



BIOLOGY

BOOKS - SURA BIOLOGY (TAMIL ENGLISH)

MODEL QUESTION PAPER HIGHER LEVEL

Mcqs

1. Power of a lens is $-4D$, then its focal length is

A. $4m$

B. $-40m$

C. $-0.25m$

D. $-2.5m$

Answer:



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2. Which of the following is correct

A. Rate of change of charge is electrical
power

B. Rate of change of charge is current

C. Rate of change of energy is current

D. Rate of change of current is charge

Answer:



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3. When a sound wave travels through air, the air particles

A. vibrate along the directionn of the wave
motion

B. vibrate but not in any fixxed direction

C. vibrate perpendicular to the direction of
the wave motion

D. do not vibrate

Answer:





4. In which of the following , no change in mass number of the daughter nuclide takes place ?

(i) α decay (ii) β decay

(iii) γ decay (iv) neutron decay

A. (i) is correct

B. (ii) and (iii) are correct

C. (i) & (iv) are correct

D. (ii) & (iv) are correct

Answer:



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5. The Volume occupied by 4.4 g of CO_2 at S.T.P

A. 22.4 litre

B. 2.24 litre

C. 0.24 litre

D. 0.1 litre

Answer:



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6. Solubility of NaCl in 100 ml water is 36 g. If 25 g salt is dissolved in 100 ml of water how much more salt is required for saturation ?
_____.

A. 12g

B. 11g

C. 16g

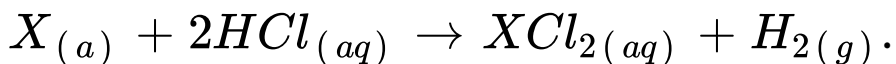
D. 20g

Answer:



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7. A single displacement reaction is represented by



Which of the following(s) could be X.

(i) Zn

(ii) Ag

(iii) Cu (iv) Mg.

A. *i* and ii

B. ii and iii

C. iii and iv

D. *i* and iv

Answer:



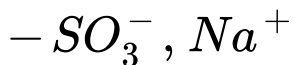
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8. Which of the following statement is wrong about detergents ?

A. It is a sodium salt of long chain fatty acids

B. It is sodium salts of sulphonic acids

C. The ionic part in a detergent is



D. It is effective even in hard water.

Answer:



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9. A patient with blood group O was injured in an accident and has lost . Which blood group the doctor should effectively use for transfusion in this condition ?

- A. O group
- B. AB group
- C. A or B group
- D. all blood group.

Answer:



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10. Dendrites transmit impulse _____ cell body
and axon transmit impulse _____ cell body.

A. away from, away from

B. towards, away from

C. towards, towards

D. away from, towards

Answer:



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11. The number of periods in the modern periodic table is _____.

A. 6,16

B. 7,17

C. 8,18

D. 7,18

Answer:



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12. The group of rays is _____.

A. lines

B. dots

C. beam

D. none of these

Answer:



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13. _____ deals with the bodies which are at rest under the action of forces .

A. Statics

B. Kinematics

C. Dynamics

D. Mechanics

Answer:



14. If V_B , V_G , V_R be the velocity of blue , green and red light respectively in a glass prism, then which of the following statement gives, the correct relation ?

A. $V_B = V_G = V_R$

B. $V_B > V_G > V_R$

C. $V_B < V_G < V_R$

D. $V_B < V_G < V_R$

Answer:



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15. Velocity of sound in a gaseous medium is 330m s^{-1} . If the pressure is increased by 4 times without causing a change in the temperature, the velocity of sound in the gas is

A. 330m s^{-1}

B. 660m s^{-1}

C. $156ms^{-1}$

D. $990ms^{-1}$

Answer:



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16. In the nuclear reaction ${}_6X^{12} \xrightarrow{\alpha\text{decay}} {}_ZY^A$

the value of A and Z is _____.

A. 8,6

B. 8,4

C. 4,8

D. cannot be determined with the given data

Answer:



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17. Which of the following represents 1 amu ?

A. Mass of a C-12 atom

B. Mass of hydrogen atom

C. $\frac{1}{12^{th}}$ of the mass of a C-12 atom

D. Mass of O-16 atom

Answer:



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18. Electronegativity values of Na and Cl are 0.9 and 3.0 respectively, predict the nature of bonding .

