

Holy Spirit High School
Biology 2201
Mid- Year Exam 2012

Name: _____

Teacher: _____

Part 1: Using the **SCANTRON SHEET** provided, select the letter that best answers the question. Answer all parts from this section. (70 marks)

1. Biology is the study of:
 - a. animals only.
 - b. small living things only.
 - c. plants.
 - d. all living things.**
2. Which statement is NOT part of the cell theory?
 - a. Cells vary in size but have the same shape.**
 - b. All organisms are made of one or more cells.
 - c. All cells carry on their own life activities.
 - d. New cells arise only from other living cells.
3. Animalia is a:
 - a. kingdom.**
 - b. phylum.
 - c. genus.
 - d. class.
4. The scientific name of an organism is formed from its:
 - a. kingdom and phylum names.
 - b. phylum and class names.
 - c. family and genus names.
 - d. genus and species names.**
5. Which plant is NOT a member of the phylum Tracheophyta?
 - a. moss**
 - b. fern
 - c. oak tree
 - d. palm tree
6. Which of the following is NOT a characteristic of organisms?
 - a. reproduction
 - b. unlimited size**
 - c. growth
 - d. energy use
7. Modern taxonomists classify organisms according to their:
 - a. evolutionary relationships.**
 - b. kind of environment.
 - c. age.
 - d. seasonal variation.
8. A botanist discovers a new species of plant in a tropical rainforest. After observing its anatomy and life cycle, the following characteristics were noted: no vascular tissue, gametophyte is the dominant generation and no seeds. To what classification is this plant most likely related?
 - a. conifers
 - b. ferns
 - c. flowering plants
 - d. mosses**
9. A compound microscope differs from a simple microscope in that a compound microscope has two:
 - a. eyepieces.
 - b. lenses.**
 - c. different light sources.
 - d. objectives.

10. Which term refers to the maintenance of a constant, internal environment in all animals?
- synthesis
 - metabolism
 - homeostasis
 - circulation
11. A cell with 96% concentration of water molecules and 4% concentration of dissolved substances is placed in a hypertonic solution. The water molecule concentration of the solution could be:
- 98%.
 - 96%.
 - 94%.
- d. Not enough information given.
12. Xylem and phloem are not:
- conducting tissues
 - vascular tissues
 - present in bryophytes
 - present in tracheophytes
13. The elimination of waste substances from an organism is called:
- metabolism.
 - excretion.
 - growth.
 - osmosis.
14. Which of the following are characteristics of phylum porifera?
- mesoderm.
 - coelom.
 - bilateral symmetry.
 - asymmetry.
15. Tiny biological cells are usually measured in:
- millimeters
 - microns
 - meters
 - centimeters
16. The number of seed leaves distinguishes:
- angiosperms and gymnosperms
 - monocots and dicots
 - mosses and ferns
 - club fungi and imperfect fungi
17. The main function of glucose is:
- to act as an enzyme.
 - to assist in protein synthesis.
 - to form nucleic acids.
 - to act as a source of energy.
18. The founder of modern taxonomy is considered to be:
- Aristotle.
 - Ray.
 - Linnaeus.
 - Theophrastus.
19. A plant is a gymnosperm if it produces:
- seeds
 - cones
 - flowers
 - fronds
20. Most fungi are:
- saprobes.
 - parasites.
 - multicellular.
 - heterotrophs.
21. If you were designing a key to separate the major groups of invertebrates which would be the best characteristics to use?
- life style, reproduction, symmetry
 - body cavity, digestion, symmetry
 - life style, body cavity, symmetry
 - body cavity, germ layers, symmetry

22. Fungi are organisms mainly responsible for:
a. photosynthesis.
b. chemosynthesis.
c. decomposition.
d. flowers.
23. Members of which of the following phyla are bilateral animals with three germ layers and a coelom?
a. Nematoda
b. Mollusca
c. Porifera
d. Platyhelminthes
24. Which of the following is NOT an arthropod characteristic?
a. exoskeleton
b. jointed appendages
c. dorsal heart
d. closed circulatory system
25. As the surface of a cell increases in size, the volume of the cell:
a. increases proportionately more than the surface area.
b. increases about the same as the surface area.
c. decreases.
d. does not change.
26. The single characteristic that distinguishes birds from all other animals is (are):
a. feathers.
b. cloaca.
c. gizzard.
d. kidney.
27. The total magnification of a compound microscope is 45X. If the ocular power is 15X then the objective power is:
a. 1X
b. 3X
c. 10X
d. 30X
28. Which of the following is a way of reproducing as found in birds?
a. internal fertilization, external development
b. external fertilization, internal development
c. external fertilization, external development
d. internal fertilization, internal development
29. The evolutionary history of a group of organisms is represented by a:
a. fossil bone.
b. sample of DNA.
c. phylogenetic tree.
d. taxonomic key.
30. Which of the following has a skeleton composed of cartilage?
a. shark
b. trout
c. cod
d. goldfish
31. Asexual reproduction:
a. involves two parents.
b. results in offspring identical to the parent.
c. is necessary for the continued life of the organism.
d. occurs in all organisms.

