

Biology, 2015 EC, natural science, entrance exam

Grade 12 · Biology · 2015 E.C.

Time allowed: 120 minutes

Questions: 30

Total marks: 30

Name _____ Grade _____ ID No. _____ Date _____

1. Bacterial cell wall is unique due to its (1)
 - A. Chemical composition
 - B. Freely permeability
 - C. Selective permeability
 - D. Mechanical support
2. Which genus of bacteria oxidize hydrogen sulphide to sulphate and make sulphate ions available to be taken by plant roots from the soil? (1)
 - A. Klebsiella
 - B. Desulphovibrio
 - C. Azotobacter
 - D. Thiobacillus
3. Which one of the following diseases is caused by food poisoning bacteria ? (1)
 - A. Candidiasis
 - B. Salmonellosis
 - C. Tuberculosis
 - D. Pneumonia
4. Which one of the following is correct concerning the reproductive cycles of viruses? (1)
 - A. Both lytic and lysogenic life cycles release new viruses without the genetic alteration of the host cell
 - B. In lysogenic life cycle the DNA of the virus integrates with the host cell's DNA.
 - C. Both lytic and lysogenic life cycles undergo the same life cycle but ending with different results
 - D. In lytic life cycle, viruses are released without killing the host cell.
5. Unlike free living cells, viruses are completely (1)
 - A. pathogenic to a living cell
 - B. mutual to a living cell
 - C. parasitic to a living cell
 - D. harmful to a living cell
6. Why are vaccines important? Because they help to (1)
 - A. trigger the immune system
 - B. kill pathogens
 - C. prevent functional diseases
 - D. heal wounds
7. Assume you wanted to demonstrate compatibility of blood groups. You took four test tubes labelled O, A, B, and AB based on the blood group that each test tube contains. Then you added unknown blood sample into each tube and no agglutination was observed in each test tube. From this you can conclude that the unknown blood sample was. (1)
 - A. blood group B.
 - B. blood group O
 - C. blood group A.
 - D. blood group AB.
8. Which one of the following diseases has the likelihood of contracting HIV? (1)
 - A. Syphilis
 - B. Chancroid
 - C. Tuberculosis
 - D. Gonorrhoea

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9. Even though pasteurization is a technique used to heat milk, beer and other foods, it cannot preserve food unspoiled for years because it. (1)
- A. Cannot kill pathogenic micro organisms
 - B. Reduces the nutritional of the food
 - C. is conducted in containers that are not properly sealed.
 - D. uses mild temperature that kills most but not all bacteria
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10. Which one of the following statements is correct about the binomial nomenclature? (1)
- A. The genus name is written in full while the species name is abbreviated
 - B. Both genus and species names are capitalized and italicized when printed.
 - C. The first letter of genus name is capitalized while the species name is written in small letters.
 - D. The genus name is written in English while the species name is written in Latin.
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11. During gas exchange between the alveoli and blood capillaries, oxygen is absorbed by the blood while carbon dioxide is removed. This opposite direction of gas exchange occurs due to (1)
- A. Difference in the concentration gradient of oxygen and carbon dioxide.
 - B. Difference in the molecular size of oxygen and carbon dioxide.
 - C. Thicker layer of the capillaries.
 - D. The small surface area of the alveoli.
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12. Identify the correct statement about the effect of exercise on breathing rate. (1)
- A. The vital capacity of the lung decreases during heavy exercise.
 - B. The tidal volume of air at rest is greater than the tidal volume of air during exercise.
 - C. Fast and deep breathing are the result of demanding less oxygen.
 - D. Exercise and getting fit makes the lungs efficient.
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13. The following is a list of functions of the components of blood. (1)

- 1. Transport of oxygen
- 2. Fight against diseases
- 3. Cause blood clotting

Which one of the following is a correct order of blood components responsible for the above functions respectively?

