



22146010



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**BIOLOGY**  
**STANDARD LEVEL**  
**PAPER 1**

Friday 9 May 2014 (afternoon)

45 minutes

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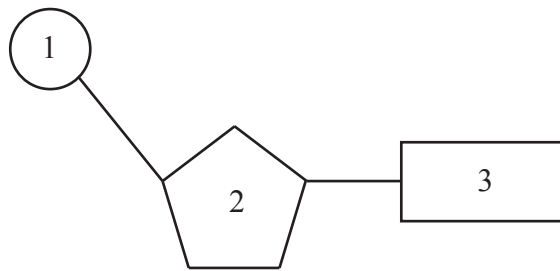
**INSTRUCTIONS TO CANDIDATES**

- Do not open this examination paper until instructed to do so.
- Answer all the questions.
- For each question, choose the answer you consider to be the best and indicate your choice on the answer sheet provided.
- The maximum mark for this examination paper is *[30 marks]*.

1. What information about sample data is shown by error bars?
  - A. Sample size
  - B. Variability
  - C. Mean
  - D. Anomalies
  
2. Though a single nerve cell does not think, millions of them organized as a brain result in thinking. What kind of property does thinking represent?
  - A. Anatomical
  - B. Adaptive
  - C. Extracellular
  - D. Emergent
  
3. The cell theory states that cells come from pre-existing cells. What biological process allows this to occur?
  - A. Ovulation
  - B. Differentiation
  - C. Cytokinesis
  - D. Exocytosis

4. Which structures have a phospholipid bilayer?
- I. vesicle
  - II. nucleus
  - III. nucleoid
- A. I and II only
- B. I and III only
- C. II and III only
- D. I, II, and III
5. What can be found in plant cells but not animal cells?
- A. Starch
- B. Mitochondria
- C. Golgi apparatus
- D. Rough ER
6. Which usually takes the most time in the cell cycle?
- A. Cytokinesis
- B. Interphase
- C. Telophase
- D. Anaphase

7. Which parts of this nucleotide would bond covalently with other nucleotides in a DNA double helix?



- A. 1 and 2 only
  - B. 1 and 3 only
  - C. 2 and 3 only
  - D. 1, 2 and 3
8. Which is a disaccharide?
- A. Fructose
  - B. Galactose
  - C. Lactose
  - D. Ribose
9. What process forms triglycerides?
- A. Evaporation
  - B. Condensation
  - C. Hydrolysis
  - D. Glycolysis

10. How much energy is stored in 1 kg of body fat compared to 1 kg of glycogen?
- A. Half as much
  - B. Same amount
  - C. Twice as much
  - D. One tenth as much
11. Which nucleic acids are directly involved in transcription?
- A. mRNA and one DNA strand
  - B. mRNA and both DNA strands
  - C. tRNA and both DNA strands
  - D. tRNA and one DNA strand
12. Which substances are made during photosynthesis and store energy that can be used by cells?
- A. Carbon dioxide and glucose
  - B. ATP and water
  - C. Water and glucose
  - D. Glucose and ATP
13. What occurs during gene mutation?
- A. Allele change
  - B. Crossing over
  - C. Non-disjunction
  - D. Evolution

14. What is the result after the first meiotic division of one diploid animal cell containing  $2n$  chromosomes?

	Number of cells	Chromosomes per cell
A.	2	$n$
B.	2	$2n$
C.	4	$n$
D.	4	$2n$

15. Which blood group genotype shows codominance?

- A.  $I^A I^A$
- B.  $I^B i$
- C.  $I^A I^B$
- D.  $ii$

16. What term describes genetically identical organisms derived from a single parent?

- A. Species
- B. Clone
- C. Family
- D. Twins

17. How is the polymerase chain reaction (PCR) used in research?
- A. Allows the separation of DNA fragments
  - B. Tests expression of many genes simultaneously
  - C. Permits identification of gene function
  - D. Duplicates a selected DNA fragment
18. What provides evidence for the universal nature of the genetic code?
- A. Uracil replaces thymine in RNA.
  - B. The amount of A is equal to the amount of T and the amount of G is equal to the amount of C.
  - C. Nucleic acids contain the same bases in all species.
  - D. mRNA codons are assigned to the same amino acids in different species.

