



Secondary School Mathematics & Science Competition

Biology

Sample Past Paper 2011

Q. 01 Electrolytes are typically transported across a cell membrane via:

- (I) Active transport
- (II) Osmosis
- (III) Facilitated diffusion
- (IV) Simple diffusion

- A. (II) only
- B. (IV) only
- C. (I) and (III)
- D. (III) and (IV)

Q. 02 Which of the following processes use(s) fermentation?

- (I) Food waste processor
- (II) Alcohol production
- (III) Production of yoghurt and cheese
- (IV) Bread making

- A. (I) and (III) only
- B. (II) and (IV) only
- C. (II), (III) and (IV)
- D. All of the above

- Q. 03 Which of the following comparisons between decomposer and detritivore are INCORRECT?

		Decomposer	Detritivore
(1)	Major ecological roles	Releasing inorganic materials from organic matter through decomposition	Breaking up small pieces of organic matter into even smaller pieces
(2)	Body size	Smaller	Larger
(3)	Digestion of organic matter	Digest inside the body	Digest outside the body
(4)	Organisms	Bacteria and fungi	Crab, shrimps and rats

- A. (1) and (2) only
 B. (2) and (3) only
 C. (3) and (4) only
 D. (1) and (4) only

- Q. 04 Which of the following answer shows the order from the smallest area of field of view to the largest area of field of view?

	Eyepiece magnification	Objective magnification
(I)	5X	10X
(II)	10X	15X
(III)	15X	30X
(IV)	20X	40X

- A. (I) → (II) → (III) → (IV)
 B. (I) → (III) → (II) → (IV)
 C. (IV) → (II) → (III) → (I)
 D. (IV) → (III) → (II) → (I)

- Q. 05 Which of the following statement about meiosis is correct?
- In meiosis, the chromosomes duplicates after homologous chromosomes paired with each other.
 - Sperms and eggs cannot undergo meiosis.
 - Testes and ovaries can undergo meiosis only.
 - The pair of chromatids pair up in meiosis I and then homologous chromosomes pair up in meiosis II.
- Q. 06 Which of the following combination is INCORRECT for the response of temperature changes in our bodies?

	Structure of the skin	Response under hot conditions	Response under cold conditions
A.	Erector muscles	Relax	Contract
B.	Hairs	Lie flat	Pulled upright
C.	Sweat glands	Secrete more sweat	Secrete less sweat
D.	Capillaries supplying blood to the skin	Capillaries dilation	Capillaries constriction

- Q. 07 Which of the following statement about primary succession and secondary succession is INCORRECT?
- Lichens can survive in a dry and unfertilized area, so they are called pioneer plants for both primary succession and secondary succession.
 - The seral communities of the secondary succession are the same as to those at later stage of the primary succession.
 - When the abiotic factors remain constant, primary succession ceases and turn to secondary succession.
- (I) only
 - (I) and (II) only
 - (II) and (III) only
 - (I), (II) and (III)

Q. 08 Octopus Paul was so famous during the 2010 FIFA World Cup in South Africa. Unfortunately, not many people can classify the octopus, the cuttlefish and the squid, which belong to the same family but different species. Which of the following feature is correct for the squid?

- A. Has eight tentacles with long-shaped head
- B. Has eight tentacles with oval-shaped head
- C. Has ten tentacles with long-shaped head
- D. Has ten tentacles with oval-shaped head

Q. 09 Which of the following combination is INCORRECT for the human blood group?

	Blood group	Antigen(s) on the membrane of red blood cells	Antibody(ies) in the plasma
A.	O	Not A or B	No Anti-A or Anti-B
B.	A	A	Anti-B
C.	B	B	Anti-A
D.	AB	A and B	No Anti-A or Anti-B

Q. 10 Which of the following match is correct in the history of DNA study?

	Name(s) of scientist(s)	Work done with DNA
A.	Alfred Hershey and Martha Chase	Proved that DNA replicates by semi-conservative replication
B.	Matthrew Meselsohn and Franklin Stahl	Proved that the nuclear material in a bacteriophage, not the protein coat, infects a bacterium
C.	Rodalind Franklin	Analyzed DNA by X-ray crystallography
D.	Frederick Griffith	Discovered transformation in bacteria



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Answer

1.	C	2.	D	3.	C	4.	D	5.	C
6.	D	7.	D	8.	C	9.	A	10.	C