

亞洲大學

96 學年度轉學招生考試試題紙

學系別	考試科目	考試日期	時 間	備註
大學日間部各學系二年級	普通生物學(A)	96.07.23	10:30-12:10	共七頁

(A). MULTIPLE CHOICE.

Please select the best answer. (2 points/question, 80 points in total)

1. How do cells capture the energy released by cellular respiration?
 A) They produce ATP. B) They produce glucose.
 C) They store it in molecules of carbon dioxide.
 D) The energy is coupled to oxygen. E) None of the choices are correct.

2. Oxidation is the _____, and reduction is the _____.
 A) gain of electrons . . . loss of electrons B) loss of electrons . . . gain of electrons
 C) loss of oxygen . . . gain of oxygen D) gain of oxygen . . . loss of oxygen
 E) gain of protons . . . loss of protons

3. The summary equation for photosynthesis is
 A) $6 \text{ CO}_2 + 6 \text{ H}_2\text{O} + \text{sunlight} \rightarrow \text{C}_6\text{H}_{12}\text{O}_6 + 6 \text{ O}_2$
 B) $\text{C}_5\text{H}_{12}\text{O}_6 + 6 \text{ O}_2 + \text{sunlight} \rightarrow 5 \text{ CO}_2 + 6 \text{ H}_2\text{O}$,
 C) $\text{C}_6\text{H}_{12}\text{O}_6 + 6 \text{ O}_2 + \text{sunlight} \rightarrow 6 \text{ CO}_2 + 6 \text{ H}_2\text{O}$.
 D) the same as the equation for glycolysis written in reverse.
 E) None of the choices are correct.

4. The light reactions occur in the _____ while the Calvin cycle occurs in the _____.
 A) stroma . . . thylakoid membranes B) stroma . . . nucleus
 C) cytoplasm . . . stroma D) cytoplasm . . . thylakoid membrane
 E) thylakoid membranes . . . stroma

5. The creation of offspring carrying genetic information from just a single parent is called
 A) asexual reproduction. B) sexual reproduction. C) a life cycle.
 D) regeneration. E) None of the choices are correct.

6. Compared to prokaryotic chromosomes, *eukaryotic* chromosomes
 A) are simpler. B) are circular in structure. C) include fewer proteins.
 D) are copied immediately after cell division. E) are housed in a membrane-enclosed nucleus.

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7. During which phase of mitosis does the nuclear envelope re-form and the nucleoli reappear? A) anaphase B) metaphase C) prophase D) interphase E) telophase				
8. Alleles of a gene are found at _____ chromosomes. A) the same locus on homologous mitochondrial B) the same locus on heterologous C) different loci on homologous D) different loci on heterologous E) the same locus on homologous				
9. Mendel's law of independent assortment states that A) chromosomes sort independently of each other during mitosis and meiosis. B) genes sort independently of each other in animals but not in plants. C) independent sorting of genes produces polyploid plants under some circumstances. D) each pair of alleles segregates independently of the other pairs of alleles during gamete formation. E) None of the choices are correct.				
10. When a T2 bacteriophage infects an E. coli cell, what part of the phage enters the bacterial cytoplasm? A) the whole phage B) only the RNA C) only the DNA D) the protein "headpiece" and its enclosed nucleic acid E) the tail fibers				
11. If one strand of DNA is CGGTAC, the corresponding strand would be A) GCCTAG. B) CGGTAC. C) GCCAUC. D) TAACGT. E) GCCATG.				
12. Which one of the following sequences best describes the flow of information when a gene directs the synthesis of a cellular component? A) RNA → DNA → RNA → protein B) DNA → RNA → protein C) protein → RNA → DNA D) DNA → amino acid → RNA → protein E) DNA → tRNA → mRNA → protein				
13. The transfer of genetic information from DNA to RNA is called A) translation. B) transcription. C) initiation. D) elongation. E) promotion.				

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<p>14. Which one of the following is not a function of tRNA?</p> <p>A) joining to only one specific type of amino acid B) recognizing the appropriate codons in mRNA C) transferring nucleotides to rRNA D) helping to translate codons into amino acids E) All of the choices are functions of tRNA.</p> <p>15. Which one of the following best describes the sequence of events of translation?</p> <p>A) codon recognition → translocation → peptide bond formation → termination B) peptide bond formation → codon recognition → translocation → termination C) codon recognition → peptide bond formation → translocation → termination D) codon recognition → peptide bond formation → termination → translocation E) peptide bond formation → translocation → codon recognition → termination</p> <p>16. What kind of virus is HIV (the AIDS virus)?</p> <p>A) a herpes virus B) a paramyxovirus C) a retrovirus D) a complex virus E) a provirus</p> <p>17. Transformation</p> <p>A) is the direct transfer of DNA from one bacterium to another. B) occurs when a bacterium acquires DNA from the surrounding environment. C) is the result of crossing over. D) occurs when a phage transfers bacterial DNA from one bacterium to another. E) requires DNA polymerase.</p> <p>18. The lac operon in E. coli</p> <p>A) prevents lactose-utilizing enzymes from being expressed when lactose is absent from the environment. B) coordinates the production of tryptophan-utilizing enzymes when it is present. C) allows the bacterium to resist antibiotics in the penicillin family. D) regulates the rate of binary fission. E) uses activators to initiate the production of enzymes that break down lactose.</p>				