A. Ionic

B. Covalent

C. Coordinate

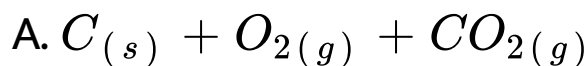
D. Metallic

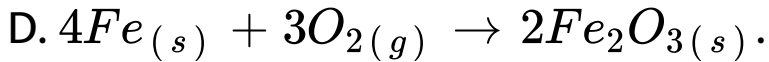
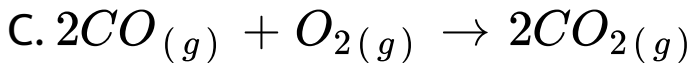
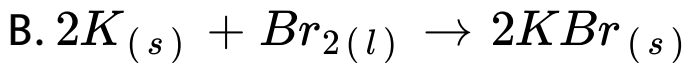
Answer:



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19. Which of the following is not an "element + element \rightarrow compound" type reaction?





Answer:



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20. In a hexaploid wheat ($2n=6x=42$) the haploid (n) and the basic (x) number of chromosomes respectively are:-

A. $n=7$ and $x=21$

B. $n=21$ and $x=21$

C. $n=7$ and $x=7$

D. $n=21$ and $x=7$

Answer:



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21. Which one of the following regarding blood composition is correct

A. Plasma-Blood+Lymphocyte

B. Serum-Blood+Fibrinogen

C. Lymph-Plasma+RBC+WBC

D. Blood-Plasma+RBC+WBC+Platelets

Answer:



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22. A person who met with an accident lost control of body temperature, water balance and

hunger. Which of the following part of brain is supposed to be damaged?

A. Medulla oblongata

B. cerebrum

C. pons

D. hypothalamus

Answer:



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23. Active transport involves

A. movement of molecules from lower to higher concentration

B. expenditure of energy

C. it is an uphill task

D. all of the above

Answer:



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24. In which of the following sport the turning effect of force used ?

A. swimming tennis

B. cycling

C. hockey

D.

Answer:



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25. The value of universal gas constant is _____

A. $3.81 \text{ mol}^{-1} \text{ K}^{-1}$

B. $8.03 \text{ mol}^{-1} \text{ K}^{-1}$

C. $1.38 \text{ mol}^{-1} \text{ K}^{-1}$

D. $8.31 \text{ mol}^{-1} \text{ K}^{-1}$

Answer:



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26. The frequency, which is audible to the human ear is

A. 50 kHz

B. 20 kHz

C. 15000 kHz

D. 10000 kHz

Answer:



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27. Which of the following is a triatomic molecule ?

A. Glucose

B. Helium

C. Carbon dioxide

D. hydrogen

Answer:



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28. A solution is a _____ mixture .

A. homogenous

B. heterogenous

C. homogenous and heterogeneous

D. non homogeneous

Answer:



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29. Which of the following are used as anaesthetics ?

A. Carboxylic acids

B. Ethers

C. Esters

D. Aldehydes

Answer:



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30. The body of leech has

A. 23 segments

B. 33 segments

C. 38 segments

D. 30 segments

Answer:



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31. Node of ranvier is found in_____

A. muscles

B. axons

C. dendrites

D. cyton

Answer:



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32. Estrogen is secreted by corpus luteum.

A. Anterior pituitary

B. Primary follicle

C. Graafian follicle

D. Corpus luteum

Answer:



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33. The 'use and disuse theory' was proposed by_____.

A. Charles Darwin

B. Ernst Haeckel

C. Jeann Baptiste Lamarck

D. Gregor Mendel

Answer:



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34. World 'No Tobacco Day ' is observed on

A. 43982

B. 43988

C. 43943

D. 44106

Answer:



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35. Which is used to build scripts ?

