

# JOINT UNIVERSITIES PRELIMINARY EXAMINATIONS BOARD

## 2015 EXAMINATIONS

### BIOLOGY: SCI-J152

#### MULTIPLE CHOICE QUESTIONS Answer ALL Questions

- Which of the following diseases could be exclusively associated with a river basin?
  - Malaria
  - Syphilis
  - Onchocerciasis
  - Cholera
- In mammals, the function of the sebaceous gland is to \_\_\_\_\_
  - produce sweat
  - secrete sodium
  - secrete water
  - produce sebum
- Osteoporosis is a disease of the \_\_\_\_\_
  - lungs
  - skin
  - bones
  - eyes
- The type of reproduction that is common to both Hydra and yeast is \_\_\_\_\_
  - grafting
  - budding
  - conjugation
  - binary fission
- The difference between the largest and the smallest data values is the \_\_\_\_\_
  - variance
  - interquartile range
  - range
  - coefficient of variation
- The function of ribosomes in cells is
  - protein synthesis
  - starch synthesis
  - transport of materials
  - lipid storage.

7. Which statement correctly describes homologous chromosomes?
- A. They are formed during meiosis
  - B. They are held together by centromeres
  - C. They are identical
  - D. They carry the same gene loci
8. Which one of the following is a correct outline of the main events in photosynthesis?
- A. Oxygen reacts with a carbohydrate to produce water and carbon-dioxide in the presence of light.
  - B. Light join carbon-dioxide to an acceptor compound which is then reduced by hydrogen obtained from water.
  - C. Light splits water and the resulting hydroxyl group combines with a compound which has incorporated carbon-dioxide
  - D. Carbon-dioxide combines with an acceptor compound and this is reduced by hydrogen split from water by light.
9. Breathing movement in mammals is accompanied by regular movement of the diaphragm and the \_\_\_\_\_
- A. intercostal muscles
  - B. vertebral column
  - C. clavicle
  - D. pleural cavity
10. Organisms that require oxygen to grow are called \_\_\_\_\_
- A. psychrophilic organisms
  - B. thermophilic organisms
  - C. aerobes
  - D. hyperthermophiles.
11. Organisms that retain the blue/purple colour in their cell wall in gram staining technique are \_\_\_\_\_
- A. microaerophile
  - B. viable cells
  - C. gram positive organisms
  - D. gram negative organisms.
12. Which of the following nitrogenous base is found in RNA but not in DNA?
- A. Adenine
  - B. Thymine
  - C. Uracil
  - D. Guanine.
13. The study of groups of organisms is called \_\_\_\_\_
- A. Ecology
  - B. Autecology

- C. Gynecology
- D. Synecology

14. Genetic rearrangement between nonsister chromatids is known as \_\_\_\_\_
- A. cross over
  - B. synapsis
  - C. random fertilization
  - D. character
15. One of the following is not a type of dormancy.
- A. Induced
  - B. Innate
  - C. Enforced
  - D. Applied
16. The terrestrial species of class Gastropoda prevent water loss by means of \_\_\_\_\_
- A. Apiphragm.
  - B. Nephridia.
  - C. Radula.
  - D. Epiphragm.
17. The first forms of life on Earth were thought to be \_\_\_\_\_
- A. single-celled plants.
  - B. prokaryotes
  - C. insects
  - D. large animals such as dinosaurs
18. Which polysaccharide is usually found in the cell walls of fungi?
- A. Starch
  - B. Glycogen
  - C. Chitin
  - D. Cellulose
19. What adaptation do seed plants have in addition to the seed that is not found in seedless plants?
- A. Gametophytes
  - B. Vascular tissue
  - C. Pollen
  - D. Chlorophyll
20. Prokaryotes stain as Gram-positive or Gramnegative because of differences in the \_\_\_\_\_
- A. Cell wall.
  - B. Cytoplasm.

- C. Nucleus.  
D. Chromosome.
21. External fertilization occurs in \_\_\_\_\_ type of environment?
- A. Aquatic  
B. Forested  
C. Savanna  
D. Steppe
22. What kind of ecosystem are exotic species especially threatening to?
- A. Deserts  
B. Marine ecosystems  
C. Islands  
D. Tropical forests
23. Each neurone contains \_\_\_\_\_
- A. soma, dendrites and axon  
B. sensory, association and motor  
C. cerebrum, cerebellum and hypothalamus  
D. afferent, efferent and mixed
24. One of these statements is not true about Berry and Drupe.
- A. They both have thin epicarp  
B. They both have fleshy succulent mesocarp  
C. Their endocarp is edible  
D. They both have seed
25. Antibiotic discovery was done by the Scottish bacteriologist \_\_\_\_\_
- A. Alexander Penicillius  
B. Alexander Fleming  
C. Alexandes Fleming  
D. AlexandesPenicillius
26. The type of cell division which forms the basis of Mendel's law of segregation is \_\_\_\_\_
- A. Mitosis  
B. Meiosis  
C. Somatic  
D. Synoptic
27. Archaeobacteria is simply \_\_\_\_\_
- A. A prokaryotes without cell wall  
B. An eukaryotes without cell wall  
C. A prokaryote without a peptidoglycan cell wall  
D. An eukaryotes without a peptidoglycan cell wall

