

SECTION B: ENTRANCE EXAMS

REPUBLIC OF CAMEROON

Peace – Work – Fatherland

THE UNIVERSITY OF BAMENDA

HIGHER TEACHER'S TRAINING COLLEGE

BAMBILI



REPUBLIQUE DU CAMEROUN

Paix – Travail - Patrie

UNIVERSITE DE BAMENDA

ECOLE NORMALE SUPERIEURE

BAMBILI

COMPETITIVE ENTRANCE EXAMINATION INTO FIRST YEAR OF THE FIRST CYCLE

ACADEMIC YEAR: 2015/2016

DEPARTMENT: BIOLOGY

Instructions: Answer all the questions in section 1 (Major Paper) and all the questions in section 2 (Minor Paper). Selecting the most appropriate answer (letter A, B, C or D) for each item and write it on the corresponding number space provided in your Answer Booklet. Make sure you insert the question paper inside the answer Booklet before you leave the Examination Hall. Good Luck! Time allowed: 3 Hours.

SECTION 1: MAJOR PAPER: BIOLOGY: Answer all Questions

1. The casparian strip in a plant root blocks transport of water and minerals traveling in the
A) Symplast B) Apoplast C) Cytoplasm D) Plasmodesmata
2. Dry seeds endure higher temperature than germination seeds because
A) Hydration makes the enzyme more sensitive to temperature
B) Dry seeds have a hard cover
C) Dry seeds have more reserved roots
D) seeding are tender
3. The time required for a cell to undergo binary fission is called the
A) Exponential growth rate B) Growth curve
C) Generation time D) Lag period
4. The source of the necessary element of life is

- A) Inorganic environmental reservoir B) The sun C) Rock D) The air
5. A nucleotide contains which of the following?
A) 5C sugar B) Nitrogen base C) Phosphate D) All of the above
- 6.
7. The portion of the fibrous layer that is white and opaque is the
A) Choroid B) Cornea C) Retina D) Sclera
8. Nearsightedness is more properly called
A) Myopia B) Hyperopia C) Presbyopia D) Emmetropia
9. Otoliths(ear stones) are A) A cause of deafness B) A type of hearing aid
C) Important in equilibrium D) The rock-hard petrous temporal bones
10. Which cell functions as part of the immune system?
A) Keratinocyte B) Melanocyte C) Dendritic cell D) Tactile cell
11. The hormone stimulus that prompts red blood cell formation is
A) Secronin B) Heparin C) Erythropoietin D) Thrombopoietin
12. The structural framework of lymphoid organs is A) Areolar connective
tissue B) Hematopoietic tissue C) reticular tissue D) Adipose tissue
13. The casparian strip in a plant root is part of the
A) Epidermis B) Endodermis C) Cortex D) Symplast
14. The fetal membrane that forms the basis of the umbilical cord is the
A) Allantois B) Amnion C) Chorion D) Yolk sac
15. Water balance is regulated by the control of amount(s)
A) Ingested B) Excreted in urine C) Lost in perspiration D) Lost in feces
16. Which of the following cavities will contain your stomach?
A) peritoneal B) Pericardial C) Pleural D) Thoracic
17. Perennial plants are A) Always herbaceous B) Always woody C) Either
herbaceous or woody D) Neither herbaceous nor woody
18. Carbohydrates are acted on by
A) Peptidases, Trypsin and Chymotrypsin
B) Amylase, Maltase, and Sucrose
C) Lipases D) Peptidases, Lipases, and Galactase
19. The formation of glucose to glycogen is
A) Glyconeogenesis B) Glycogenesis C) Glycogenolysis D) Glycolysis
20. Filtration at the glomerulus is inversely related to
A) Water reabsorption B) Capsular hydrostatic pressure
C) Arterial blood pressure D) Acidity of the urine
21. When 325g of sucrose is dissolved in 1 litre of water, the resultant solution
will be