A. Scripts area

B. Block palette

C. Stage

D. Sprite

Answer:



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36. The eye defect's 'presbyopia' can be corrected by

A. convex lens

B. concave lens

C. convex mirror

D. Bi focal lenses

Answer:



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37. SI unit of resistance is

A. mho

B. joule

C. ohm

D. ohm meter

Answer:



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38. Artificial radioactivity was discovered by_____

A. becquerel

B. Irene Curie

C. Roentgen

D. Neils Bohr

Answer:



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39. _____ is an important metal to form amalgam

A. Ag

B. Hg

C. Mg

D. Al

Answer:



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40. Photolysis is a decomposition reaction caused by_____

A. heat

B. electricity

C. light

D. mechanical energy

Answer:



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41. Kreb's cycle takes place in

A. chloroplast

B. mitochondrial matrix

C. stomata

D. inner mitochondrial membrane energy

Answer:



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42. The wall of human heart is made of

- A. Endocardium
- B. Epicardium
- C. Myocardium
- D. all of the above

Answer:



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43. Avena coleoptile test was conducted by

A. Darwin

B. N. Smit

C. Paal

D. F.W. Went

Answer:



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44. The centromere is found at the centre of the _____ chromosome.

- A. Telocentric
- B. Metacentric
- C. Sub-metacentric
- D. Acrocentric

Answer:



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45. We can cut the DNA with the help of

A. scissors

B. restriction endonucleases

C. knife

D. RNAase

Answer:



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46. A renewable source of energy is

A. petroleum

B. coal

C. nuclear fuel

D. trees

Answer:



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47. Cancer of the epithelial cells is called

A. Leukemia

B. Sarcoma

C. Carcinoma

D. Lipoma

Answer:



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48. Define inertia. Give its classification.



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49. What is vo-efficient or real expansion ?



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50. What are longitudinal waves? Give one example.



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51. Define critical mass.



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52. Define combination reaction. Give one example for an exothermic combination reaction.



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53. How does leech suck blood from the host?



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54. Define stimulus.



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55. What are Okazaki fragments?



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56. What are psychotropic drugs ?



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57. Find the percentage of nitrogen in ammonia.



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58. Explain the process of controlled and uncontrolled chain reactions.



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59. (i) What is rust? Give the equation for formation of rust.

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



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60. (i) Draw and label the structure of oxysomes.

(ii) What is respiratory quotient?



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61. Voluntary and involuntary actions.



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62. How does fossilization occurs in plants?



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63. What precautions can be taken for preventing heart disease?





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64. How will you prevent soil erosion?



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65. Medullated and non-medullated nerve fibre.



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66. What are the causes of Myopia?



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67. What is the minimum distance needed for an echo?



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68. Explain the construction and working of a 'Compound Microscope'.



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69. Derive the relationship between relative molecular mass and Vapour density.



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70. A is a reddish brown metal which combines with O_2 at $< 1370K$ gives B, a black coloured compound. At a temperature $> 1370 K$, A

gives C which is red in colour. Find A, B and C with reaction.



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71. Write notes on various factors affecting solubility .



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72. How is the structure of DNA organized?

What is the biological significance of DNA?



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73. How do you differentiate homologous organs from analogous organs?



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Subjective Questions

1. If a 5N and a 15 N forces are acting opposite to one another . Find the resultant force and

the direction of action of the resultant force



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2. Why are traffic signals red in colour?



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3. If you keep ice at $0^{\circ}C$ and water at $0^{\circ}C$ in either of your hands, in which hand you will feel more chillness? Why?



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4. What connection is used in domestic appliances and why ?



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5. 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.



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6. A cobalt specimen emits induced radiation of 75.6 millicurie per second. Convert this disintegration into becquerel.

(one curie = $3.7 \times 10^{10} Bq$)



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7. Find the percentage of nitrogen in ammonia.



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8. Where does the carbon that is used in photosynthesis come from?



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9. What will happen if you cut planaria into small fragments ?



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10. What is Scratch?



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11. Two bodies have a mass ratio of 3:4. The force applied on the bigger mass produces an acceleration of 12 m s^{-2} . What could be the acceleration of the other body, if the same force acts on it.



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12. Calculate the coefficient of cubical expansion of a zinc bar whose value is

increased $0.25m^3$ from $0.3m^3$ due to change in its temperature of 50K.



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13. Cell phone towers should be placed far away from the residential area-why?



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14. A solution is prepared by dissolving 45g of sugar in 180g of water. Calculate the mass

percentage of solute.



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15. State two conditions necessary for rusting of iron.



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16. 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.



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17. How does developing embryo gets its nourishment inside the mother 's body ?



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18. How do you differentiate homologous organs from analogous organs?



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19. What would happen if the habitat of wild animals of disturbed ?