Use the following table of classification to answer questions **32-33** below:

Taxonomic Categories for Koala, Red Kangaroo and Brown Bear

KOALA	RED KANGAROO	BROWN BEAR
Animalia	Animalia	Animalia
Chordata	Chordata	Chordata
Mammalia	Mammalia	Mammalia
Marsupialia	Marsupialia	Carnivora
Phalangeridae	Macropodidae	Ursidae
<i>Phascolarctos cinereus</i>	<i>Megaleia rufa</i>	<i>Ursus arctos</i>

32. Identify the species name of the **red kangaroo** :
- Animalia
 - Macropodidae
 - Marsupialia
 - Megaleia rufa rufa**
33. Which of the two species above are most closely related?
- Koalas and brown bears, because they are both bears
 - Kangaroos and Koalas because they are both members of the same order**
 - Brown bears and kangaroos because they are both members of the same class
 - Koalas and kangaroos because they both come from Australia
34. Grasshopper is to Arthropoda as Human is to:
- Cnidaria
 - Annelida
 - Chordata
 - Mammalia**
35. Cells that use a great amount of energy usually contain numerous
- lysosomes
 - ribosomes
 - vacuoles
 - mitochondria**
36. Processes that require energy and work against a concentration gradient include which of the following?
- I. facilitated diffusion
 - II. active transport
 - III. osmosis
- I only
 - II only**
 - I and II only
 - I, II and III
37. Which of the following statements about the cell membrane is correct?
- it has a rigid structure composed of cellulose
 - it prevents the exit of all substances from the cell
 - it is a fluid filled organelle surrounding the nucleolus
 - it is a two layered structure composed of lipids and proteins**
38. The Arthropod's exoskeleton:
- does not molt
 - is found only in the abdomen area
 - is composed of chitin**
 - grows with the animal
39. An image seen by a scanning electron microscope shows:
- not much detail
 - the surface only
 - coloured tissue
 - internal structures**

40. The correct life cycle of a virus is:
- attachment, replication, entry, lysis, assembly
 - replication, attachment, entry, lysis, assembly
 - attachment, replication, entry, assembly, lysis
 - attachment, entry, replication, assembly, lysis
41. The magnification of a compound microscope is the ratio of:
- image size to object size.
 - object size to image size.
 - ocular to objective magnifying power.
 - objective to ocular.
42. Taxonomic keys:
- cannot be used for protozoans and algae.
 - can only be used for vertebrates.
 - are usually dichotomous.
 - are of little value to most taxonomists.
43. Which group of terms is in the CORRECT order from most general to most specific?
- species, phylum, genus, kingdom
 - genus, species, kingdom, phylum
 - kingdom, phylum, genus, species
 - phylum, kingdom, species, genus
44. When taxonomists use information about DNA and RNA, they are classifying organisms on the basis of:
- structural similarity.
 - biochemistry.
 - cytology.
 - behavior.
45. Which one of the following characteristics is the best indicator of life?
- structure (shape)
 - reproduction
 - movement
 - oxygen consumption
46. Which process provides most of the oxygen found in the Earth's atmosphere?
- photosynthesis
 - aerobic respiration
 - hydration synthesis
 - fermentation
47. Heterotrophic nutrition is characteristic of which organism?
- algae
 - grass
 - oak tree
 - human
48. Photosynthesis is the process by which:
- the potential energy of glucose is transferred to ATP molecules.
 - glucose is gradually broken down to form lactic acid or alcohol.
 - two glucose molecules combine to form maltose and water.
 - light energy is converted into the chemical energy of glucose.
49. Which process requires cellular energy?
- diffusion
 - passive transport
 - osmosis
 - endocytosis
50. In the process of respiration, aerobic organisms generally use:
- carbon dioxide and give off molecular oxygen.
 - molecular nitrogen and give off carbon dioxide.
 - carbon dioxide and give off molecular nitrogen.
 - molecular oxygen and give off carbon dioxide.
51. Which substances must a green plant obtain from its environment to carry on photosynthesis?
- glucose and water
 - oxygen and chlorophyll
 - carbon dioxide and water
 - carbon dioxide and oxygen

52. Which substance is represented by X in the word equation shown?



- a. alcohol
- b. chlorophyll
- c. oxygen
- d. lactic acid

53. Which activity is NOT an example of heterotrophic nutrition?

- a. An eagle kills and eats a snake.
- b. A tapeworm absorbs food in a human intestine.
- c. A mushroom decomposes a dead log.
- d. An algal cell synthesizes food during photosynthesis.

54. Photosynthetic products are transported from the leaf to the rest of the plant through:

- a. guard cells.
- b. phloem tissue.
- c. xylem tissue.
- d. cambium cells.

