

台灣聯合大學系統九十二學年度轉學生入學試題卷

類組：A-1

年級：2 節次：1 科目：普通生物學

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I. Term explanation (3 points each)

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|---------------|---------------|---------------|---------------|--------------|------------------|
| 1. Nucleotide | 2. Nucleoside | 3. Nucleus | 4. Nucleosome | 5. Nucleoid | 6. Nucleolus |
| 7. Centriole | 8. Centromere | 9. Centrosome | 10. Ribosome | 11. Ribozyme | 12. Ribonuclease |

II. Indicate the site of the following reactions occurs inside a cell (本大題請以英文作答，以中文作答者，不予計分 2 points/each)

- | | | |
|----------------|------------------------------|-----------------------|
| 1) Glycolysis | 2) Pyruvate decarboxylation | 3) Electron transport |
| 4) Krebs cycle | 5) Light-dependent reactions | 6) Calvin cycle |

III. Choose ONE most appropriate answer (2 points each)

- Which of the following is not required for evolution to take place?
A. natural selection B. adaptation C. genetic variation D. change over time E. artificial breeding
- A researcher is investigating the MHC protein. That means she is
A. studying proteins that are similar to G proteins and that pass through the plasma membrane seven times
B. studying proteins that provide surface markers for distinguishing between "self cells" and "non-self cells"
C. studying proteins that are commonly used to detect human blood groups (A, B, AB, and O)
D. studying proteins that act as secondary messengers conveying signal molecule messages to target cells deep within the cytoplasm
- All of the following are secreted by the anterior pituitary gland except
A. oxytocin B. prolactin C. thyroid-stimulating hormone
D. melanocyte-stimulating hormone E. adrenocorticotrophic hormone
- Which of the following is not a nonspecific defense of the vertebrate system?
A. cells that ingest invading microbes B. antimicrobial proteins that kill pathogens C. immunoglobulin synthesis
D. the inflammatory response E. the temperature response
- Hormones are all of the following except
A. they are chemical substances produced in the organism B. they are produced in small, often minute quantities
C. they are produced in one part of the organism and transported to another
D. their effect is not dependent on the nature of the tissue
E. they can stimulate certain physiological processes while inhibiting others
- All of the following about flagella of bacteria are true except
A. they are used in locomotion B. they are used in feeding
C. they have similar function as mitochondria of eukaryotic cells D. there may be more than one per cell
E. they are attached in between the cell wall and the membrane
- Microtubules become shorter, pulling chromatids to the ends of the spindle, during
A. anaphase B. interphase C. metaphase D. prophase E. telophase
- Some of the functions of the eukaryotic organelles are performed in bacteria by the
A. plasma membrane B. nucleoid area C. cell wall D. capsule E. flagella/cilia
- Lysosomes are vesicles bounded by membranes that contain oxidative enzymes. Their functions include all of the following except the
A. catalyze the rapid breakdown of macromolecules B. break down old organelles
C. eliminate substances taken into the cell by phagocytosis D. participate in the phenomenon of selective cell death
E. allow bacteria to pass through unaffected



注意：背面有試題

10. When an RNA virus invades a cell, it typically first
- causes the cell to make many copies of virus RNA
 - causes the host cell to start dividing
 - closes the channels in the membrane
 - inserts the RNA into a host chromosome
 - makes a DNA copy of the viral RNA
11. When a cell biologist adds a chemical to a cell culture that prevents DNA from wrapping around histones, which of the following is prevented?
- DNA methylation is prevented because no methyl groups can attach because of phosphate group repulsion.
 - RNA polymerase formation is prevented because the DNA ligase will not function.
 - Operon formation is prevented.
 - Nucleosome formation is prevented.
 - Zinc fingers motifs are prevented, which further prevent transcription initiation.
12. The gene pool includes
- all of the of fitness within a population
 - all of the of individuals within a population
 - all of the of mutations within a population
 - all of the of adaptations within a population
 - all of the alleles of genes within a population
13. The gap into which neurotransmitters are released by the arrival of an impulse is called
- gap junction
 - synaptic cleft
 - postsynaptic membrane
 - presynaptic membrane
 - impulse channel
14. Which of the following is not a solute found in the plasma?
- metabolites, wastes and hormones
 - ions
 - albumins
 - collagen
 - globulins
15. Let P = purple flowers and p = white, and T = tall plants and t = dwarf. What combinations of gametes could be produced by a heterozygote for both the traits?
- PpTt only
 - Pp, Tt
 - P, p, T, t
 - PT, Pt, pT, pt
 - infertile, no gametes produced
16. The main difference in the embryonic development of plants and animals is:
- A plant embryo will develop normally even if it is removed from its ovule.
 - A plant embryo will not develop if it is removed from its ovule.
 - The pattern of plant-development is not an expression of the zygote genotype.
 - The development in animals is not affected by specific chemical signals in the egg.
 - The pattern of plant-development is unaffected by environment.



IV. Please answer the following questions.

- What is the endosymbiont theory? What is the evidence supporting this theory? (15 points)
- A woman is married for the second time. Her first husband has blood type A and her child by that married has type O. Her new husband has type B blood, and when they have a child its blood type is AB. What is the woman's blood genotype and blood type? (5 points)