch Video Solution](#)

3. What is rust ? Give the equation for formation of rust .



[Watch Video Solution](#)

4. (a) What happens during a chemical change?

(b) Calculate the number of molecules in 11g of  $CO_2$ .



[Watch Video Solution](#)

5. Write notes on various factors affecting solubility .



**Watch Video Solution**

6. Explain the salient features of periods in the modern periodic table.



**Watch Video Solution**



7. (a) What are Bio degradable and Non-biodegradable detergents?

(b) Give appropriate reasons for alloying.



[Watch Video Solution](#)

8. (a) What is a homoatomic molecule? Give two examples.

(b) State two conditions necessary for rusting of iron.



[Watch Video Solution](#)

9. explain solid solution ,Liquid solution and Gaseous solution .



[Watch Video Solution](#)

10. Explain hydraulic washing with a neat diagram.



[Watch Video Solution](#)

**11.** Explain the salient features of periods in the modern periodic table.



**Watch Video Solution**

**12. (a)** The aquatic animals live more in cold regionn why?

**(b)** How to identify saturated annd unsaturated compounds?



**Watch Video Solution**

**13.** Give a test to identify the presence of alcohol .



**Watch Video Solution**

**14.** How will you determine the atomicity of gases using Avogadro's hypothesis?



**Watch Video Solution**

**15.** Explain the mechanism of cleansing action of soaps and detergents.



**Watch Video Solution**

**16.** On analysing an impure sample of sodium chloride, the percentage of chloride was found to be 45.5 what is the percentage of pure sodium chloride in the sample?



**Watch Video Solution**

**17. (a)** Write any three uses of copper.

**(b)** Ionisation energy decreases down the group in periodic table. Give reason.



**Watch Video Solution**

**18.** Explain smelting process.



**Watch Video Solution**

**19.** (a) How do detergents cause water pollution? Suggest remedial measures to prevent this pollution.

(b) Differentiate combination and decomposition reactions.



**Watch Video Solution**

**20.** In what way hygroscopic substances differ from deliquescent substances .



**Watch Video Solution**

**21.** Calculate the gram molecular mass of the following (i)  $CH_4$

(ii)  $CO_2$

(iii)  $NH_3$ .



**Watch Video Solution**

**22.** A hot saturated solution of copper sulphate forms crystals as it cools . Why ?



**Watch Video Solution**



**23.** (a) Explain Bassermerisation.

(b) What s molar volume of a gas?



**Watch Video Solution**

**24.** How will you classify hydrocabons?



**Watch Video Solution**

**25.** Explain the factors influcencing the rate of a reaction



[Watch Video Solution](#)

26. How will you convert ethanol to ethane ?



[Watch Video Solution](#)

27. (a) Define mole.

(b) Distinguish between cation and an anion.



[Watch Video Solution](#)

**28.** Explain the classification based on the direction of the reaction.



**Watch Video Solution**

**29.** (a) Define heterocyclic compounds. Give an example.

(b) 60 grams of NaOH is dissolved in 120 grams of water at  $25^{\circ}C$  to form a saturated solution. Find mass percentage of solute and solvent.





[Watch Video Solution](#)

**30.** (a) Explain the types of double displacement reactions with examples.

(b) What are the advantages of detergents over soaps?



[Watch Video Solution](#)

**31.** Derive the relationship between relative molecular mass and Vapour density.



[Watch Video Solution](#)

**32.** (a) Powdered  $CaCO_3$  reacts much faster with HCl than with solid marble chips. Account for the following.

(b) Define atomic mass unit?



**Watch Video Solution**

**33.** Atomic radii decreases as we move from left to right of periodic table. Justify your answer .



[Watch Video Solution](#)

**34.** How does pH play an important role in everyday life?



[Watch Video Solution](#)

**35.** How is ethanol manufactured from sugarcane ?



[Watch Video Solution](#)

**36.** Write down the steps involved in a metallurgical process.



**Watch Video Solution**

**37.** (a) What happens when  $MgSO_4 \cdot 7H_2O$  is heated? Write the appropriate equation

(b) Define solubility.



**Watch Video Solution**

**38.** Methods of preventing corrosion



[Watch Video Solution](#)

**39.** (a) What is Molarr volume of gas?

(b) Define: Relative atomic mass.



[Watch Video Solution](#)

**Answer All The Questions Biology**

**1.** (a) What is collateral vascular bundle?

(b) Why did Mendel select pea plant for his



experiment?



**Watch Video Solution**

2. Why is the management of forest and wildlife resource considered as a challenging task?



**Watch Video Solution**

3. Explain the role of Okazaki fragments.



**Watch Video Solution**

4. (a) How is the circulatory system designed in leech to compensate the heart structure?

