

## BSCI 124 – Unit I sample exam questions

There are fifty questions - each worth two points. Multiple choice - Record the best answer. Record your answers in the blank spaces to the left of the question number using CAPITAL letters.

- \_\_\_\_\_1. Science is different from art, philosophy, and religion because scientific principles are (A) always correct (B) verified (C) biased (D) filled with emotion
- \_\_\_\_\_2. One way carbon leaves the biosphere is by (A) photosynthesis (B) fixation (C) respiration (D) all of these
- \_\_\_\_\_3. Prokaryotic cells lack (A) a plasma membrane (B) DNA (C) organelles (D) cytosol
- \_\_\_\_\_4. In most plants, the primary organ for photosynthesis is the (A) leaf (B) stem (C) root (D) wood
- \_\_\_\_\_5. When discussing the energy flow and food chains, what is an example of a producer? (A) lions (B) the earth (C) cows (D) grass
- \_\_\_\_\_6. This organelle stores compounds that may include sugars, salts, or pigments. (A) golgi apparatus (B) endoplasmic reticulum (C) nucleus (D) vacuole
- \_\_\_\_\_7. The purpose of meiosis is to produce (A) growth (B) epidermal cells (C) gametes (D) xylem
- \_\_\_\_\_8. Bones support animals. What supports plants? (A) cell walls (B) muscles (C) also bones (D) plasma membranes
- \_\_\_\_\_9. Which of the following is NOT a component of a nucleotide (A) phosphate (B) lipid (C) sugar (D) organic base
- \_\_\_\_\_10. The major site of protein synthesis is the (A) nucleolus (B) ribosome (C) plasma membrane (D) chloroplast
- \_\_\_\_\_11. The biosphere includes (A) the atmosphere (B) the oceans (C) the organisms (D) all of these
- \_\_\_\_\_12. Carbohydrates have a lot of energy because they have a lot of (A) carbon-hydrogen bonds (B) glycerol (C) phosphate atoms (D) oil
- \_\_\_\_\_13. Science can best be described as (A) a technique (B) all knowledge (C) not using data (D) lacking experimentation

\_\_\_\_\_14. The site of plant cell reproduction in the root is the (A) xylem (B) meristem (C) root hair (D) root cap

\_\_\_\_\_15. If you have been eating too much fat, your blood may have high levels of (A) polysaccharides (B) triglycerides (C) monosaccharides (D) sugar

\_\_\_\_\_16. Electrons lost from the photosynthetic pigments through photosynthesis are replaced by the breakdown of (A) carbon dioxide (B) water (C) ATP (D) NADPH<sub>2</sub>

\_\_\_\_\_17. The site of cellular respiration is the (A) golgi apparatus (B) nucleolus (C) mitochondrion (D) endoplasmic reticulum

\_\_\_\_\_18. The purpose of the DNA master plan is to produce (A) glucose (B) lipids (C) proteins (D) starch

\_\_\_\_\_19. Which of the following is NOT true about living organisms. (A) they grow and develop (B) they respond to stimuli (C) they reproduce (D) they create their own energy

\_\_\_\_\_20. For protein synthesis, the DNA message must first be transcribed. What molecule does this? (A) transfer RNA (B) ribosome RNA (C) messenger RNA (D) amino acid

\_\_\_\_\_21. The cellular contents circulates because of (A) gravity (B) microtubules (C) transpiration (D) osmosis

\_\_\_\_\_22. Waxes, certain vitamins, and chlorophyll are made of (A) proteins (B) carbohydrates (C) lipids (D) nucleic acids

\_\_\_\_\_23. The purple (P) flower color of a plant is dominant over the white (p) color. The phenotypic ratio of the offspring due to random assortment is 4 purple, 0 white. What are the possible genotypes of the parents? (A) PP, PP (B) PP, pp (C) Pp, Pp (D) any of these

\_\_\_\_\_24. After mitosis, what is the relationship between the mother cell and the resulting daughter cell? (A) the mother is diploid and the daughter is haploid (B) the mother is haploid and the daughter is diploid (C) they are identical (D) they are different

\_\_\_\_\_25. The important way nitrogen enters the biosphere is by (A) respiration (B) decomposition (C) photosynthesis (D) fixation by bacteria

\_\_\_\_\_26. DNA duplication occurs in (A) metaphase (B) anaphase (C) telophase (D) interphase

