

# 大葉大學 95 學年度轉學招生考試試題紙

系 組 別	日 \ 第二部	年級	考 試 科 目 (中文名稱)	考試日期	節次	備註 共 三 頁
生物資源系	日	二	普通生物學	8月7日	三	P2-1

註：考生可否攜帶計算機或其他資料作答，請在備註欄註明（如未註明，一律不准攜帶） 11:00 ~ 12:30

**選擇題：** 每題有 4 個備選答案，請選出一個正確答案，答錯不倒扣，請依題號於答案卡上畫記作答。(第 1~20 題每題 3 分，第 21~30 題每題 4 分合計 100 分)

- 1) Which of the following terms includes all of the others?
  - A) species diversity
  - B) biodiversity
  - C) genetic diversity
  - D) ecosystem diversity
  
- 2) How many grams of acetic acid ( $C_2H_4O_2$ ) would you use to make 10 L of a 0.1 M aqueous solution of acetic acid?
  - A) 10.0 g
  - B) 0.1 g
  - C) 6.0 g
  - D) 60.0 g
  
- 3) Which of the following pairs of base sequences could form a short stretch of a normal double helix of DNA?
  - A) 5'-purine-pyrimidine-purine-pyrimidine-3' with 3'-purine-pyrimidine-purine-pyrimidine-5'
  - B) 5'-A-G-C-T-3' with 5'-T-C-G-A-3'
  - C) 5'-G-C-G-C-3' with 5'-T-A-T-A-3'
  - D) 5'-A-T-G-C-3' with 5'-G-C-A-T-3'
  
- 4) Which of the following relationships between cell structures and their respective functions is *not* correct?
  - A) cell wall: support, protection
  - B) chloroplasts: chief sites of cellular respiration
  - C) chromosomes: genetic control information
  - D) ribosomes: site of protein synthesis
  
- 5) Why is ATP an important molecule in metabolism?
  - A) Its hydrolysis provides an input of free energy for exergonic reactions.
  - B) It provides energy coupling between exergonic and endergonic reactions.
  - C) Its terminal phosphate group contains a strong covalent bond that when hydrolyzed releases free energy.
  - D) A and B only
  
- 6) Which type of organism obtains energy by metabolizing molecules produced by other organisms?
  - A) autotrophs
  - B) heterotrophs
  - C) decomposers
  - D) B and C
  
- 7) What are the products of the light reactions that are subsequently used by the Calvin cycle?
  - A) oxygen and carbon dioxide
  - B) carbon dioxide and RuBP
  - C) water and carbon
  - D) ATP and NADPH
  
- 8) All of the following occur during mitosis *except* the
  - A) condensing of chromosomes.
  - B) uncoupling of chromatids at the centromere.
  - C) formation of a spindle.
  - D) synthesis of DNA.
  
- 9) A cross between homozygous purple-flowered and homozygous white-flowered pea plants results in offspring with purple flowers. This demonstrates
  - A) the blending model of genetics.
  - B) true-breeding.
  - C) dominance.
  - D) a dihybrid cross.
  
- 10) Which of the following statements does not apply to the Watson and Crick model of DNA?
  - A) The two strands of the DNA form a double helix.
  - B) The distance between the strands of the helix is uniform.
  - C) The framework of the helix consists of sugar-phosphate units of the nucleotides.
  - D) The two strands of the helix are held together by covalent bonds.
  
- 11) Which of the following statements concerning the eukaryotic chromosome is *false*?
  - A) It is composed of DNA and protein.
  - B) The nucleosome is the most basic structural subunit.
  - C) The number of genes on each chromosome is different in different cell types.
  - D) It consists of a single linear molecule of double-stranded DNA.
  
