

NAME: _____

STUDENT NUMBER: _____

BIO270
Midterm
October 22nd, 2008
3 pm – 4 pm
No aids allowed

1. An HB pencil **MUST** be used to fill in all responses on the Scantron sheet. Responses in ink will not be detected and will be counted as incorrect.
2. Beside "course" on the Scantron sheet write: **BIO270**. Write in date and signature.
3. On the Scantron sheet, fill in your **last name** and **initials** and **Student ID#** in the spaces provided. These sections **MUST** be completed. Leave "code" blank.
4. This exam has a total of 30 multiple choice questions. ALL questions are worth one mark each.
5. Answer all questions; there is no penalty for guessing.
6. Mark only **ONE** box for each question. A question will be incorrect if more than one box is marked or if no box is marked.
7. Only answers on the Scantron sheet will be counted. Avoid erasures and be sure they are done completely when necessary. Faint marks in an erased box may be detected (two responses = incorrect).
8. Print your name and student number on the front of the exam paper. **RETURN** exam paper with the Scantron sheet carefully inserted between the first and second pages (so that the sheet is not bent or curled).
9. Choose the **BEST** answer for each question

1. How many species of animals exist?
 - a. 10 000
 - b. 100 000
 - c. **1 000 000**
 - d. 10 000 000
 - e. 100 000 000

2. Studying an animal and its environment is usually done at which level?
 - a. Cell and molecular
 - b. Systems
 - c. Organismal
 - d. **Ecological**
 - e. Integrative

3. What does emergence mean?
 - a. When life emerges from a prebiotic Earth
 - b. **The principle that the whole is more important than the sum of its parts**
 - c. Another term for evolution
 - d. When new species arise in a new era
 - e. None of the above

4. What is homeostasis?
 - a. **The maintenance of internal constancy**
 - b. The maintenance of external constancy
 - c. Both of the above
 - d. None of the above

5. Which of the following is correct?
 - a. Genotype is a product of phenotype and the environment
 - b. The environment is a product of genotype and phenotype
 - c. **Phenotype is a product of genotype and the environment**
 - d. Phenotype is a product of genotype only
 - e. Phenotype is a product of the environment only

6. What is the difference between conformers and regulators?
 - a. **Conformers change their internal environment as the external environment changes.**
 - b. Regulators change their internal environment as the external environment changes.
 - c. Conformers maintain their internal environment as the external environment changes.
 - d. Both conformers and regulators maintain their internal environment as the external environment changes, but there are other differences.
 - e. The two terms are synonymous.

7. How many different kinds of cells are there in the human body?
- 1
 - 4
 - 25
 - 200**
 - 1 000
8. How many tissue categories are there?
- 2
 - 4**
 - 8
 - 16
 - 32
9. Most homeostatic mechanisms are governed by:
- Positive feedback
 - Neutral feedback
 - Negative feedback**
 - A and B
 - B and C
10. Striated muscle:
- Is also referred to as skeletal muscle
 - Is under significant voluntary control
 - Is under significant involuntary control
 - A and B**
 - All of the above
11. The cell membrane of muscle cells is referred to as:
- Sarcolemma**
 - Sarcoplasm
 - Sarcoplasmic reticulum
 - Sarcomere
 - Muscle membrane
12. Thin filaments consist of:
- F-actin
 - Tropomyosin
 - Troponin
 - A and B
 - All of the above**
13. Thick filaments have what type of core?
- Titin**
 - Tropomodulin

- c. Nebulin
 - d. Z-disc
 - e. A and C
14. Sarcomeres are repeated in:
- a. Parallel
 - b. Series
 - c. **Parallel and Series**
 - d. None of the above
15. The middle region of a sarcomere occupied by thick filaments is referred to as:
- a. Z-disc
 - b. **A-band**
 - c. I-band
 - d. B-band
 - e. D-band
16. Thin and thick filaments overlap in _____ regions of each sarcomere.
- a. 1
 - b. **2**
 - c. 3
 - d. 4
 - e. 5
17. Maximal force occurs at which sarcomere length?
- a. Minimal
 - b. **Intermediate**
 - c. Maximal
 - d. A and C
 - e. None of the above
18. The power stroke occurs when:
- a. **The myosin head bends**
 - b. The actin head bends
 - c. The myosin and actin heads bend
 - d. None of the above
19. Which ion increases in intracellular concentration upon muscle contraction?
- a. Sodium
 - b. Potassium
 - c. Magnesium
 - d. **Calcium**
 - e. All of the above
20. What is the primary neurotransmitter associated with muscle contraction?
- a. **Acetylcholine**

- b. Serotonin
- c. Dopamine
- d. Glutamine
- e. Glycine

21. Microtubules are attached to integral membrane proteins in the:

- a. Endoplasmic reticulum
- b. Golgi apparatus
- c. Nucleus
- d. Mitochondria
- e. **Plasma membrane**

22. Kinesin and dynein are responsible for:

- a. The ability of frogs to jump
- b. **The ability to rapidly change skin colour**
- c. The ability to some animals to hibernate
- d. The ability of some animals to sense magnetic fields
- e. A and B

23. Microtubules are polymers of what protein?

- a. Subulin
- b. Myosin
- c. Dynein
- d. **Tubulin**
- e. B and D

24. Tubulin monomers are activated by:

- a. ATP
- b. CTP
- c. **GTP**
- d. TTP
- e. A and C

25. Flagella occur in:

- a. **Singles or pairs**
- b. Pairs or triples
- c. Singles or triples
- d. Pairs only
- e. Triples only

26. Capping proteins:

- a. Decrease microfilament length
- b. Increase microfilament length
- c. Increase microfilament assembly
- d. A and C
- e. **B and C**

27. Microfilaments are held together by _____ to create _____.
- Filamin; bundles
 - Fascin; tangled networks
 - Filamin; fascin
 - Fascin; filamin
 - Filamin; tangled networks**
28. Lamellapodia are primarily:
- 1-D
 - 2-D**
 - 3-D
 - A or B
 - B or D
29. Which of the following are true of muscle contraction:
- Myosin is an ATPase**
 - Actin is an ATPase
 - Myosin is a GTPase
 - A and B
 - All of the above
30. Rigor mortis is caused by an absence of:
- Actin
 - Myosin
 - ATP**
 - Troponin
 - Tropomyosin

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