28. Leucosolenia belongs to class \_\_\_\_\_
- A. Calcispongiae
  - B. Hexactinellida
  - C. Demospongiae
  - D. Porifera
29. A pseudopodia that is threadlike, branched and interconnected is known as \_\_\_\_\_
- A. Lobopodia
  - B. Actinopodia
  - C. Filopodia
  - D. Reticulopodia
30. Photosynthetic microphylls are found in \_\_\_\_\_
- A. Division Psilophyta
  - B. Division Lycophyta
  - C. Division Sphenophyta
  - D. Division Pterophyta
31. Polio myelitis is an infectious disease caused by \_\_\_\_\_
- A. virus
  - B. protozoan
  - C. bacterium
  - D. fungus
32. Which of these is a trace element?
- A. Iron
  - B. Copper
  - C. Calcium
  - D. Sulphur
33. Which of these diseases cannot be prevented by immunization?
- A. Polio myelitis
  - B. Tuberculosis
  - C. Cholera
  - D. Onchocerciasis
34. Hydra removes undigested food by \_\_\_\_\_
- A. passing it through the anus
  - B. passing it through the mouth
  - C. means of contractile vacuole
  - D. digesting it through the body surface
35. Which of the following is INCORRECT? The prothallus of a fern \_\_\_\_\_

- A. is a flattened heart shaped structure.  
B. is green because its cells contain chloroplast.  
C. is the dominant plant.  
D. bears the sexual organs.
36. The science of taxonomy has two branches namely \_\_\_\_\_ and \_\_\_\_\_
- A. Biology naming and biochemistry  
B. Nomenclature and Classification  
C. Botany and systematic  
D. Microbiology and systematic
37. To complement biotic analysis in measuring environmental factors the following are studied  
Except
- A. Soil  
B. Water  
C. Topography  
D. Geography
38. The period between inoculation of bacteria in culture medium and the beginning of multiplication is known as \_\_\_\_\_
- A. log phase  
B. lag phase  
C. stationary phase  
D. decline phase
39. Small proteinaceous infectious particles that do not contain nucleic acid genome that codes for their progeny are \_\_\_\_\_
- A. bacteria  
B. viruses  
C. HIV  
D. prion
40. Example of all-purpose media used in cultivation of bacteria by a bacteriologist is \_\_\_\_\_
- A. selenite A agar  
B. blood agar  
C. nutrient agar  
D. tryptone soy agar
41. Which of the following is not a characteristic feature of the phylum Cnidaria?
- A. Polymorphism  
B. Cephalisation  
C. Body of two-germ layers  
D. Nematocysts

42. Which of the following groups of plants are not considered as lower plants?
- A. Pteridophytes
  - B. Bryophytes
  - C. Cryptogams
  - D. Spermatophytes
43. Non-living bodies in the cell includes one of these, \_\_\_\_\_
- A. Starch grains
  - B. Chloroplast
  - C. Ribosomes
  - D. Cell wall
44. Alternation of generation in plants involves which of the following?
- A. Processes in two sexual pathways
  - B. Processes in one single sexual pathway
  - C. Spores dispersal alone
  - D. Processes in homogamy alone
45. Which of these is not a form of respiration in Amphibians?
- A. Cutaneous
  - B. Tubular
  - C. Pulmonary
  - D. Buccal-Pharyngeal
46. The factor that least affects food shortage in the sub-saharan Africa is \_\_\_\_\_
- A. flooding
  - B. pests
  - C. mixed cropping
  - D. drought
47. Which one of the following factors may not directly affect population density of organisms?
- A. Edaphic
  - B. Nutritional
  - C. Mortality
  - D. Emmigration
48. One of the major causes of laboratory acquired infection is inhalation of \_\_\_\_\_
- A. air
  - B. water
  - C. particles
  - D. infectious aerosol

49. The major cell of the specific immune system are \_\_\_\_\_
- A. bone marrow cells
  - B. erythrocytes
  - C. lymphocytes
  - D. monocytes
50. The normal microbacter of the stomach include all of the following except:
- A. Streptococcus
  - B. Staphylococcus
  - C. Lactobacillus
  - D. Diphtheriods



## BIOLOGY ESSAY QUESTIONS

ESSAY QUESTIONS: Answer FOUR Questions in all; One from each Course

TIME: 2HRS

1. (a). State 6 differences between sexual and asexual reproduction 6 marks
- (b). Write short notes on any 2 of the following:
- i. Haplontic life cycle
  - ii. Diplontic life cycle
  - iii. Haplodiplontic life cycle 4 marks

### BIO 001: GEN BIOLOGY

2. (a). Define the following terms
- i. Genotype
  - ii. Phenotype
  - iii. Hybrid
  - iv. Dominant character. 4 marks
- (b). State clearly Mendel's first and second laws of inheritance 2 marks
- (c). If a pure breeding brown coloured rat BB is crossed with a pure breeding White rat bb, using diagrams only, show the genotype of the offspring up to the second filial generation. 4 marks

### BIO 001: GEN BIOLOGY

3. Describe the formation of two molecules of pyruvate during respiration 10 marks
- BIO 003: MICRO BIOLOGY

4. (a). Define the following terms
- i. Aseptic Technique
  - ii. Antigens
  - iii. Antibodies
  - iv. Immunity 4 marks

- (b). List 6 rules that must be observed for any aseptic technique 6 marks
- BIO 003: MICRO BIOLOGY

5. (a). How does water in the soil enter the root hair of a plant? 6marks
- (b) Name the tissue that conducts water from the root to the stem and leaves in a flowering Plant? 4marks

### BIO 002: BASIC BOTANY

6. (a). State five functions of testosterone 5 marks

(b). With aid of diagram only, describe mature spermatozoon 5 marks

**BIO 004: FUNDAMENTALS OF ZOOLOGY**

7. (a). What is a tissue? 1 mark

(b). How are plant tissue formed 3 marks

(c). Describe the structure and function of two vascular tissues 6 marks

**BIO 002: BASIC BOTANY**

8. (a). List any 6 characteristics of the phylum mullusca 6 marks

(b).Give 4 economic importance of the sub- class pulmonata 4 marks

**BIO 004: FUNDAMENTALS OF ZOOLOGY**