

Question 1: Which microorganism is responsible for nitrogen fixation in root nodules of legumes?

- a) Aspergillus fungus
- b) Saccharomyces yeast
- c) Rhizobium bacteria
- d) Cyanobacteria in leaf tissues

Question 2: Rocks formed by cooling and solidification of magma are

- a) Igneous rocks
- b) Sedimentary rocks
- c) Metamorphic rocks
- d) Fossil rocks

Question 3: A car moves with uniform velocity. The net force acting on it is

- a) Equal to its weight
- b) Equal to mass $\times$ velocity
- c) Constant
- d) Zero

Question 4: A sudden change in a gene or chromosome is known as

- a) Mutation
- b) Variation
- c) Adaptation
- d) Segregation

Question 5: An earthquake's intensity is measured using

- a) Celsius scale
- b) Decibel scale
- c) Richter scale
- d) Speedometer

Question 6: A body thrown vertically upwards with a velocity of 20 m/s will reach maximum height in

- a) 1 s
- b) 2 s
- c) 3 s
- d) 4 s

Question 7: The XX chromosome combination produces

- a) Male
- b) Female
- c) Hybrid
- d) Mutant

Question 8: Which organelle is present in plant cells but not in animal cells and is directly involved in photosynthesis?

- a) Lysosome
- b) Ribosome
- c) Chloroplast
- d) Centrosome

Question 9: The hardest mineral on Earth is

- a) Quartz
- b) Corundum
- c) Feldspar
- d) Diamond

Question 10: The process of breaking down rocks into smaller pieces is called

- a) Weathering
- b) Deposition
- c) Folding
- d) Cementation

Question 11: The primary role of ribosomes in the cell is

- a) Lipid breakdown
- b) Protein synthesis
- c) DNA replication
- d) ATP production

Question 12: A substance that can be split into two or more simpler substances by chemical means is a

- a) Element
- b) Compound
- c) Mixture
- d) Alloy

Question 13: The diagram used to predict the outcome of a genetic cross is called

- a) Family tree
- b) Genetic wheel
- c) Pedigree chart
- d) Punnett square

Question 14: The layer of the Sun that we can see directly is called

- a) Chromosphere
- b) Photosphere
- c) Corona
- d) Core

Question 15: Hemophilia is an example of a

- a) Bacterial disease
- b) Sex-linked disorder
- c) Infectious disease
- d) Chromosome number disorder

Question 16: Which statement best explains why viruses are considered non-living by many scientists?

- a) They cannot reproduce or carry out metabolism without a host cell
- b) They are too small to be alive
- c) They contain DNA, which living things lack
- d) They do not contain proteins

Question 17: In a monohybrid cross, the F₂ generation phenotypic ratio is

- a) 1:1
- b) 2:1
- c) 3:1
- d) 9:3:3:1

Question 18: What is the primary source of energy for the Sun?

- a) Gravitational contraction
- b) Chemical reactions
- c) Nuclear fusion
- d) Electrical energy

Question 19: The speed of sound in air increases with

- a) Volume of air
- b) Temperature
- c) Pressure
- d) Humidity only

Question 20: The transfer of pollen from anther to stigma is called

- a) Pollination
- b) Fertilization
- c) Hybridization
- d) Cross-breeding

Question 21: The law of conservation of energy states

- a) Energy is constant only for moving objects
- b) Energy cannot be created or destroyed, only transformed
- c) Energy can be created but not destroyed
- d) Energy can disappear completely

Question 22: The visible characters of an organism are called its

- a) Phenotype
- b) Genotype
- c) Allele
- d) Trait

Question 23: Which technique separates a soluble solid from a liquid by heating and cooling to obtain crystals?

- a) Filtration
- b) Crystallization
- c) Distillation
- d) Evaporation

Question 24: Which of the following is the closest star to Earth?

- a) Betelgeuse
- b) Sirius
- c) Alpha Centauri system
- d) Proxima Centauri

Question 25: A trait expressed in both homozygous and heterozygous condition is called

- a) Mutated trait
- b) Dominant trait
- c) Recessive trait
- d) Blended trait

Question 26: Which substance has a fixed composition and definite chemical formula?

- a) Air
- b) Steel
- c) Calcium carbonate
- d) Petrol

Question 27: Which of the following is a monoatomic gas?

- a) Nitrogen
- b) Oxygen
- c) Neon
- d) Chlorine

Question 28: What are the building blocks of proteins?

- a) Genes
- b) Amino acids
- c) Nucleotides
- d) Chromosomes

Question 29: Which of the following is an example of a homogeneous mixture?

- a) Sand and iron filings
- b) Salt dissolved in water
- c) Oil and water
- d) Fruit salad

Question 30: Sickle-cell anemia is caused by

- a) Bacterial infection
- b) Viral infection
- c) Gene mutation
- d) Vitamin deficiency

Question 31: Which of the following physical methods can separate suspended solids from a liquid quickly by applying rapid spinning?