19. What type of organism is growing on the surface of this dead wood?

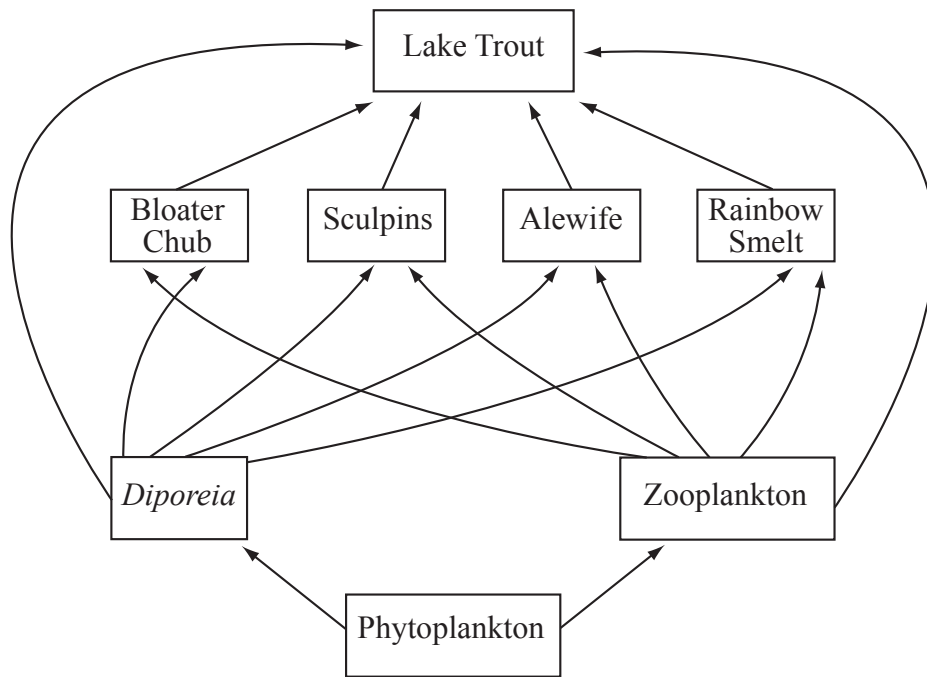


[Source: [http://en.wikipedia.org/wiki/File:Fungus\\_in\\_a\\_Wood.JPG](http://en.wikipedia.org/wiki/File:Fungus_in_a_Wood.JPG)]

- A. Autotroph
- B. Primary consumer
- C. Detritivore
- D. Saprotroph



20. How many trophic levels are there in the shortest and longest food chains that end with Lake Trout?



	Shortest	Longest
A.	2	3
B.	3	4
C.	4	5
D.	3	5

21. How does the precautionary principle affect the planning of public projects?

- A. Supporters of any project must prove that it will not cause harm.
- B. Opponents of any project must prove that it will cause harm.
- C. Precautions must be taken to prevent harm to biodiversity during construction of the project.
- D. Precautions must be taken to prevent harm to biodiversity after construction of the project.

22. What might increase in arctic ecosystems as a result of rising global temperatures?
- A. Ozone
  - B. Numbers of pest species
  - C. Day length
  - D. Chlorofluorocarbons

23. What term describes similar structures found in animals with a common ancestry?
- A. Homologous
  - B. Inherent
  - C. Characteristic
  - D. Analogous

24. Which sequence of taxonomic groups goes from largest to smallest?

A.	phylum	order	class	species	genus
B.	kingdom	family	class	genus	species
C.	phylum	class	order	family	species
D.	kingdom	phylum	family	order	genus

25. Which structure directly absorbs nutrient molecules from the digestive tract?
- A. Esophagus
  - B. Villus
  - C. Liver
  - D. Large intestine

26. Which is/are involved in the control of heart rate?

- I. Heart pacemaker
- II. Hormone secretion
- III. Nerves

- A. I only
- B. III only
- C. I and II only
- D. I, II and III

27. What describes antigens?

- A. They catalyze immune reactions.
- B. They activate specific white blood cells.
- C. They destroy bacteria but not viruses.
- D. They are only produced by white blood cells.

28. What would allow inhalation to occur during ventilation?

	<b>Diaphragm</b>	<b>External intercostal muscle</b>	<b>Abdominal muscles</b>
A.	contract	contract	contract
B.	relax	relax	relax
C.	contract	contract	relax
D.	relax	relax	contract

29. Where could an action potential occur in a motor neuron?

- A. Anywhere on the cell membrane
- B. Dendrites only
- C. Cell body only
- D. Axon only

30. What must be present for a human fetus to develop into a normal male?

	<b>X chromosome</b>	<b>Y chromosome</b>	<b>testosterone</b>
A.	✓		✓
B.	✓	✓	
C.		✓	✓
D.	✓	✓	✓

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