IB DIPLOMA PROGRAMME
PROGRAMME DU DIPLÔME DU BI
PROGRAMA DEL DIPLOMA DEL BI

M06/4/BIOLO/SPM/ENG/TZ2/XX+

BIOLOGY
STANDARD LEVEL
PAPER 1

Thursday 4 May 2006 (afternoon)

45 minutes

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.

1. Which two molecules are the principal components of membranes?

A. Glycogen and protein

B. Lipid and glycogen

C. Cellulose and protein

D. Protein and lipid

2. The width of a human hair is 0.1 mm. What is the width in μm?

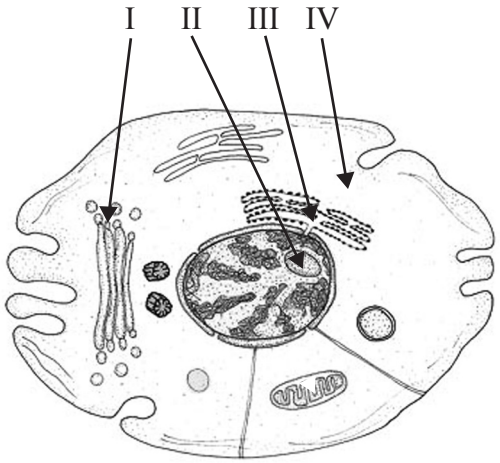
A. 10 μm

B. 100 μm

C. 1000 μm

D. 10 000 μm

3. The diagram below represents an animal cell.



Which processes occur in the locations labeled?

	Transcription	Translation	Respiration
A.	II	III	I
B.	III	II	I
C.	II	III	IV
D.	III	II	IV

4. What process involves the movement of a solvent through a semi-permeable membrane from a region of low solute concentration to a region of high solute concentration?

A. Active transport

B. Osmosis

C. Simple diffusion

D. Facilitated diffusion

5. If a cell plate is beginning to form and nuclei are re-forming at opposite ends of a cell, what kind of cell is this?

A. An animal cell in prophase

B. A plant cell in prophase

C. An animal cell in telophase

D. A plant cell in telophase

6. Which molecule is a monosaccharide?

A. Ribose

B. Glycogen

C. Amylase

D. Glycerol

7. Which of the following is an organic compound found in both plant and animal cells?

A. Cellulose

B. Carbonate

C. Water

D. Pyruvate

8. Which of the following features are correct for hydrogen bonding?

I. It is involved in the cohesion of water.

II. It results in the thermal properties of water.

III. It is a bond within the water molecule.

A. I and II only

B. II and III only

C. I and III only

D. I, II and III

9. What is a role of carbohydrates in animal cells?

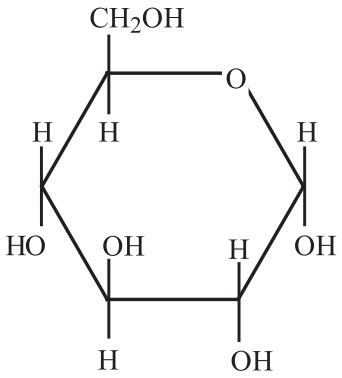
A. As channels for passive transport

B. As enzymes

C. As energy storage

D. As components of the animal cell wall

10.



Which of the following terms correctly describe(s) the molecule above?

I. Monosaccharide

II. Glucose

III. Component of triglyceride

A. I only

B. I and II only

C. II and III only

D. I, II and III

11. In which process of photosynthesis is light directly involved?

A. Conversion of ATP to ADP

B. The fixing of carbon

C. The splitting of water

D. The conversion of pyruvate to ethanol

12. Which property of water is most important to plants living below the surface of water?

A. Cohesion

B. Nitrogen solubility

C. Surface tension

D. Transparency

13. What is always a difference between the alleles of a gene?

A. Their position on the chromosome

B. Their amino acid sequence

C. The number of codons that each contains

D. Their base sequence

14. Which of the following conditions has been treated by gene therapy?

A. Emphysema

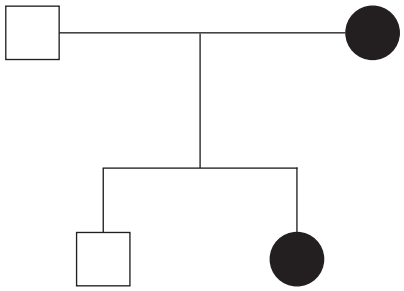
B. SCID

C. Coronary heart disease

D. Colon cancer

The following information refers to questions 15 and 16.