- A) Molar solution B) Molal solution
C) Isotonic solution D) Neutral solution
22. Chemical reactions that occur spontaneously are described as
A) Exergonic and release energy B) Exergonic and their products contain more energy
C) Endergonic and releases energy D) Endergonic and their products contain more energy
23. Seeds swell when placed in water because of A) Osmosis B) Plasmolysis
C) Water potential imbibition
24. When a plant wilts, the sequence of events will be as follows
A) Exosmosis, plasmolysis, deplasmolysis, wilting
B) Exosmosis, deplasmolysis, plasmolysis, wilting
C) Exosmosis, plasmolysis, wilting
D) plasmolysis, exosmosis , wilting
25. Conduction of sap in old plants where heart wood gets decayed occurs through
A) The outer annual rings B) The innermost annual rings
C) The intire sap wood D) The phloem cell
26. Root hairs are found in the zone of
A) Cell division B) Cell elongation C) Cell maturation D) Cell differentiatin
27. Which of the follong is an ideal anti-transpiration A) Phenyl mercuric acetate B) Aspirin C) Phenolic acid D) None of the above
28. K^+ transport and hormone regulation theory explains A) Stomatal movement in succulents only B) Stomatal movement in non-succulents only
C) Stomatal movement in heliophytes only D) All of the above
29. Which of the following elements take part in breakdown of water during photosynthesis A) Manganese B) Sodium C) Potassium D) Sulphur
30. By what method are ions absorbed by plants? A) AlTong DPD gradient
B) Along water potential gradient C) By carriers and pumps D) Along gravity gradient
31. Ribosome are small, dark-staining granules composed of ribosomal RNA and
A) Lipids B) Phospholipids C) Proteins D) Polysaccharide
32. Which of these is not a pair of antagonistic hormones?
A) Insulin-glucagon
B) calcitonin-parathyroid hormone
C) aldosterone -altrial natruiretic hormone
D) thyroxine- growth hormone

33. The area of a lake closest to the shore and where rooted plants are found is the: A) littoral zone B) limnetic zone C) profundal zone D) benthic zone
34. The greatest contributor of electrons to the electron transport chain is: A) oxygen B) glycolysis C) the citric acid cycle D) fermentation
35. Exoskeletons and endoskeleton differ in that; A) an exoskeleton is rigid and an endoskeleton is flexible. B) endoskeletons are found only in vertebrates C) exoskeletons are composed of calcium, and endoskeleton are built from chitin. D) exoskeletons are external to the soft tissues and endoskeletons are internal.
36. Which of the following is not an ion homeostatically maintained in vertebrates? A) Cl^- B) Ca^{++} C) Na^+ D) F^-
37. Which of these is not a true statement? A) In all mammals, offsprings develop completely within the female B) All mammals have hairs and mammary glands C) All mammals have one birth at a time D) All mammals are land-dwelling forms
38. During pregnancy : A) The ovarian and uterine cycles occur more quickly than before. B) GnRH is produced at a higher level than before C) the ovarian and uterine cycles do not occur D) the female secondary sex characteristics are not maintained
39. A sensory receptor : A) is the first portion of a reflex arc B) initiates nerve impulses C) is specific for one type of stimulus D) all of these are correct.
40. The appendix connects to the : A) cecum B) small intestine C) liver D) large intestine.

SECTION 2: MINOR PAPER: GEOLOGY AND CHEMISTRY

- 1) The most important development of life in the archaean was: A) eukaryotic cells B) heterotrophism C) multicellular life D) photosynthesis
- 2) The oxidation numbers of Mn and As in Mn_2O_3 and AsH_3 are respectively A) +3 and +3 B) -3 and -3 C) +3 and -3 D) -3 and +3
- 3) The first experiment regarding evolution of life was performed by? A) Watson and Crick B) Oparin and Haldane C) Urey and Miller D) Meselson and Stahl