- \_\_\_\_\_27. The division of the cell's cytoplasm is called (A) mitosis (B) interphase (C) cytokinesis (D) prophase
- \_\_\_\_\_28. The actual source of energy in the biosphere comes from (A) heat (B) UV radiation (C) gravity (D) photons
- \_\_\_\_\_29. What happens in Anaphase I of meiosis? (A) The sister chromatids separate. (B) The cell goes from the diploid to the haploid condition. (C) The DNA duplicates. (D) The chromosomes line up along the equator.
- \_\_\_\_\_30. What is a characteristic of lipids? (A) they are the primary compound in the cell wall (B) they are the transport form of sugar (C) they make up RNA (D) they won't dissolve in water
- \_\_\_\_\_31. A codon will match with a specific (A) amino acid (B) lipid (C) cell type (D) carbohydrate
- \_\_\_\_\_32. The plant cell wall is primarily composed of (A) living cells (B) lipid (C) cytosol (D) carbohydrates
- \_\_\_\_\_33. These chromosomes are alike. (A) heterozygous (B) dominant and recessive (C) homologous (D) all of these
- \_\_\_\_\_34. The purpose of sexual reproduction is to (A) produce variable offspring (B) produce new cells for growth (C) duplicate nuclei (D) duplicate prokaryotic organisms
- \_\_\_\_\_35. In mitosis, the sister chromatids are pulled apart by (A) spindle fibers (B) cytokinesis (C) chromosomes (D) cytoplasmic streaming
- \_\_\_\_\_36. In a plant, the tall characteristic (T) is dominant over the short (t). In a monohybrid cross, two tall plants produce 3 tall and 1 short offspring. What are the genotypes of the parents? (A) TT, tt (B) TT, Tt (C) Tt, Tt (D) tt, tt
- \_\_\_\_\_37. Products of the light reaction of photosynthesis are (A) high energy molecules (B) sugars (C) water (D) carbon dioxide
- \_\_\_\_\_38. Water moves through a plant because of (A) a water pump in the roots (B) a water pump in the stem (C) evaporation from the leaves (D) evaporation from the roots
- \_\_\_\_\_39. The energy used during photosynthesis to form the bonds in glucose comes from (A) ATP and NADPH<sub>2</sub> (B) H<sub>2</sub>O (C) CO<sub>2</sub> (D) N<sub>2</sub>
- \_\_\_\_\_40. Having two complete sets of chromosomes. (A) egg (B) haploid (C) sperm (D) diploid

\_\_\_\_\_41. The trait that is masked in the heterozygous condition is (A) a phenotype (B) dominant (C) a tall pea plant (D) recessive

\_\_\_\_\_42. With incomplete dominance, when a red flowered plant is crossed with a white flowered plant, the offspring will be (A) red (B) pink (C) white (D) all of these

\_\_\_\_\_43. In respiration, the energy from sugar molecules is transferred to (A) photosynthetic pigments (B) ATP (C) carbon dioxide (D) oxygen

\_\_\_\_\_44. If a photon's wavelength is increased, its energy will (A) increase (B) stay the same (C) decrease (D) all of these

Matching - match the plant structure with its primary function (use capital letters)

\_\_\_\_\_45. Stomates           A. protective tissue

\_\_\_\_\_46. Cuticle            B. food transport

\_\_\_\_\_47. Phloem            C. gas exchange

\_\_\_\_\_48. Epidermis        D. storage

\_\_\_\_\_49. Cortex            E. water transport

\_\_\_\_\_50. Xylem            F. prevents excessive evaporation

ANSWERS: 1-B, 2-C, 3-C, 4-A, 5-D, 6-D, 7-C, 8-A, 9-B, 10-B, 11-C, 12-A, 13-A, 14-B, 15-B, 16-B, 17-C, 18-C, 19-D, 20-C, 21-B, 22-C, 23-D (see note below), 24-C, 25-D, 26-D, 27-C, 28-D, 29-B, 30-D, 31-A, 32-D, 33-C, 34-A, 35-A, 36-C, 37-A, 38-C, 39-A, 40-D, 41-D, 42-B, 43-B, 44-C, 45-C, 46-F, 47-B, 48-A, 49-D, 50-E

Question 23 -descriptions of possible answers: answer A - all offspring PP, purple; answer B - all offspring Pp, purple; answer C - typical offspring ratio is PP, 2Pp, pp or 3 purple to 1 white based on probabilities - but random assortment could also produce offspring that are 2 purple and 2 white, 1 purple and 3 white, all purple, or all white. **Therefore, the correct answer to this question is D - any of these.**