

選擇 20%

1. Which of the following combinations of phylum and description is *incorrect*?
 - A. Echinodermata – branch bilateria, coelom from archenterons
 - B. Nematoda – roundworms, pseudocoelomate
 - C. Platyhelminthes – flatworms, gastrovascular cavity, acoelomate
 - D. Porifera – gastrovascular cavity, mouth from blastopore
 - E. Chorda – pharynx slit, spinal cord

2. In land snail, a clam, and octopus all share
 - A. a mantle
 - B. embryonic torsion
 - C. radula
 - D. distinct cephalization
 - E. gill

3. Which one is *not* a characteristic of most members of the phylum Annelida?
 - A. hydrostatic skeleton
 - B. segmentation
 - C. metanephridia
 - D. pseudocoelom
 - E. closed circulatory system

4. Which one of the following groups is entirely extinct?
 - A. cephalochordates
 - B. lobe-finned fishes
 - C. agnathans
 - D. bird
 - E. placoderms

5. In addition to skeletal differences, cartilaginous fishes can be distinguished from bony fishes
 - A. presence of spiral valve in intestine
 - B. presence of eardrums
 - C. presence paired fins
 - D. gill
 - E. dorsal fin

6. Which is the most early embryo stage?
 - A. blastula
 - B. morula
 - C. gastrula
 - D. neurula
 - E. larva

7. Which one is *not* vertebrate?
 - A. placoderms
 - B. lancelets
 - C. aves
 - D. amphibia
 - E. reptilia

8. Which one is *not* amniote?
 - A. aves
 - B. frog
 - C. crocodilians
 - D. turtle
 - E. dinosaurs

(背面仍有題目,請繼續作答)

9. Which one is **not** jaw bone?
A. articular
B. quadrate
C. angular
D. dentary
E. squamosal
10. Which of the following structures or substances is *incorrectly* paired with a tissue?
A. Haversian system – bone
B. Platelets – blood
C. Fibroblast – skeleton muscle
D. Chondroitin sulfate – cartilage
E. Basement membrane - epithelium
11. Which one is the advance body plan?
A. acoelomate
B. pseudocoelomate
C. radiata
D. deuterostomes
E. prostomes
12. Which of the following structures or taxa is *incorrectly* paired with a tissue?
A. Buxdu- Nematocyst
B. Mollusk – radula
C. Arthropoda – cuticle
D. Echinoderm- water vascular system
E. Nematoda- pupa
13. Which is not extraembryonic membrane?
A. amnion
B. allantois
C. chroin
D. york sac
E. fertilizer membrane
14. Intercalated disc belongs to
A. smooth muscle
B. cardiac muscle
C. skeletal muscle
D. all of above
E. none of above
15. A population that has a relatively low r value will most likely
A. have large clutch sizes with relatively small offspring
B. be found in environments that are highly variable
C. have an early age of first reproduction and a short generation time
D. produce fewer offspring with more competitive capabilities
E. be regulated by density-independent factors
16. A population's carrying capacity is
A. the number of individuals in that population
B. reached when the number of deaths exceeds the number of births
C. inversely related to r_{max}
D. the population size that can be supported by available resources for that species within the habitat
E. set at 8 billion for the human population

17. Which of the following is a result of biological magnification?
- A. Top-level predators may be most harmed by toxic environmental chemicals.
 - B. DDT has spread throughout every ecosystem and is found in almost every organism.
 - C. The greenhouse effect will be most significant at the poles.
 - D. Energy is lost at each trophic level of a food chain
 - E. Many nutrients are being removed from agricultural lands and shunted into aquatic ecosystems.

18. Populations with low effective population sizes are susceptible to all of the following problems *except*

- A. inbreeding
- B. reduced heterozygosity
- C. bottlenecking
- D. genetic drift
- E. adaptive radiation

19. Complete metamorphosis is advantageous for all of the following reasons *except*

- A. it permits a larval stage specialized for feeding and growth
- B. it permits an adult stage specialized for dispersal and reproduction
- C. pupae can suspend development and become dormant during periods of environmental stress
- D. adults can be more mobile, improving the probability of locating a mate
- E. feeding adults can disperse to new food resources, thus avoiding competition with larvae

20. Which of the following is *not* descriptive of deuterostomes?

- A. radial cleavage
- B. includes monkey
- C. formation of coelom from outpocketings of archenterons
- D. development of the blastopore into the mouth
- E. echinoderm and chordates

解釋名詞 50 %

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| 1. mast cells | 6. monocytes |
| 2. Hassall's corpuscles | 7. osteoid |
| 3. red pulp | 8. Clara cells |
| 4. taeniae coli | 9. Sharpey's fiber |
| 5. triad | 10. hydroxyapatite |

問答 30%

1. Describe the functional compartment of lymph node.
2. Describe the structure of pituitary gland.
3. Describe the meiosis in female germ cells.