

私立臺北醫學院九十學年度第一學期期中考試(試)題紙

| 系級 | 科目 | 授課教師 | 考試日期 | 學號 | 姓名 |
|----|-------|------|----------------|----|----|
| 醫一 | 普通生物學 | 蔡育惠 | 81年11月17日第 2 節 | | |

※①請注意本試題共 3 張。如發現頁數不足及空白頁或缺印，應當場請求補齊，否則缺少部份概以零分計。
 ②每張試題卷務必填寫(學號)、(姓名)。

I. Please choose **Only One Correct** answer for each question. Each question is worth 2 points.

- Which of the following of gene sequences is more significant to each plant species?
 - Low-copy-number DNA
 - Medium-copy-number DNA
 - High-copy-number DNA
 - transposon
- Which zone in a root structure can you see a branching root system?
 - The zone of elongation
 - The zone of maturation
 - The root cap
 - The zone of cell division
- "Three basic tissues" are formed when plant embryo is in globular stage. Which of the following is NOT one of the three basic tissues?
 - dermal tissue
 - ground tissue
 - vascular tissue
 - nutrient tissue
- Which hormone in the following, along with auxin, play a major role in stem elongation in most plants?
 - cytokinins
 - gibberellins
 - ethylene
 - oligosaccharins
- Which of the following is NOT included in the life history of complete metamorphosis insects?
 - pheromones
 - pupa
 - adult
 - larva
- Which of the following shows correct chromosome number?
 - spore---2n
 - gametophyte---1n
 - sperm---2n
 - sporophyte---1n
- Characteristics of living amphibians:
 - Lungs
 - Cutaneous respiration
 - Partially divided heart
 - All of the above
- Choose the **false** statement.
 - Sea star also called starfish.
 - Sea cucumbers are soft-bodied, sluglike animals with arms.
 - Sand dollars lack arms but have a five-part symmetry.
 - Brittle stars pull themselves along with their arms.

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|----|----|------|-----------------------|----|----|
| | | 蔡郁惠 | ____年____月____日第____節 | | |

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9. Which of the following animals lacks both tissues and symmetry?
 (A) sponges (B) Jellyfish (C) hydras (D) corals

10. How many species of the Mollusks are named as we know now?
 (A) 1,100 (B) 11,000 (C) 110,000 (D) 1,100,000

11. In a sexual reproduction, plants clone new individuals from portions of adult

 (A) stems (B) leaves (C) roots (D) ovules
 (E) all of the above

12. _____ adaptations have evolved to reduce water loss through transpiration.
 (1) Biochemical (2) Anatomical (3) Morphological
 (A) only 1 (B) both 1 and 2 (C) both 2 and 3
 (D) all of 1, 2 and 3 (E) all are false

II. Choose only ONE of the following two questions to answer. (8分)

1. What is potential chemical application of the stem cells?

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2. Please briefly design a protocol to engineer a harmless virus (the vaccine) for boosting human immune response against harmful herpes simplex infection.

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|-----|-----------|---------|-----------|-----|-----|
| 系 級 | 科 目 | 授 課 教 師 | 考 試 日 期 | 學 號 | 姓 名 |
| 醫 學 | 普 通 生 物 學 | 楊 良 友 | 年 月 日 第 節 | | |

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General Biology
Medicine

Final Exam January, 2002 Instructor: Liang-Yo Yang
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There are 20 questions in this part and each question is worth 2.5 points. Please choose **ONLY ONE BEST** answer for each question. Good luck and have a great winter break.

Please write down your answer to each corresponding question in the following table.

| | | | | |
|-----|-----|-----|-----|-----|
| 1. | 2. | 3. | 4. | 5. |
| 6. | 7. | 8. | 9. | 10. |
| 11. | 12. | 13. | 14. | 15. |
| 16. | 17. | 18. | 19. | 20. |

1. A shift in the membrane potential toward the positive direction and exceeding the threshold causes a(n)
 A. resting potential B. equilibrium potential C. action potential D. ion current
 E. electrolyte bias

2. Which of the following type of joint is not properly matched with its description?
 A. the sutures that join the bones of the skull: immovable joints
 B. cartilaginous joints of the spine: slightly movable joints
 C. efficient shock absorbers: slightly movable joints
 D. synovial joints: freely movable joints
 E. knee and hip joints: slightly movable joints

