

Markhor Junior Contest ®

Aspirant Level (Class IX, X, O/A Level) Science 2010

There are 25 questions, and each question carries two marks.

1. **Which of the following indicates bias in an investigation?**
A) Using instruments with calibration errors
B) Repeating measurements multiple times
C) Selecting only data that supports the hypothesis
D) Using a large random sample
2. **Neutrons are important because they:**
A) Determine chemical properties
B) Stabilize the nucleus by reducing proton-proton repulsion
C) Carry negative charge
D) Orbit the nucleus
3. **Which element has the electron configuration [Ar] 4s² 3d¹⁰ 4p¹?**
A) Gallium (Ga)
B) Germanium (Ge)
C) Zinc (Zn)
D) Selenium (Se)
4. **Which of the following has giant ionic lattice structure?**
A) NaCl
B) CO₂
C) HCl (gas)
D) CH₄
5. **Lone pairs affect molecular geometry by:**
A) Occupying more space than bonding pairs and compressing bond angles
B) Reducing atomic mass
C) Changing the number of electrons in the nucleus
D) Increasing bond length uniformly
6. **The thylakoid membranes inside a chloroplast are stacked into structures called:**
A) Cristae
B) Cisternae
C) Grana
D) Tonoplasts
7. **How many *net* ATP molecules are produced during glycolysis??**
A) 1
B) 2
C) 4
D) 8

Markhor Junior Contest ®

8. Which enzyme is directly involved in transcription but not in replication?
- A) DNA polymerase
 - B) RNA polymerase**
 - C) DNA ligase
 - D) DNA helicase
9. In translation, the first amino acid in most polypeptides is:
- A) Glycine
 - B) Methionine**
 - C) Phenylalanine
 - D) Tryptophan
10. Which situation best represents pleiotropy?
- A) A single gene influences multiple traits**
 - B) Multiple genes influence a single trait
 - C) Alleles blend to produce intermediate traits
 - D) One allele completely masks another
11. Post-translational regulation involves:
- A) Adding or removing chemical groups from proteins**
 - B) Removing introns from mRNA
 - C) Controlling ribosome binding
 - D) Modifying tRNA anticodons
12. Which feature distinguishes epigenetic changes from genetic mutations?
- A) Epigenetic changes are reversible**
 - B) Epigenetic changes alter base sequences
 - C) Mutations affect phenotype, but epigenetics does not
 - D) Mutations are influenced by diet
13. Which is a major challenge in applying CRISPR technology?
- A) Off-target edits
 - B) Efficient delivery into cells
 - C) Ethical considerations for germline editing
 - D) All of the above**
14. Which of the following biotechnological applications improves livestock quality?
- A) Cloning superior animals
 - B) Artificial insemination with selected semen
 - C) Transgenic expression of growth hormones
 - D) All of the above**

Markhor Junior Contest ®

15. Which part of the brain is responsible for coordination and balance?
- A) Cerebrum
 - B) Cerebellum**
 - C) Medulla oblongata
 - D) Hypothalamus
16. Herd immunity occurs when:
- A) All individuals are naturally infected
 - B) A large portion of the population is immune, reducing pathogen spread**
 - C) Only vaccinated individuals are immune
 - D) Pathogens mutate rapidly
17. Which of the following is an example of preventive medicine for non-infectious diseases?
- A) Regular exercise to prevent obesity**
 - B) Antibiotic therapy
 - C) Vaccination against measles
 - D) Quarantine
18. Which part of the brainstem controls breathing and heart rate?
- A) Medulla oblongata**
 - B) Pons
 - C) Midbrain
 - D) Thalamus
19. Which of the following is an example of behavioral adaptation?
- A) Camouflage in insects
 - B) Migration of birds during winter**
 - C) Spines in cacti
 - D) Webbed feet in ducks
20. Which type of fossil is formed when sediment fills a mold of an organism?
- A) Cast fossil**
 - B) Trace fossil
 - C) True form fossil
 - D) Amber fossil
21. Resilience of an ecosystem refers to:
- A) Its ability to withstand and recover from disturbances**
 - B) Number of species present
 - C) Primary productivity
 - D) Rate of species extinction
22. Which is an indirect effect of deforestation on biodiversity?
- A) Loss of habitat and species extinction**
 - B) Increase in oxygen levels

Markhor Junior Contest ®

- C) Reduced CO₂ levels
- D) Soil enrichment

23. Which statement about viruses is correct?

- A) They can reproduce independently
- B) They can infect multiple host species**
- C) They are always beneficial
- D) They contain both DNA and RNA simultaneously

24. Antibiotic-resistant infections are particularly dangerous in hospitals because:

- A) Patients have compromised immune systems
- B) Resistant bacteria can spread easily in close quarters
- C) Limited treatment options are available
- D) All of the above**

25. Marine microbial communities are critical for:

- A) Photosynthesis and carbon fixation
- B) Nitrogen and sulfur cycling
- C) Supporting food webs
- D) All of the above**