

國立臺灣大學九十三年學年度轉學生入學考試試題

科目：普通動物學

題號：41

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※請在答案卷上標明題號依序作答

一、選擇題(每題 2 分)

- Which of the following statements about G-protein is incorrect?
(A) When a GTP is replaced by a GDP on a G-protein, the G-protein changes its conformation and becomes activation
(B) G-proteins having GTPase activities can convert GTP to GDP
(C) G-protein can serve as receptor to bind with specific ligand
(D) The activated G-protein can directly activate specific relay proteins
- Repolarization of a neuron membrane after an action potential is due to
(A) Na⁺ gates opening and K⁺ gates opening (B) Na⁺ gates closing and K⁺ gates opening
(C) Na⁺ gates closing and K⁺ gates closing (D) Na⁺ gates opening and K⁺ gates closing
- Which of the following molecules does not involve into antibody formation?
(A) interleukin I (B) T cell receptor (C) CD 8 molecules (D) MHC II molecules
- Air rushes into the lungs of humans during inspiration because
(A) rib muscles relax (B) pressure in the alveoli increases
(C) the volume of the thoracic cavity increases
(D) the diaphragm contracts and pushes upward on the chest cavity
- Breathing is usually regulated by
(A) the lung contraction (B) the concentration of RBCs
(C) CO₂ concentration in the blood (D) the hemoglobin concentration in RBCs
- If a molecule of CO₂ released into the blood in your left toe travels out of your nose, it must pass through all of the following structures except
(A) right atrium (B) pulmonary vein (C) right ventricle (D) alveolus
- What is stratified cuboidal epithelium composed of?
(A) several layers of boxlike cells
(B) a layer of ciliated, mucus-secreting cells
(C) an irregularly arranged layer of pillar-like cells
(D) a tight layer of square cells attached to a basement membrane
- What is peristalsis?
(A) A process of fat emulsification in the small intestine
(B) Voluntary control of the rectal sphincters regulating defecation
(C) The transport of nutrients to the liver through the hepatic portal vein
(D) Smooth muscle contractions that move food through the alimentary canal
- Hair cells can be found in all of the following sites except
(A) the retina of cats (B) the lateral line system of fish
(C) the organ of Corti in humans (D) the semicircular canals in birds
- Focusing in the mammalian eyes is regulated by
(A) opening of the pupil (B) moving the lens forward or backward
(C) lateral inhibition of horizontal cells (D) contraction of ciliary muscles
- Which of the following receptor is incorrectly paired with the type of energy it transduces?
(A) chemoreceptor - gustatory (B) nociceptors - olfactory
(C) mechanoreceptor - sound (D) infrared receptor - heat
- Calcium pumps are important on the regulation of intracellular calcium ion concentration. They locate in several membranes except
(A) mitochondria (B) endoplasmic reticulum (C) plasma membrane (D) Golgi apparatus
- The three germ layers in a vertebrate are formed after which one developmental stage?
(A) cell cleavage (B) neurulation (C) gastrulation (D) organogenesis
- Which of the following statements about an antibody is correct?
(A) The antigen-binding site on antibody is called epitope
(B) The light chain and the heavy chain of an antibody are connected by J (joint) region
(C) The human antibodies can be distinguished as IgA, IgB, IgD, IgE, or IgG
(D) Both of the light chain and the heavy chain have antigen-binding site