3. Organic phosphates, nerve gases, and insecticides produce continuous neuromuscular contraction leading up to death by
 A. binding of acetylcholine to receptors
 B. inhibiting the action of acetylcholinesterase
 C. decreasing the distance in the neuromuscular junction
 D. propagating a continuous action potential
 E. all of the above

4. Which of the following characteristics are true for an action potential?
 A. a threshold potential must be exceeded
 B. each stimulus produces a full potential or none at all
 C. during the refractory period it is less likely that another action potential can be produced
 D. a and b
 E. a, b, and c

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| | | 楊良友 | ____年____月____日第____節 | | |

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5. The chemical released by somatic motor neurons is
 A. noradrenaline B. adrenaline C. acetylcholine D. sarcocholine E. sarcoadrenaline

6. The use-dependent decrease in the ability of a muscle to generate force is called
 A. oxygen debt B. fatigue C. tetanus D. isotonic contraction E. hypertrophy

7. The process in which impulses jump from node to node is called
 A. going through channels B. interrupted signals C. incomplete transfer D. repolarization
 E. saltatory conduction

8. What is the association between tropomyosin and troponin molecules in resting striated muscle fibers?
 A. tropomyosin holds the troponin in place on the myosin
 B. troponin holds the tropomyosin in place on the myosin
 C. tropomyosin holds the troponin in place on the actin
 D. troponin holds the tropomyosin in place on the actin
 E. there is no known association

9. The effect of myelin and nodes of Ranvier is to make nerve impulses travel
 A. away from as well as toward the cell body B. faster C. in many directions at once
 D. laterally from axon to axon E. slower

10. Biogenic amines include
 A. epinephrine, norepinephrine B. dopamine, serotonin C. glycine and GABA D. a, b, and c
 E. a and b

11. The membrane of a resting neuron is much more permeable to which of the following ion than any other ion?
 A. Cl B. Ca⁺⁺ C. Na⁺ D. K⁺ E. H⁺

12. Muscles contract through addition of the contractions of the fibers, producing tension that may result in shortening of the muscle. This is called
 A. isometric contraction B. isotonic contraction C. tetanus D. twitch E. fatigue

13. An example of a muscle that contracts as a unit because of electrical coupling is
 A. cardiac muscle B. the limb muscles C. the muscles of the walls of the gut
 D. all of the above E. none of the above

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14. At the vertebrate neuromuscular junction, acetylcholine causes which of the following reactions?

- A. muscle fiber membrane is depolarized
- B. action potentials are generated in the muscle fiber
- C. stimulation of the entry of Ca^{+2} and muscle fiber contraction
- D. a and b only
- E. a, b, and c in a sequence

15. Drug addiction is the result of which of the following sequential events?

- A. Drug molecule prevents reabsorption and causes overstimulation of post-synaptic membrane
- B. CNS responds to increased firing by decreasing the number of receptors
- C. the synapse is less sensitive when the drug is removed, normal functioning can only ensue by continuing to take the drug
- D. a and c
- E. a, b, and c

16. Myofibril contractile subunits, the sarcomeres, are bounded on each end by a disc of protein called the

- A. Z frame B. Z surface C. I zone D. Z line E. none of the above

17. The muscles that move the eye have a high proportion of fast-twitch fibers and reach maximum tension very fast. These fibers belong to the class

- A. type I fibers B. type II fibers C. type III fibers D. type IV fibers E. type V fibers

18. During a contraction in the smooth muscle, the calcium ions in the sarcoplasmic reticulum bind to the protein called

- A. troponin B. tropomyosin C. myosin D. calmodulin E. none of the above

19. Which of the following is not true about the smooth muscle?

- A. contains myosin and actin filaments
- B. contains intercalated discs
- C. contains sarcoplasmic reticulum
- D. contains smaller muscle fibers than the skeletal muscle
- E. more than one of the above

20. Which of the following muscle contraction is operated by latch mechanism?

- A. smooth muscle B. skeletal muscle C. cardiac muscle
- D. a and c E. a, b, and c.

私立臺北醫學院 九十 學年度第 一 學期 期中 考試 (命 題) 試 題 紙

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|-----|-------|---------|-----------------------|-----|-----|
| | 普通生物學 | 林明松 | ____年____月____日第____節 | | |

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Please choose **Only One Correct** answer for each question. Each question is worth 1 point.