- a) Magnetism
- b) Centrifugation
- c) Filtration
- d) Distillation

Question 32: If tall (T) is dominant over dwarf (t), the genotype (Tt) will result in a plant that is

- a) Mutated
- b) Tall
- c) Dwarf
- d) Half tall

Question 33: A car accelerates from 20 m/s to 40 m/s in 10 s. Its acceleration is

- a) 1 m/s²
- b) 2 m/s²
- c) 3 m/s²
- d) 4 m/s²

Question 34: Which microorganism is used in the production of antibiotics like penicillin?

- a) Bacteria
- b) Protozoa
- c) Fungi
- d) Algae

Question 35: A solar flare is

- a) A reflection of sunlight by asteroids
- b) An eruption on a planet
- c) A comet passing near the Sun
- d) A sudden release of energy from the Sun's surface

Question 36: Which planet is known for having a significant axial tilt of about 98 degrees?

- a) Jupiter
- b) Saturn
- c) Uranus
- d) Neptune

Question 37: Which process is carried out by yeast in the absence of oxygen?

- a) Photosynthesis
- b) Fermentation
- c) Respiration
- d) Nitrogen fixation

Question 38: The DNA double helix model was proposed by

- a) Watson and Crick
- b) Mendel
- c) Lamarck
- d) Rosalind Franklin

Question 39: Which atmospheric layer burns meteors?

- a) Troposphere
- b) Stratosphere
- c) Mesosphere
- d) Thermosphere

Question 40: A vibrating object completes 600 oscillations in 2 minutes. Its frequency is

- a) 2 Hz
- b) 5 Hz
- c) 8 Hz
- d) 10 Hz

Question 41: Which of the following is not a characteristic of all living cells?

- a) They grow and divide.
- b) They contain genetic material (DNA or RNA).
- c) They are surrounded by a membrane.
- d) They can perform photosynthesis.

Question 42: The Himalayas are an example of

- a) Fold mountains
- b) Block mountains
- c) Volcanic mountains
- d) Residual mountains

Question 43: A cyclist moves 50 m east and then 120 m north. The resultant displacement is

- a) 100 m
- b) 130 m
- c) 150 m
- d) 170 m

Question 44: _____ is the main source of aluminium.

- a) Quartz
- b) Hematite
- c) Magnetite
- d) Bauxite

Question 45: The process by which sediments are pressed together to form rock is called

- a) Compaction
- b) Melting
- c) Weathering
- d) Volcanism

Question 46: Which planet's atmosphere is primarily composed of carbon dioxide?

- a) Mars
- b) Venus
- c) Earth
- d) Mercury

Question 47: Which of the following is an example of kinetic energy?

- a) Book on a table
- b) Stretched spring
- c) Moving car
- d) Water at the top of a dam

Question 48: Microorganism that causes malaria.

- a) Giardia
- b) Amoeba
- c) Paramecium
- d) Plasmodium

Question 49: If frequency of a wave is doubled, its wavelength becomes

- a) Double
- b) Four times
- c) Half
- d) Remains same

Question 50: Uniform motion means

- a) Changing direction with constant speed
- b) Constant speed in a straight line
- c) Changing speed in a straight line
- d) Increasing acceleration

Question 51: The SI unit of energy is

- a) Newton
- b) Joule
- c) Watt
- d) Pascal

Question 52: Two solutions are separated by a membrane permeable only to water. Side A contains 1.0 M sucrose, side B contains 0.5 M sucrose. Predict the direction and reason for net water movement.

- a) From B to A because water moves toward higher solute concentration
- b) From A to B because solute concentration is higher in A
- c) No net movement because membrane is permeable to water
- d) From B to A because sucrose can cross the membrane

Question 53: The Great Red Spot on Jupiter is

- a) A giant storm
- b) A large crater
- c) A volcanic region
- d) A polar ice cap

Question 54: The compound H_2O_2 is called

- a) Hydrogen peroxide
- b) Water
- c) Hydroxide
- d) Hydrogen oxide

Question 55: An example of a sedimentary rock formed from clay is

- a) Granite
- b) Shale
- c) Marble
- d) Basalt

Question 56: Potential energy is maximum when

- a) The object is at mid-height
- b) The object is at the lowest point
- c) The object is moving fastest
- d) The object is at the highest point

Question 57: Earth's magnetic field is generated by movements in the

- a) Crust
- b) Mantle
- c) Outer core
- d) Inner core

Question 58: The largest volcano in the solar system, Olympus Mons, is located on

- a) Mars
- b) Venus
- c) Mercury
- d) Fungi

Question 59: The energy transformation in a microphone is

- a) Sound → Mechanical
- b) Electrical → Sound
- c) Sound → Electrical
- d) Mechanical → Sound

Question 60: The energy required to lift a body of mass 5 kg to a height of 10 m is ($g = 9.8 \text{ m/s}^2$)

- a) 290 J
- b) 350 J
- c) 390 J
- d) 490 J

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