(b) What are the advantages of using biogas ?



[Watch Video Solution](#)

5. Trace the pathway followed by water molecules from the time it enters a plant root to the time it escapes into the atmosphere from a leaf.



[Watch Video Solution](#)

6. Suggest measures to overcome the problems of an alcoholic.



[Watch Video Solution](#)

7. (a) Differentiate the following Aerobic and Anaerobic respiration.

(b) What are allosomes?



[Watch Video Solution](#)

8. How does rainwater harvesting structures recharge ground water?



[Watch Video Solution](#)

9. How does the light dependent reaction differ from the light independent reaction? What are the end product and reactants in each? Where does each reaction occur within the chloroplast?



[Watch Video Solution](#)

**10. (a)** What is a dental formula?

(b) What are the various routes by which transmission of human immuno deficiency virus takes place?



**Watch Video Solution**

**11. (a)** Write a note on euploidy.

(b) Enumerate the functions of blood.



**Watch Video Solution**

**12.** Illustrate the structure and functions of brain.



**Watch Video Solution**

**13. (a)** Differentiate the following monocot root and Dicot root.

(b) What will happen if you cut planaria into small fragments?



**Watch Video Solution**

**14. (a)** Draw the digestive system of leech and label the parts.

**(b)** Write a note on smoking hazard and effects of Tobacco.



**Watch Video Solution**

**15.** Write the physiological effect of Auxin.



**Watch Video Solution**

**16.** The sex of the new born child is a matter of chance and neither of the parents may be considered responsible for it. What would be the possible fusion of gametes to determine the sex of the child?



**Watch Video Solution**

**17.** (a) Draw diagrams to represent the types of concentric vascular bundles.

(b) List the function of cerebrospinal fluid.







[Watch Video Solution](#)

**18.** (a) Draw the dorsal view of brain of rabbit & label the parts.

(b) What is colostrum? How is milk production hormonally regulated?



[Watch Video Solution](#)

**19.** Write a note on DNA replication.



[Watch Video Solution](#)

**20.** (a) What are heart sounds? How are they produced?

(b) What is the aim of wild life conservation?



**Watch Video Solution**

**21.** (a) Draw the ultrastructure of mitochondria and label the parts.

(b) How does locomotion take place in leech?



**Watch Video Solution**

**22.** Explain the male reproductive system of rabbit with a labelled diagram.



**Watch Video Solution**

**23.** (a) List the difference between RBC and WBC.

(b) Define triple fusion.



**Watch Video Solution**

**24. (a)** Write a note on Triticale.

**(b)** Differentiate between Type-1 and Type-2 diabetes mellitus.



**Watch Video Solution**

**25.** With a neat labelled diagram describe the parts of a typical angiosperm ovule .



**Watch Video Solution**

**26.** Describe mutation breeding with an example.



**Watch Video Solution**

**27. (a)** What is photosynthesis and where in a cell does it occur?

**(b)** How can menstrual hygiene be maintained during menstrual days?



**Watch Video Solution**

**28. (a)** How was IR-8 variety produced?

**(b)** List the source of e-wastes.



**Watch Video Solution**

**29.** With a neat labelled diagram explain the structure of a neuron.



**Watch Video Solution**

**30.** (a) Name the gaseous plant hormone.

Describe its three different actions in plants.

(b) Which hormone is known as stress hormone in plants ? Why?



**Watch Video Solution**

**31.** Distinguish between

undifferentiated cells and differentiated cells.



**Watch Video Solution**

**32.** What are the phases of menstrual cycle?

Indicate the changes in the ovary and uterus.



**Watch Video Solution**

**33.** What are the hormones secreted by posterior lobe of the pituitary gland? Mention the tissues on which they exert their effect



**Watch Video Solution**



**34.** (a) What precautions can be taken for preventing heart disease?

(b) Distinguish between somatic gene therapy and germ line gene therapy.



**Watch Video Solution**

**35.** Enumerate the importance of forest.



**Watch Video Solution**

**36.** Why are leucocytes classified as granulocytes and mention its functions .



**Watch Video Solution**

**37. (a)** State the applications of DNA finger printing technique.

**(b)** Describe the structure of spinal cord.



**Watch Video Solution**

**38.** Describe an experiment which demonstrates that growth stimulating hormone is produced at the tip of coleoptile.



**Watch Video Solution**

**Answer All The Questions Science**

**1.** Two bulbs are having the ratings as 60 W, 220 V and 40 W, 220 V respectively. Which one has a greater resistance?



[Watch Video Solution](#)

2. Calculate the coefficient of cubical expansion of a zinc bar whose volume is increased  $0.25m^3$  from  $0.3m^3$  due to change in its temperature of 50K.