- A. White blood cells, platelets, red blood cells
 - B. Platelets, white blood cells, red blood cells
 - C. Red blood cells, white blood cells, platelets
 - D. Red blood cells, platelets, white blood cells
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14. What is the cause of the back flow of blood into the atria from the ventricles? It could be damage of the (1)
- | | |
|-------------------|----------------------|
| A. aorta. | B. pulmonary artery. |
| C. pulmonary vein | D. valves |
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15. The capillaries are blood vessels that have thin wall and large surface area since their function is (1)
- | | |
|----------------------------------|--------------------------------------|
| A. transport of oxygenated blood | B. exchange of substances |
| C. to return blood to the heart | D. transport of de oxygenated blood. |

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- 16.** During image formation, light is refracted twice before it is focused on the retina. This phenomenon happens at the (1)
- A. aqueous humour and lens
B. iris and lens
C. lens and vitreous humour
D. Cornea and lens
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- 17.** Three students designed the following experimental settings to understand the actual taste of a food. (1)
- #Student 1: Blindfolded two students, one of them tightly holding the nose while the other without holding the nose and tasting the food.
#Student 2: Blindfolded one student and the other left with open eyes, both holding their nose tightly while tasting the food
#Student 3: None of the participants blindfolded and only one eye, both holding their nose tightly while tasting the food
#Student 4: None of the participants blindfolded and both of them taste the food without holding the nose.
- Which student designed the most appropriate experiment?
- A. Student 1
B. Student 2
C. Student 4
D. Student 3
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- 18.** Short sightedness corrected by a concave lens because the problem arises due to a (1)
- A. weak eye lens that converges light slightly
B. powerful eye lens that diverges light
C. weak eye lens that diverges light.
D. strong eye lens that converges light too soon
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- 19.** A patient exhibited symptoms of weight loss, sweating and irritability and the doctor suspected an endocrine malfunction that can be related to the (1)
- A. pancreas
B. adrenal gland
C. thyroid glands
D. gonads
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- 20.** Secretions of endocrine glands require receptors on cell membrane to be picked by their targets while exocrine secretions do not. This is because (1)
- A. exocrine glands secrete hormone directly to the blood stream.
B. endocrine glands are ductless.
C. exocrine glands are controlled by the nervous system.
D. endocrine glands produce protein - based hormones.
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- 21.** Which of the following diseases is caused by a DNA virus? (1)
- A. Cold sore
B. Aids
C. Swine flu
D. Corona
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- 22.** Currently, natural resources are being depleted at an increasing rate and waste materials are accumulated and discharged freely into water bodies. What is the best strategy to overcome these problems? (1)
- A. Decomposition
B. Succession
C. Fossilization
D. Recycling
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- 23.** Which stage of the nitrogen cycle needs the role of Rhizobium? (1)
- A. Decomposition
B. Denitrification
C. Nitrogen fixation
D. Nitrification

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- 24.** A key aspect in the process of recovery of an ecosystem through succession is that. (1)
- A. pioneer species always make the environment better.
 - B. higher organisms colonize the environment first.
 - C. a climax community of lichens and mosses is established at the end.
 - D. pioneer species always tend to be lower animals.
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- 25.** What are the common plants of the bore al forest? (1)
- A. Deciduous trees
 - B. Conifers
 - C. Mosses
 - D. Epiphytes
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- 26.** Which one of the following may NOT be regulated by a plant hormone? (1)
- A. Seed dispersal
 - B. Cell division
 - C. Cell elongation
 - D. Fruit ripening
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- 27.** Bushing of a plant results from (1)
- A. cancellation of the positive effect of apical dominance.
 - B. removal of the inhibitory effect of auxin.
 - C. decreased production of auxin by side shoot.
 - D. increased production of auxin by the main shoot.
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- 28.** Actions such as protection of individual species, reduction of pollution, and reduction of deforestation can collectively be taken as methods of (1)
- A. agricultural expansion
 - B. biodiversity conservation
 - C. Fighting global warming
 - D. fighting soil erosion
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- 29.** Which one of the following plants is NOT endemic to Ethiopia? (1)
- A. Mango
 - B. Zigba
 - C. Noug
 - D. Enset
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- 30.** Which one of the following national parks is characterized by the presence of wildlife such as elephant, lion, cheetah and giraffe? (1)
- A. Bale mountains national park
 - B. Awash national park
 - C. Mago national park
 - D. Simien mountains national park

— END OF EXAMINATION —