- 12) Which of the following best describes the complete sequence of steps occurring during *every* cycle of PCR?
  1. The primers hybridize to the target DNA.
  2. The mixture is heated to a high temperature to denature the double stranded target DNA.
  3. Fresh DNA polymerase is added.
  4. DNA polymerase extends the primers to make a copy of the target DNA.
  - A) 2, 1, 4
  - B) 1, 3, 2, 4
  - C) 3, 4, 1, 2
  - D) 3, 4, 2
  
- 13) Which of the following is (are) involved in embryonic development?
  - A) cell division
  - B) cell differentiation
  - C) morphogenesis
  - D) A, B, and C
  
- 14) In evolutionary terms, the more closely related two different organisms are, the
  - A) more similar their habitats are.
  - B) less similar their DNA sequences are.
  - C) more recently they shared a common ancestor.
  - D) less likely they are to be related to fossil forms.
  
- 15) In a population with two alleles, *A* and *a*, the frequency of *A* is 0.2. Organisms that are homozygous for *A* die before reaching sexual maturity. In five generations, what would be the frequency of individuals with *aa* genotypes?
  - A) 0.2
  - B) 0.4
  - C) 0.6
  - D) 0.8

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生物資源系			日	二	普通生物學	8月7日	三	P2-2

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- A) less than 0.04
- B) 0.04
- C) 0.32
- D) greater than 0.64

- 16) A defining characteristic of allopatric speciation is
- A) the appearance of new species in the midst of old ones.
  - B) asexually reproducing populations.
  - C) geographic isolation.
  - D) artificial selection.

- 17) *Panthera* is a taxon at which level?
- A) order
  - B) family
  - C) phylum
  - D) genus

- 18) How would the chief hypothesis concerning the origin of the ER and Golgi apparatus be described?
- A) endosymbiosis
  - B) serial endosymbiosis
  - C) genetic annealing
  - D) infolding of the plasma membrane

- 19) Plant-like photosynthesis that releases O<sub>2</sub> occurs in
- A) cyanobacteria.
  - B) chlamydiae.
  - C) archaea.
  - D) actinomycetes.

- 20) The following are all adaptations to life on land *except*
- A) rosette cellulose-synthesizing complexes.
  - B) cuticles.
  - C) tracheids.
  - D) reduced gametophyte generation.

- 21) Which of the following is an ongoing trend in the evolution of land plants?
- A) decrease in the size of the leaf
  - B) reduction of the gametophyte phase of the life cycle
  - C) elimination of sperm cells or sperm nuclei
  - D) increasing reliance on water to bring sperm and egg together

- 22) The number of legs an insect has, or the number of vertebrae in a vertebral column, or the number of joints in a digit (such as a finger) are all strongly influenced by \_\_\_\_\_ genes.
- A) haploid
  - B) introns within
  - C) heterotic
  - D) *Hox*

- 23) Which of the following is *not* a shared characteristic of all chordates?
- A) pharyngeal clefts
  - B) post-anal tail
  - C) notochord
  - D) four-chambered heart

- 24) Active transport involves all of the following *except* the
- A) slow movement through the lipid bilayer of a membrane.
  - B) pumping of solutes across the membrane.
  - C) hydrolysis of ATP.
  - D) transport of solute against a concentration gradient.

- 25) External stimuli would be received most quickly by a plant cell if the receptors for signal transduction were located in the
- A) cell membrane.
  - B) cytoplasmic matrix.
  - C) endoplasmic reticulum.
  - D) nuclear membrane.

- 26) The body's automatic tendency to maintain a constant internal environment is termed
- A) negative feedback.
  - B) physiologic control.
  - C) homeostasis.
  - D) static equilibrium.

- 27) All of the following represent adaptations by terrestrial animals to drying conditions *except*
- A) anhydrobiosis.
  - B) salt glands.
  - C) efficient kidneys.
  - D) impervious surfaces.

- 28) Which of the following statements about hormones is *incorrect*?
- A) They are produced by endocrine glands.
  - B) They are modified amino acids, peptides, or steroid molecules.
  - C) They are carried by the circulatory system.
  - D) They are used to communicate between different organisms.

- 29) How would the dispersion of humans in Taiwan best be described?
- A) dense
  - B) clumped
  - C) random
  - D) intrinsic

- 30) To recycle nutrients, the minimum an ecosystem must have is
- A) producers.
  - B) producers and decomposers.
  - C) producers, primary consumers, and decomposers.
  - D) producers, primary consumers, secondary consumers, and decomposers.