55. Which statement describes an EXCEPTION to the cell theory?

- a. Cells arise from previously existing cells.
- b. The cell is the basic unit of function in animals.
- c. Mitochondria and chloroplasts can reproduce within the cell
- d. The cell is the basic unit of structure in plants

56. Which structures are found in every living cell?

- a. a plasma membrane and cytoplasm
- b. chloroplasts and mitochondria
- c. a cell wall and nucleus
- d. centrioles and chromosomes

57. The wing of a bat, arm of a man, and a flipper of a whale have similar internal structures. Even though these structures have diverse functions, their similarities suggest:

- a. development from a common ancestor
- b. development in similar environments
- c. separate development merging to a common ancestor
- d. similar reactions to environmental stress

58. The presence of which organelles would identify an organism as an autotroph?

- a. nuclei
- b. lysosomes
- c. chloroplasts
- d. cilia

59. Which structure in a plant cell is chiefly composed of a non-living material known as cellulose?

- a. cell membrane
- b. nucleus
- c. mitochondrion
- d. cell wall

60. The pine, spruce and juniper trees are examples of:

- a. angiosperms
- b. gymnosperms
- c. bryophytes
- d. dicots

61. An organism was added to a test tube containing water, which was then attached to a gas analyzing apparatus. The gas analyzer indicated that the organism was releasing the gas oxygen when placed in bright sunlight. Which type of organism was most probably added to the test tube?

- a. fresh-water animal
- b. aquatic plant
- c. amoeba
- d. virus

62. The main result of aerobic respiration is the:

- a. conversion of radiant energy into chemical energy.
- b. production of lactic acid as an end product.
- c. storage of energy in a polysaccharide.
- d. production of ATP from the breakdown of glucose.

63. Which prominent feature of a stained cell would enable the student to identify it as a plant cell?
- nucleus and vacuole
 - vacuole and cytoplasm
 - chloroplast and cell wall**
 - ribosome and centrosome
64. The process of osmosis is best illustrated by the movement of:
- water into root hair cells**
 - oxygen into red blood cells
 - carbon dioxide through stomata
 - glucose through phloem
65. In vascular plants, the absorption of water from the soil into root hairs depends principally upon the presence of a:
- phototrophic response by the root hairs.
 - geotropic response by the conducting tissue.
 - higher concentration of water in the soil than in the root hairs.**
 - higher concentration of water in the root hairs than in the soil.
66. In bryophytes, intercellular transport is accomplished by diffusion, since bryophytes:
- live only in dry environments.
 - lack vascular tissue.**
 - require no minerals from the soil.
 - contain vascular tissue.
67. Red blood cells contain a higher concentration of potassium than the surrounding blood plasma does. This higher concentration is maintained by the process of:
- cyclosis.
 - osmosis.
 - simple diffusion.
 - active transport.**
68. Platyhelminthes do not exhibit:
- bilateral symmetry
 - anterior and posterior ends
 - ectoderm, mesoderm, and endoderm layers
 - backbones**
69. Aerobic respiration is a life function that occurs in:
- animal cells, only.
 - green plant cells, only.
 - nongreen plant cells, only
 - most animal and plant cells.**
70. The simplest animals showing a complete digestive system with two openings and a tube-within-a-tube body plan are the:
- platyhelminthes
 - nematode**
 - mollusca
 - vertebrates
71. Which process requires the presence of oxygen to release energy?
- aerobic respiration**
 - photosynthesis
 - fermentation
 - anaerobic respiration
72. After arthropods, the largest animal phylum is the:
- cnidarians
 - roundworms
 - flatworms
 - mollusks**
73. Which is NOT a reason for the success of insects?
- ability to fly
 - long life cycle**
 - feeding adaptations
 - high rate of reproduction

74. The process that is unnecessary to the life of an individual organism but necessary for the continued existence of that type of organism is:
- asexual reproduction.
 - sexual reproduction.
 - reproduction.**
 - vegetative reproduction.
75. The organisms that possess a **one way** digestive tract are the:
- Platyhelminthes**
 - Annelida
 - Poriferans
 - Aves

ESSAYS: 25 MARKS

DIRECTIONS: Part 2: Complete this section on the test paper in the spaces provided. (25 marks)
Students must answer **number 1** and any **3 three** other questions.

1. Distinguish between the vertebrates found within Kingdom Animalia based upon the following characteristics.

Body cavity, Germ layers, Symmetry, Reproduction, and any other body System (10 marks)

2. a) Define **either** biogenesis or spontaneous generation. (1 mark)

b) Describe an experiment from Redi, Needham, Spallanzani or Pasteur and explain how it supports biogenesis or spontaneous generation. (4 marks)

3. Compare and contrast a plant and animal cell and label **5 (five)** of its' organelles. State the structure and function of each organelle. (5 marks)
4. What would happen to an animal cell with an internal salt concentration of 0.8% if it were placed in a salt solution of the following concentrations? (Diagrams will be necessary) (5 marks)
- a) 0.02% b) 0.8% c) 20.0%

5. Using a table, compare and contrast the processes of photosynthesis and respiration. [5 marks]

6. List 5 [five] adaptations that allowed plants to adapt to life on land. (5 marks)