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<p>19. RNA splicing involves the</p> <p>A) addition of a nucleotide "cap" to the molecule. B) addition of a nucleotide "tail" to the molecule. C) removal of introns from the molecule. D) removal of exons from the molecule. E) addition of introns to the molecule.</p> <p>20. A homeotic gene</p> <p>A) turns on the genes necessary for synthesis of proteins. B) serves as a master control gene that functions during embryonic development by controlling the developmental fate of groups of cells. C) represses gene transcription. D) produces a product that controls the transcription of other genes. E) All of the choices are correct.</p> <p>21. A gene that can cause cancer when present in a single copy in a cell is called a(n)</p> <p>A) oncogene. B) enhancer gene. C) silencer gene. D) carcinogen. E) proto-oncogene.</p> <p>22. Restriction enzymes</p> <p>A) edit proteins. B) cut DNA at specific sites. C) stop transcription. D) bind together strands of DNA. E) bind RNA fragments together.</p> <p>23. In the process of human gene cloning using recombinant plasmids, the bacterial plasmid</p> <p>A) functions as a vector. B) is the source of the gene to be cloned. C) is cultured inside the human cell which contains the gene to be cloned. D) is used to insert the human gene into the bacterial chromosome. E) None of the choices are correct.</p> <p>24. A vaccine works by</p> <p>A) inhibiting bacterial replication. B) stimulating the immune system. C) inhibiting viral replication. D) preventing the translation of mRNA. E) stimulating the secretion of insulin.</p>				

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<p>25. Digestion is the A) absorption of nutrients. B) conversion of glycogen to glucose. C) chemical and mechanical breakdown of food. D) churning of food in the stomach and intestine. E) conversion of amino acids to proteins.</p> <p>26. The process of moving air in and out of the lungs is called A) gas exchange. B) diffusion. C) breathing. D) internal respiration. E) air metabolism.</p> <p>27. In an open circulatory system, A) there is no heart. B) there is no blood. C) there are no blood vessels. D) blood flows out of the body. E) there is no distinction between blood and interstitial fluid.</p> <p>28. When you cut yourself, the damaged cells immediately release which of the following chemical alarm signals? A) interferon B) complement C) histamine D) antihistamine E) anti-interferon</p> <p>29. Antibodies are A) amino acids. B) lipids. C) carbohydrates. D) proteins. E) nucleic acids.</p> <p>30. The tree in your backyard is home to two cardinals, a colony of ants, a wasp's nest, two squirrels, and millions of bacteria. Together, all of these organisms represent A) a species. B) a community. C) a population. D) an ecosystem. E) the biosphere.</p> <p>31. Which of the following is/are properties of life? A) a complex organization B) the ability to take in energy and use it C) the ability to respond to stimuli from the environment D) the ability to reproduce E) All of the choices are correct.</p> <p>32. The four most common elements in living organisms are A) C, H, O, Fe. B) C, H, O, Na. C) C, H, O, N. D) C, N, O, Na. E) Fe, N, O, Ca.</p>				

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<p>33. Which one of the following is an amino group? A) -OH B) -NH₂ C) -COOH D) -CO E) -CH₃</p> <p>34. A disaccharide forms when A) two monosaccharides join by dehydration synthesis. B) two starches join by dehydration synthesis. C) two monosaccharides join by hydrolysis. D) two starches join by hydrolysis. E) a starch and a monosaccharide join by dehydration synthesis.</p> <p>35. Cells that lack a membrane-bound nucleus are _____ cells. A) plant B) animal C) prokaryotic D) eukaryotic E) fungal</p> <p>36. During cell reproduction, chromatin fibers coil up into structures called A) ribosomes. B) lysosomes. C) peroxisomes. D) chromosomes. E) nucleoli.</p> <p>37. The Golgi apparatus A) is composed of stacks of membranous vesicles that are continuous with one another. B) stores, modifies, and packages proteins. C) strings together amino acids to produce proteins. D) forms fats from glycerols and fatty acids. E) is the site of carbohydrate breakdown.</p> <p>38. The function of chloroplasts is A) cellular respiration. B) intracellular transport of proteins. C) lipid synthesis. D) photosynthesis. E) intracellular digestion.</p> <p>39. Most of a cell's enzymes are A) lipids. B) proteins. C) amino acids. D) nucleic acids. E) carbohydrates.</p> <p>40. Osmosis can be defined as A) the diffusion of water. B) the diffusion of nonpolar molecules. C) active transport. D) the diffusion of a solute. E) endocytosis.</p>				

※ 試題請隨卷繳回

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(B). Please explain the following terms: (5 points/term, 20 points in total)

1. Biotechnology
2. Genetically modified organisms
3. Global warming
4. Embryonic stem cells