- The growth rate of a population is a very sensitive function of its (1) dispersion (2) parasite (3) soil (4) age structure ()
- Reproduction has a price. Therefore increased fecundity in birds correlates with (1) higher mortality (2) lower mortality (3) higher growth rate (4) lower growth rate ()
- The fast growth in the population in the less-developed countries is due to (1) more adult (2) more female (3) higher birth rate (4) higher immigrant rate ()
- If we wish to preserve natural ecosystems, we should do all we can to preserve their (1) biological diversity (2) climate (3) bear (4) predator..... ()
- In a controlled experiment in a coastal ecosystem, an investigator removed a key predator (sea stars) . Finally, the number of species in that ecosystem (1) increase (2) decrease (3) no change (4) increase and then decrease..... ()
- If two species compete for the same limited resources, one will be able to use them more efficiently and will drive the other to extinction. Such phenomenon is called (1) reproductive strategies (2) niche (3) predation (4) competitive exclusion ()
- All the organisms that live together in a place are called a (1) population (2) community (3) ecosystem (4) biosphere ()
- The progressive development of a community is referred to as (1) niche (2) succession (3) biodiversity (4) community ()
- (1) predation (2) space (3) cooperation (4) chemical defense is able to reduce competition in natural communities and increase biodiversity..... ()
- The number of lynxes (predator) is controlled by the (1) availability of snowshoe hares (prey) (2) weather (3)parasites (4) chemical content of soil..... ()
- Exotic species often cause great damage to local environment due to the lack of their (1) habitat (2) prey (3) niche (4) predator... ()
- More than 200 different alkaloids have been isolated from the frogs of the family *dendrobatidae*, and some of them are playing important roles in (1) neuromuscular research (2) predator-prey relationship research (3) behavior research (4) competition research..... ()
- One of the most serious environment problems is the loss of (1) biodiversity (2) deer (3) fish (4) pine tree..... ()
- E. O. Wilson has calculated that as much as (1) 1% (2) 50% (3) 5% (4) 20% of the world's species may be lost during the next 30 years ()
- There is an intensive investigation of (1) soil (2) organisms (3) oil (4)

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- Water for new drugs to fight cancer and other diseases, or as sources antibiotics... ()
16. The specific role a species plays in its environment is called its (1) niche
 (2) function (3) biodiversity (4) succession..... ()
17. The relationship between cattle egrets and an African cape buffalo is called
 (1) predation (2) communalism (3) competition (4) parasitism ()
18. Catches of the Peruvian anchovy fishery fell rapidly after the 1972 is due to
 the change of temperature and (1) predation by bird (2) overharvesting
 (catch too many) by human (3) low density of prey (4)
 high salinity..... ()
19. (1) survivorship (2) predator-prey relationship (3) coevolution
 (4) are used to describe the characteristics of mortality in different kinds
 of populations... ()
20. (1) bat (2) ant (3) deer (4) elephant is important in pollination
 of plant..... ()
21. A community together with nonliving components of its environment is called
 an (1) ecosystem (2) population (3) biomes (4) succession ()
22. Release of industrial smoke into the upper atmosphere leads to (1) acid rain
 (2) water pollution (3) population growth (4) ultraviolet radiation..... ()
23. Clownfishes are often form symbiotic associations with (1) sea anemones
 (2) other fishes (3) oyster (4) crabs ()
24. Plant are often protected from herbivores, fungi, and other agents by chemicals
 that they manufacture. Such chemicals are called (1) primary compounds
 (2) evolution (3) secondary compounds (4) mimicry..... ()
25. The human population pyramid of Austria's has a narrow base, and thus
 Australia population is (1) random growth (2) increasing (3) maintain
 the same(4) decreasing..... ()
26. In Australia, prickly pear cactus (*Opuntia*) introduced from Latin America,
 once overran the ranges and become so abundant that vast areas were
 effectively closed to cattle grazing. The situation was changed dramatically with
 the introduction of the (1) moth *cactoblastis* (2) bat (3) bird (4) more cattle... ()
27. Wolf predation selectively removes calves and (1) old moose (2) strong
 female moose(3) strong male moose(4) young female moose..... ()
28. Many organisms have coevolved to the point of dependence such relationship
 is called (1) predation (2) symbiosis (3) communities (4) succession..... ()
29. Please identify the following density independent factor (1) predation
 (2) disease (3) competition (4) sudden storm ()
30. Which of the following factors is of crucial importance in limiting
 population sizes of bird in nature (1) parasite (2) human (3) predator-
 prey relationships (4) mortality ()