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20. A 100 watt bulb is used for 5 hours daily and four 60 watt bulbs are used for 5 hours daily. Calculate the energy consumed (in kWh) in the month of January.



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21. Two blocks of masses 8 kg and 2 kg respectively lie on a smooth horizontal surface in contact with one another . They are pushed by a horizontally applied force of 15 N . Calculate the force exerted on the 2kg mass .



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22. Derive the ideal gas equation by combining the empirical gas laws.



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23. Explain about domestic electric circuits.

(circuit diagram not required)



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24. Distinguish between

(a) Somatic gene therapy and germ line gene therapy.

(b)Undifferentiated cells and differentiated cells.



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25. 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?



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26. Explain in detail the uses and main parts of the 'SCRATCH' animation software.



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27. "Wearing helmet and fastening the seat belt is highly recommended for safe journey" justify your answer using Newton's law of motion.



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28. Draw a ray diagram to show the image formed by a convex lens when the object is placed between F and $2F$.



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



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30. 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?



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31. Define one roentgen.



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32. A is a reddish brown metal which combines with O_2 at $< 1370K$ gives B, a black coloured compound. At a temperature $> 1370 K$, A gives C which is red in colour. Find A, B and C with reaction.



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33. What causes the opening and closing of guard cells of stomata during transpiration?



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34. Why is vegetative propagation practiced for growing some type of plants?



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35. Why does the reaction rate of a reaction increase on raising the temperature ?



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36. What will happen if trees are cut down ?



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37. While doing an experiment for the determination of focal length of a convex lens, Raja Suddenly dropped the lens. It got broken into two halves along the axis. If he continues his experiment with the same lens,

(a) can he get the image?

(b) is there any change in the focal length?



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



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39. Calculate the number of moles in

27 g of Al



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40. (i) Arrive at, systematically, the IUPAC name of the compound: $CH_3 - CH_2 - CH_2 - OH$

(ii) In magnesium sulphide, the ratio by mass of Mg and S is 3:4. what is the ratio of the number of Mg and S atoms?



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41. Classify neurons based on its structure.



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42. When any dry plant material is kept in water , they swell up . Name and define the phenomenon involved in this change .



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43. In angiosperms , the pollen grain germinates to produce pollen tube that carries two gametes what is the purpose of carrying two gametes when single gamete can fertilize the egg ?



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44. How are stem cells useful in regenerative process ?



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45. If you are an artist, which computer applications will be relevant for you ?



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46. 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.



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47. An object is placed at a distance 20 cm from a convex lens of focal length 10 cm . Find the image distance and nature of the image .



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48. 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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49. An electric iron consumes energy at the rate of 420 W when heating is at the maximum rate and 180 W when heating is at the minimum rate. The applied voltage is 220V. What is the current in each case.



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



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51. Natural selection is a driving force for evolution-How ?



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52. What will you do if someone pricks your hand with a needle? Elucidate the pathway of response with a neat labelled diagram.



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53. State Newton's second law .



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54. Define the unit of current.



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55. Define atomicity .



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56. Name the simplest ketone and give its structural formula.



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57. Define Volume percentage .



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58. What is cohesion?



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59. What are Synthetic Auxins? Give examples.



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60. Why is Archaeopteryx considered to be a connecting link?



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61. Name the types of stem cells.



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62. Calculate the coefficient of cubical expansion of a zinc bar whose value is

increased $0.25m^3$ from $0.3m^3$ due to change in its temperature of 50K.



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63. What are the agents of soil erosion ?



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64. (a) What is Molarr volume of gas?

(b) Define: Relative atomic mass.



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65. (a) Define Hydrated salt.

(b) Define the term: solution.



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66. Write a short note on mesophyll.



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67. What causes the opening and closing of guard cells of stomata during transpiration?



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68. What is colostrum? How is milk production hormonally regulated?



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69. Name three improved characteristics of wheat that helped India to achieve high productivity.



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70. What are the structures involved in the protection of brain?



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71. What is Sprite?



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



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73. What are the factors that effect the speed of sound in gases?



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74. What connection is used in domestic appliances and why?



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75. What is vo-efficient or real expansion ?



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76. Explain smelting process.



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77. (i) What are allosomes?

(ii) Explain the structure of a chromosome.



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78. With a neat labelled diagram explain the techniques involved in gene cloning.



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