接背面

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15. Which of the following materials is the direct energy source of vertebrate muscle cells?
(A) cAMP (B) glycogen (C) creatine phosphate (D) adenosine triphosphate
16. In human, spermatogenesis and oogenesis are different, because
(A) spermatogenesis begins before birth
(B) oogenesis begins at the onset of sexual maturity
(C) spermatogenesis is not complete until fertilization occurs
(D) oogenesis produces one functional gamete, whereas spermatogenesis produces four functional spermatozoa
17. What are the common characters among muscles, nerves and glands?
I) they synapse with neurons II) they are referred to as postsynaptic cells
III) they are target cells
(A) I only (B) I and II (C) II and III (D) I, II, and III
18. Which of the following normally contains proteins?
(A) loop of Henle (B) collecting duct (C) proximal tubule (D) Bowman's capsule
19. All of the followings belong to torpor behavior except
(A) sleep (B) aestivation (C) hibernation (D) evaporation
20. A goiter is associated with improper function of
(A) adrenal (B) thyroid (C) pancreas (D) parathyroid
21. Which of the following structures is incorrectly paired with its normal function?
(A) epididymis - storage of sperm (B) oviduct - embryonic implantation
(C) placenta - progesterone producing (D) prostate gland - add alkaline substance to semen
22. After you drank too much alcohol, you will feel quite thirsty. This could be due to
(A) your liver damage (B) decrease of ADH releasing
(C) dehydration of your stomach (D) a decrease in the osmolarity of the blood
23. During the menstrual cycle, what is the main source of progesterone in woman?
(A) placenta (B) corpus luteum (C) anterior pituitary (D) developing follicle
24. Which of the following fibers does not belong to connective tissue?
(A) elastin fibers (B) fibrin fibers (C) collagenous fibers (D) spindle fibers
25. The correct sequence of human intestine is
(A) duodenum → ileum → jejunum → colon → cecum → rectum
(B) duodenum → jejunum → ileum → colon → cecum → rectum
(C) duodenum → jejunum → colon → ileum → cecum → rectum
(D) duodenum → jejunum → ileum → cecum → colon → rectum
26. The word *science* is derived from a Latin verb meaning
(A) to know (B) to listen (C) to study (D) to do experiments
27. The polysaccharide cellulose is a major component of the tough plant cell walls and is made of by the glucose monomers in _____ configuration.
(A) α (B) β (C) γ (D) δ
28. Meiotic error that will produce gametes with an abnormal chromosome number is called
(A) junction (B) disjunction (C) nondisjunction (D) non-junction
29. Okazaki fragments formed during DNA replication is also named as _____ strand.
(A) continuous (B) primer (C) leading (D) lagging
30. The structure of HIV (human immunodeficiency virus), the virus that caused AIDS, contains all of the followings EXCEPT
(A) DNA (B) RNA (C) envelope (D) capsid
31. Which of the following would provide the best information for distinguishing phylogenetic relationships between several species that are almost identical in anatomy?
(A) molecular comparisons of DNA and amino acid sequences
(B) the fossil record (C) homologous structures (D) comparative anatomy
32. The largest unit in which gene flow is possible is a
(A) population (B) species (C) genus (D) phylum.

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33. Which of the following subdivisions of the animal kingdom encompasses all the others in the list?
(A) coelomates (B) protostomes (C) bilateria (D) deuterostomes
34. Which of the following characteristics is probably most responsible for the incredible diversification of insects on land?
(A) exoskeleton (B) segmentation (C) tracheal system (D) flight
35. A land snail, a clam, and an octopus all share
(A) gills (B) a mantle (C) a radula (D) distinct cephalization
36. Which of the following is NOT thought to be ancestral to human?
(A) a bird (B) a reptile (C) an amphibian (D) a bony fish
37. Most of our cells are surrounded by
(A) blood (B) interstitial fluid (C) serum (D) plasma
38. The current size of the human population is closer to
(A) 6 million (B) 3 billion (C) 6 billion (D) 10 billion
39. Predation and parasitism are similar in that both can be characterized as ____ interactions.
(A) +/+ (B) -/- (C) +/0 (D) +/-
40. One of the lessons from a pyramid of production is that
(A) production efficiency is highest for primary consumers
(B) only one-half of the energy in one trophic level is passed on to the next level
(C) eating grain-fed beef is an inefficient means of obtaining the energy trapped by photosynthesis
(D) most of the energy from one trophic level is incorporated into the biomass of the next level

二、是非題(每題 2 分)

1. A living organism is an open system since it exchange materials and energy with its surroundings.
2. The transcription of a eukaryotic gene results in pre-mRNA which is general termed as primary transcript for an initial RNA transcript.
3. The operon that regulates synthesis either repressible or inducible enzymes in *E. coli* is composed of the operator the promoter, and the structural genes.
4. Most systematists now agree that the animal kingdom probably evolved from a colonial, flagellated protist.
5. The pharyngeal slits function as suspension-feeding devices in many invertebrate chordates.
6. The dorsal, hollow nerve cord is one of the anatomical features of the phylum Chordata.
7. The water vascular system is unique to echinoderms.
8. A population is a group of individuals of a single species that simultaneously occupy the same general area.
9. Introduced species are those that humans move from the species' native locations to new geographic regions.
10. Toxins can become concentrated in successive trophic levels of food webs, a process called biological magnification.

試題必須隨卷繳回