



University of Warmia and Mazury in Olsztyn
School of Medicine

Medical School Admission Test sample:

BIOLOGY



1. In eukaryotic cells, DNA occurs only in:

- A) cell nuclei, mitochondria, Golgi apparatus
- B) mitochondria, Golgi apparatus, chloroplasts
- C) cell nuclei, lysosomes, chloroplasts
- D) cell nuclei, mitochondria, chloroplasts
- E) mitochondria, chloroplasts, lysosomes

2. Prokaryotic cells are differentiated from eukaryotic cells because prokaryotic cells:

- A) are much bigger
- B) have not cell nuclei
- C) have cell nuclei
- D) have not cell wall
- E) have mitochondria and chloroplasts

3. The DNA double helix is stabilized by hydrogen bonds between:

- A) purine bases and complementary pyrimidine bases
- B) pyrimidine bases only
- C) purine bases only
- D) molecules of deoxyribose and phosphate groups
- E) nitrogenous bases and phosphate groups

4. The complementary mRNA sequence for AAGTCA is:

- A) TTCAGT
- B) UUCAGT
- C) UUCUGT
- D) UUCAGU
- E) TTCAGU

5. During which of the following stages of cell cycle DNA replication occurs?

- A) early prophase
- B) G1 phase
- C) G2 phase
- D) G0 phase
- E) S phase

6. Which of the following statements best describes mitosis?

- A) It occurs only in the reproductive structure of organism.
- B) During this stage DNA is synthesized.
- C) It is one of the interphase stages.
- D) It is the division of mother cell into two daughter cells, genetically identical to each other and to their parent cell.
- E) It is the division of mother cell into two daughter cells, genetically different from each other and from their parent cell.



7. Gene expression may be regulated:

- A) only during translation
- B) only during transcription
- C) during transcription and translation
- D) only during replication
- E) during replication and transcription

8. During anaphase of meiosis I toward opposing poles of cell are pulled:

- A) whole chromosomes
- B) sister chromatids
- C) bivalents
- D) fragments of sister chromatids
- E) tetrads

9. One of a series of different versions of gene is called:

- A) genome
- B) haploid
- C) diploid
- D) allele
- E) allosome

10. Which of the following genotypes would produce the smallest number of different gametes if the alleles are assorted independently?

- A) aa BB Dd
- B) AA BB DD
- C) Aa Bb DD
- D) Aa BB DD
- E) Aa Bb Dd

11. Which of the following processes can decrease the genetic variation in natural populations?

- A) recombination
- B) immigration
- C) mutagenesis
- D) inbreeding
- E) hybridization

12. Which of the following structures present in the embryos of higher plants develops into primary leaves of seedlings?

- A) epicotyl
- B) endosperm
- C) radicle
- D) hypocotyl
- E) cotyledon



13. Which of the following organisms would be classified as primary consumer?

- A) lion
- B) Escherichia coli
- C) barley
- D) cow
- E) Candida albicans

14. Which of the following characterizes monocotyledonous plants?

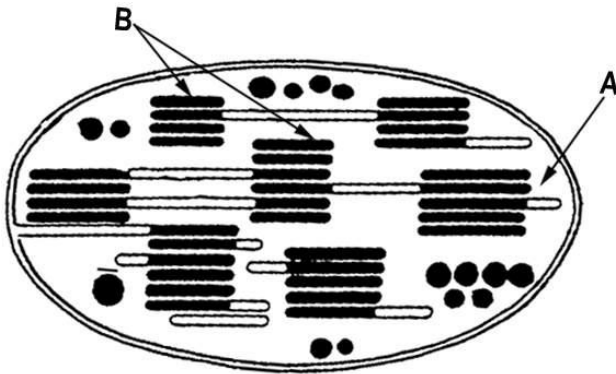
- A) Their embryos have one cotyledon.
- B) In their stems vascular bundles are usually arranged in ring.
- C) Their flowers parts are usually in multiples of four or five.
- D) They have usually taproot.
- E) Their leaves usually have netlike veins.

15. Which of the following types of plants tissue transport water and minerals?

- A) phloem
- B) xylem
- C) meristem
- D) vascular cambium
- E) epidermis

16. Which of the following require a host cell because they are not able to make proteins on their own?

- A) Paramecium caudatum
- B) Escherichia coli
- C) Influenza virus
- D) Saccharomyces cerevisiae
- E) Euglena viridis



17. The figure above shows the structure of chloroplast. Which of the following process occurs in the elements marked as (B)?

- A) photosynthesis
- B) citric acid cycle
- C) glycolysis
- D) photophosphorylation
- E) Calvin cycle

18. Which of the organisms is not correctly labeled?

- A) Bacteria – Staphylococcus aureus
- B) Plantae – Pine
- C) Fungi – Spider
- D) Animalia – Lion
- E) Viruses – HIV

19. Eutrophication is the process of:

- A) vegetation succession in lakes
- B) nutrient depletion of lakes
- C) increase inflow of minerals in lakes
- D) primary succession in lakes
- E) biological renewal of aquatic ecosystems

20. Which of the following is a prezygotic isolating mechanism to prevent reproduction between species?

- A) geographic isolation
- B) zygotic mortality
- C) isolation by hybrid sterility
- D) isolation by hybrid breakdown
- E) isolation by hybrid inviability.