- 4) Consider carbon dioxide (CO_2) and Carbon trifluoride (BF_3) has:
 - A) The two molecules do not have molecular dipole moment
 - B) they each have a molecular dipole moment .
 - C) CO_2 has a molecular dipole and BF_3 does not
 - D) CO_2 does not have a molecular dipole moment whereas BF_3 has
- 5) Glacial till is an example of a deposit that is
 - A) well sorted
 - B) poorly sorted
 - C) well rounded
 - D) moderately rounded
- 6) The covalent character of hydrides in the second row of the periodic table of elements;
 - A) increases from Carbon to Fluorine
 - B) decreases from Carbon to Fluorine
 - C) remains the same from Carbon to fluorine
- 7) Rocks are foliated or non foliated depending on their -----
 - A) hardness
 - B) cleavage and fracture
 - C) layers or non layers
 - D) streak
- 8) In an experiment to determine the enthalpy change for the combustion of ethanol, it was found that 1.5g of ethanol generated 39.45kJ of heat of combustion. The enthalpy change is
 - A) 1209.8kJmol^{-1}
 - B) -1209.8kJmol^{-1}
 - C) 39.45KJmol^{-1}
 - D) -39.45KJmol^{-1}
- 9) The rise of human civilization is the main characteristics of:
 - A) Holocene
 - B) Pleistocene
 - C) Pliocene
 - D) Miocene
- 10) The electronic configuration of Na^+ ion is
 - A) $1s^2 2s^2 2p^6$
 - B) $1s^2 2s^2 2p^6 3s^1$
 - C) $1s^2 2s^2 2p^6 3s^2$
 - D) none
- 11) Angiosperm originated during
 - A) Upper cretaceous
 - B) lower Jurassic
 - C) mid cretaceous
 - D) carboniferous
- 12) Which of the following about the CO_2 and NO_2 molecules is correct?
 - A) they are both linear
 - B) CO_2 is bent and NO_2 is linear
 - C) CO_2 is linear and NO_2 is bent
 - D) CO_2 and NO_2 are both bent
- 13) The.....is the point on the surface directly above the point of an earth quake
 - A) epicenter
 - B) focus
 - C) elastic rebound
 - D) tsunami
- 14) A mass 10 g of blue hydrated copper (II) sulfate $\text{CuSO}_4 \cdot 6\text{H}_2\text{O}$ is dissolved in water to obtain 500ml of solution. The molar concentration of Cu^{2+} ions is
 - A) $7.46 \times 10^{-2} \text{mol.L}^{-1}$
 - B) $3.73 \times 10^{-2} \text{mol.L}^{-1}$
 - C) $6.25 \times 10^{-2} \text{mol.L}^{-1}$
 - D) $2.49 \times 10^{-2} \text{mol.L}^{-1}$
- 15) Which of the following terms best describes the rocky outer layer of the earth?
 - A) Asthenosphere
 - B) biosphere
 - C) atmosphere
 - D) lithosphere

- 16) The amino acid glycine can exist as $\text{H}_2\text{N}-\text{CH}_2-\text{COOH}$ (I), $^+\text{H}_3\text{N}-\text{CH}_2-\text{COOH}$ (II), $^+\text{H}_3\text{N}-\text{CH}_2-\text{COO}^-$ (III), $\text{H}_2\text{N}-\text{CH}_2-\text{COO}^-$ (IV). Which of the four forms exists in a strongly acidic solution? A) form (I) above B) form (II) above C) form (III) above D) form (IV) above
- 17) The correct order of layers in the earth from the surface to the center is A) crust, asthenosphere, lithosphere, mantle, core B) crust, lithosphere, asthenosphere, lower mantle, outer core, inner core C) core, mantle, crust D) lithosphere, lower mantle, outer core, inner core
- 18) Two acids A_1H and A_2H are used to prepare two separate solutions S_1 and S_2 respectively, having the same molar concentration. The PH of S_1 is 4.2 and the PH of S_2 is 2.8 compare the strengths of the acids A) A_1H is stronger than A_2H B) A_2H is stronger than A_1H C) The two acids have equal strengths D) none of the above is correct
- 19) The viscosity of lava is a measure of A) the temperature when melting occurs B) the speed it flows C) the amount of silica present in the lava D) the ability of the lava to flows
- 20) What is the number of moles of water in one glass of water volume is 0.3L? A) 0.1667mol B) 1.667mol C) 16.67mol D) 166.7 mol