



“Investing in Africa’s future”

COLLEGE OF HEALTH, AGRICULTURE AND NATURAL SCIENCES (CHANS)

DEPARTMENT OF PUBLIC HEALTH AND NURSING (DPHN)

NSNS 322 BIOSCIENCES

END OF SECOND SEMESTER FINAL EXAMINATIONS

APRIL/MAY 2025

LECTURER: Mrs. F. MARENGA

DURATION: 3 HRS

INSTRUCTIONS

ANSWER ALL QUESTIONS IN SECTION A AND ANY
THREE QUESTIONS IN SECTION B

Marks allocated for each question is shown at the end of each
question

Credit will be awarded for logical, systematic and neat presentation.

Section A: Answer ALL Questions (40 Marks)

Multiple Choice Questions. Answer ALL questions: *CIRCLE THE CORRECT ANSWER* (Each Question Carries 1 Mark)

1. What is the primary function of the cell membrane?
 - a) To control cell growth
 - b) To regulate what enters and leaves the cell
 - c) To produce energy for the cell
 - d) To synthesize proteins
2. Which organelle is responsible for protein synthesis?
 - a) Mitochondria
 - b) Ribosomes
 - c) Lysosomes
 - d) Golgi apparatus
3. What is the term for the physical appearance of a trait?
 - a) Genotype
 - b) Phenotype
 - c) Chromosome
 - d) Gene
4. Which type of genetic inheritance involves the interaction of two or more genes?
 - a) Mendelian inheritance
 - b) Polygenic inheritance
 - c) Mitochondrial inheritance
 - d) Epigenetic inheritance
5. What is the process by which DNA is copied?
 - a) Transcription
 - b) Translation
 - c) Replication
 - d) Mutation

6. Which molecule is responsible for carrying genetic information from DNA to the ribosome?

- a) mRNA
- b) tRNA
- c) rRNA
- d) DNA

7. A patient has low serum albumin levels and ascites. Albumin will be given to:

- a) Improve nutritional status
- b) Lower hydrostatic pressure
- c) Pull water back into the vascular bed.

8. A patient has interstitial oedema. Which of the following caused it?

- a) Increased venous hydrostatic pressure.
- b) Decreased arterial hydrostatic pressure.
- c) Increased plasma colloid osmotic pressure.

9. What is the process by which cells become specialised?

- a) Differentiation
- b) Mitosis
- c) Meiosis
- d) Osmosis

10. Genetic conditions may be classified as below **except**:

- a) Multifactorial condition
- b) Pyogenic conditions
- c) Chromosomal conditions
- d) Mitochondrial conditions

Answer the following using TRUE or FALSE (Each Question Carries 1 Mark)

11. Hypertonic solutions can be used to treat cerebral oedema.

12. Sodium is an extracellular electrolyte.

13. The glomerular capsule secretes hydrogen ions into urine and reabsorbs bicarbonate.

14. Genes regulate both the types of proteins made and the rate at which proteins are produced.

15. Protozoans are unicellular eukaryotes.

16. Normal flora can cause opportunistic infections.

17. An allele is the location of the gene on the chromosome.

18. Killed or inactivated vaccines: Induce only humoral response and may require multiple doses and boosters to achieve immunity.

19. Isolation is a basic technique used in microbiology labs to place microbial cultures onto a culture medium.

20. Gluconeogenesis is a metabolic pathway to generate energy from glucose.

Short Questions

21. Briefly describe the structure of Deoxyribonucleic acid (DNA). (5)

22. Describe the chain of infection and how it can be broken. (10)

23. Outline the mechanisms of cell adaptation (5)

Section B: Answer THREE questions only

1. a) Describe the processes of fluid and electrolyte regulation in the body (10)

b) Describe the fluid compartments of the body (10)

2. Critically analyse the concept of Evidence-based practice when using the nursing process. (20)

3. Describe homeostasis including the mechanisms to that maintain acid base balance. (20).

4. Discuss the role of the nurse in ensuring standard infection prevention and control. (20)

