



# BIOLOGY

## BOOKS - SURA BIOLOGY (TAMIL ENGLISH)

### PROBLEMS-2 MARKS

#### Subjective Type Question

1. Two bulbs are having the ratings as 60 W, 220 V and 40 W, 220 V respectively. Which one

has a greater resistance?



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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.



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



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



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5. For a person with hypermetropia, the near point has moved to 1.5 m. calculate the focal length of the correction lens in order to make his eyes normal.



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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.



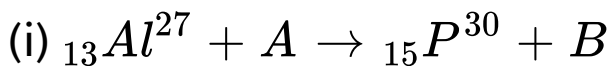
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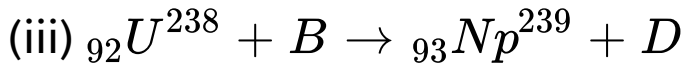
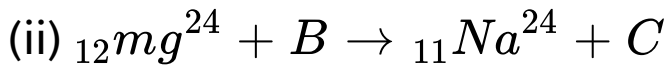
7. Calculate the pH of  $1 \times 10^{-4}$  molar solution of NaOH.



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





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



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



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**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.



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



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



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**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?



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



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



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**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?





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**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.



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



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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.



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



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



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



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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  $30^{\circ}C$ ?



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



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