Hypophosphataemia is a disorder involving poor re-absorption of phosphate from glomerular filtrate in humans. It shows a sex-linked dominant pattern of inheritance as illustrated in the following pedigree.



Key:

□ = unaffected male ● = affected female

15. Which row in the table correctly identifies the genotypes of individuals 1 and 2?

	Individual 1	Individual 2
A.	X^HX^h	X^HY
B.	X^hY	X^HX^H
C.	X^hY	X^HX^h
D.	unaffected	affected

16. Individual 2 marries an unaffected male. What is the probability that they will have an affected child?

A. 0 %

B. 25 %

C. 50 %

D. 100 %

17. Why is it possible for a gene from one organism to be introduced and function in a different organism?

A. All organisms are made of cells.

B. All organisms have nuclei.

C. The genetic code is universal.

D. All organisms have ribosomes.

18. A randomly selected group of organisms from a family would show more genetic variation than a randomly selected group from which level of classification?

A. Phylum

B Genus

C. Order

D. Class

19. For the following 10 measurements $4, 5, 5, 6, 6, 6, 6, 7, 7, 8$ the mean value is 6. What is the best estimate of the standard deviation?

A. 8

B. 6

C. 3

D. 1

20. Which of the following represents a kingdom?

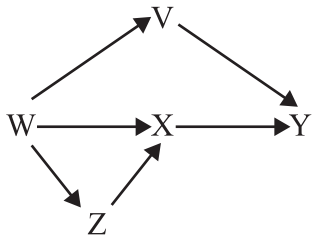
A. Eukaryote

B. Viruses

C. Protoctista

D. Mammals

The food web diagram below refers to questions 21 and 22. Each letter represents a species.



21. Which of the following terms describe(s) species X?

I. Heterotroph
II. Primary consumer
III. Secondary consumer

A. I and II only

B. I and III only

C. II only

D. I, II, and III

22. Which is the best prediction about biomass?

A. The biomass of X is more than the biomass of W.

B. The biomass of X is less than the biomass of Y.

C. The biomass of V + X + Z is equal to the biomass of W.

D. The biomass of Y is less than the biomass of Z.

23. Which organ secretes FSH (follicle-stimulating hormone)?

A. Ovary

B. Testis

C. Pituitary gland

D. Placenta

24. What is the sequence of structures through which a molecule of oxygen will pass during its entry into the body?

A. bronchus → alveolus → bronchi

B. bronchus → alveolus → pulmonary artery

C. bronchus → alveolus → pulmonary vein

D. bronchus → bronchiole → pulmonary artery

25. Which of the following changes occur with the onset of exercise?

A. Increase in pH of blood

B. Increase in rate of cellular respiration

C. Decrease in rate of contraction of the diaphragm

D. Decrease in carbon dioxide concentration of the blood

26. In which part of the digestive system is most water re-absorbed?

A. The kidneys

B. The stomach

C. The small intestine

D. The large intestine

27. Which of the following is part of the process of ventilation?

A. Changes in the volume of the thoracic cavity

B. Exchange of gases across the surface of the alveoli

C. Exchange of gases across the surface of capillaries

D. Cellular respiration

28. Which of the following occur(s) at birth in the mother's body?

I. Increase in oxytocin

II. Increase in uterine contractions

III. Increase in levels of progesterone

A. I only

B. I and II only

C. II and III only

D. I, II and III

29. Which of the following is regulated by positive feedback?

A. Blood sugar

B. Temperature

C. Oxytocin levels

D. Progesterone levels

30. Which of the following is a secondary sexual characteristic in human females?

A. Increasing relative width of hips

B. Presence of mammary glands

C. Presence of a uterus

D. Presence of a bladder