[Watch Video Solution](#)

3. A source producing a sound of frequency 500 Hz is moving towards its listener with a velocity of  $30 \text{ m.s}^{-1}$ . The speed of the sound is

$330\text{ms}^{-1}$ . What will be the frequency heard by listener?



[Watch Video Solution](#)

4. Calculate the number of molecules in 54 gm of  $H_2O$ ?



[Watch Video Solution](#)

5. For a person with hypermeteropia, the near point has moved to 1.5 m. calculate the focal

length of the correction lens in order to make his eyes normal.



[Watch Video Solution](#)

6. Find the mass of potassium chloride would be needed to form a saturated solution in 60 g of water at 303 K? Given that solubility of the KCl is 37/100 g at this temperature.



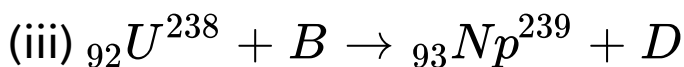
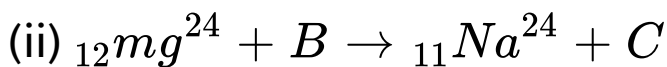
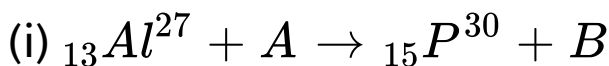
[Watch Video Solution](#)

7. Calculate the pH of  $1 \times 10^{-4}$  molar solution of NaOH.



Watch Video Solution

8. Identify A, B, C, and D from the following nuclear reactions.



Watch Video Solution

**9.** Calculate the velocity of a moving body of mass 5 kg whose linear momentum is  $2.5 \text{ kgms}^{-1}$ .



**Watch Video Solution**

**10.** Find the mass of 2.5 mole of oxygen atom .



**Watch Video Solution**



**11.** When an object is placed at 25 cm from a concave lens, a virtual image is produced at a distance of 10 cm. Calculate the magnification produced by the lens.



**Watch Video Solution**

**12.** Calculate the current and the resistance of 100W, 200V electric bulb in an electric circuit.



**Watch Video Solution**

**13.** Find the speed of sound in air at  $23^{\circ}C$ .  
(consider the speed of sound in air at  $0^{\circ}C$  is  $331.3ms^{-1}$ ).



**Watch Video Solution**

**14.** A person with myopia can see objects placed at a distance of 4 m. if he wants to see objects at a distance of 20 m, what should be the focal length and power of the concave lens he must wear?



**Watch Video Solution**

15. The potential difference between two conductor is 110 V. How much work in moving 5 C charge from one conductor to the other ?



[Watch Video Solution](#)

16. A radon specimen emits radiation of  $3.7 \times 10^3 \text{GBq}$  pe second. Convert this disintegration in terms of curie. (one curie =  $3.7 \times 10^{10}$  disintegration per second)



[Watch Video Solution](#)

**17.** At what speed should a source of sound move away from a stationary observer so that observer finds the apparent frequency equal to half of the original frequency?



[Watch Video Solution](#)

**18.** A 110 V light bulb takes 0.9 A current and operates 12h/day. Determine the energy consumed by the bulb for 30 days.



[Watch Video Solution](#)

**19.** Calculate the % of each element in calcium carbonate. (Atomic mass: C-12, O-16, Ca-40)



[Watch Video Solution](#)

**20.** A door is pushed, at a point whose distance from the hinges is 90 cm, with a force of 40 N. calculate the moment of the force about the hinges.



[Watch Video Solution](#)

21. If 50 g was the loss in mass as a result of a fissionable reaction, how much energy will have been produced ?



[Watch Video Solution](#)

22. 0.3 mole of aluminium (Atomic mass of Al=27).



[Watch Video Solution](#)

**23.** Calculate the pH of a solution in which the concentration of the hydrogen ions is  $1.0 \times 10^{-8} \text{ mol litre}^{-1}$ .



**Watch Video Solution**

**24.** The solubility of sodium nitrate at  $50^{\circ} C$  and  $30^{\circ} C$  is 114g and 96g respectively. Find the amount of salt that will be thrown out when a saturated solution of sodium nitrate

containing 50 g of water is cooled from  $50^{\circ}C$  to  $30^{\circ}C$ ?



**Watch Video Solution**

**25.** If boiling point of water is  $95^{\circ}F$ . What will be the reading in kelvin scale?



**Watch Video Solution**