21. Which of the following plant tissue is characteristic only for the leaves, but not for the roots?

- A) xylem
- B) phloem
- C) epidermis
- D) cambium
- E) mesophyll

22. Rhizobium forms an endosymbiotic nitrogen fixing association with roots of:

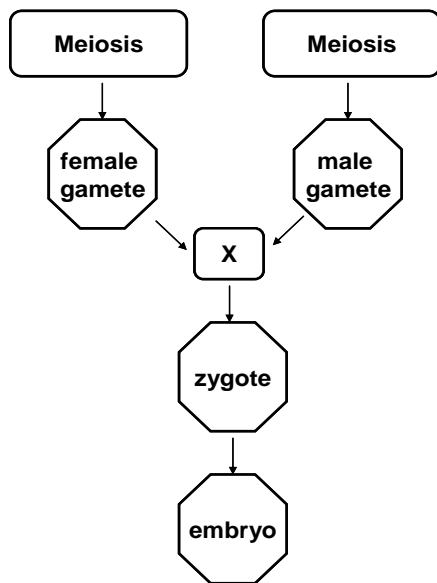
- A) pine
- B) rice
- C) rose
- D) bean
- E) coconut palm

23. Which of the following is found in an unusual high proportion in cells of cardiac muscle?

- A) lysosomes
- B) mitochondria
- C) mRNA
- D) Golgi apparatus
- E) cell nucleus

24. Which of the following organisms would most likely be found at the top of an energy pyramid?

- A) clams
- B) sardines
- C) sharks
- D) kelp
- E) mollusca



25. The diagram above shows a reproductive process. Which of the following labels is marked as (X)?

- A) fertilization
- B) ovum
- C) sperm
- D) fetus
- E) gametogenesis

26. Echinococcosis disease is caused by:

- A) Echinococcus
- B) Diphyllobotrium
- C) Trichinella
- D) Enterobius
- E) Fasciola

27. Which of the following organisms conduct ethanol fermentation?

- A) yeasts
- B) bears
- C) spiders
- D) barley
- E) mushrooms

28. Steroids are not:

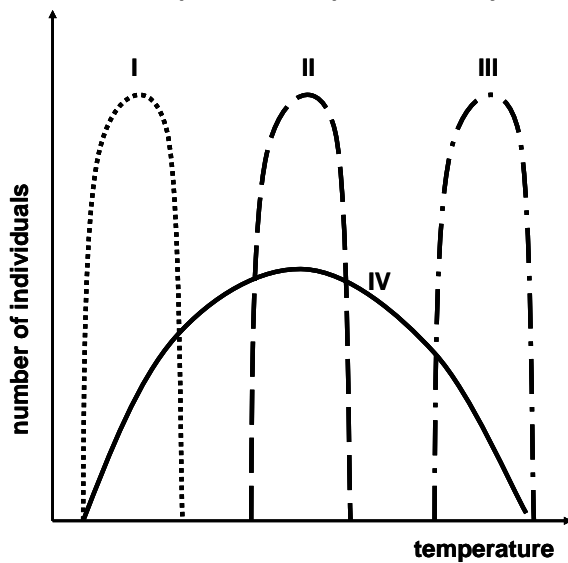
- A) sex hormones
- B) cholesterol
- C) corticosteroids
- D) bile acids
- E) vitamin C



29. Which of the following is the right order of the four stages of food processing?

- A) digestion, ingestion, absorption, elimination
- B) ingestion, digestion, elimination, absorption
- C) ingestion, digestion, absorption, elimination
- D) digestion, ingestion, absorption, elimination
- E) absorption, elimination, digestion, ingestion

30. The graph below shows the range of temperature tolerance of four different animal species. Which of this species is adapted to a very wide range of environmental temperature?



- A) I
- B) II
- C) III
- D) IV
- E) I, II, III

31. Which of the following statements is true?

- I. The pH of urine is close to neutral (7).
- II. Urine is a liquid product of the body that is secreted by urinary system.
- III. Lack of vasopressin in the blood increases diuresis.

- A) I
- B) II
- C) I, II, III
- D) III
- E) I, III



32. Which hormone is produced by the placenta?

- A) progesterone
- B) insulin
- C) thyroxin
- D) melatonin
- E) glucagon

33. Which of the following is not characteristic for mammals?

- A) mammary glands
- B) hair
- C) cold-blooded
- D) three middle ears bones
- E) sweat glands

34. All of the members of a particular species that live in one area are called a(an):

- A) biotope
- B) community
- C) ecosystem
- D) biosphere
- E) population