

**POST BASIC
BACHELOR OF SCIENCE (NURSING)**

Term-End Examination,

December, 2010

00793

**BNS-102 : APPLIED SCIENCE (BIOCHEMISTRY,
BIOPHYSICS, MICROBIOLOGY, NUTRITION
AND DIETETICS)**

Time : 3 hours

Maximum Marks : 70

Instructions :

1. *Applied Science Course comprises of the following four parts :*

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|---|-------------------|
| <i>Part A : Biochemistry</i> | <i>- 18 marks</i> |
| <i>Part B : Biophysics</i> | <i>- 17 marks</i> |
| <i>Part C : Microbiology</i> | <i>- 18 marks</i> |
| <i>Part D : Nutrition and Dietetics</i> | <i>- 17 marks</i> |
2. *Students appearing for Applied Science Course Examination should follow the relevant instructions given below :*
 - (a) *For those appearing for the first time for the examination of Applied Science Course : The students should answer the questions of all the four parts in separate answer sheets provided. On the top of each answer sheet the student should enter the Enrolment No., Course Code, Course Title and Parts.*
 - (b) *For those who are reappearing for the examination of Applied Science Course : The students need to answer only those parts, on separate answer sheets, which have not been successfully completed.*

PART-A Biochemistry

- *Attempt all the questions. Choice wherever is indicated is the question itself.*
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1. Name radio-isotopes used for the following. $\frac{1}{2} \times 4 = 2$
 - (a) Determination of formation of blood cells and their life span.
 - (b) Diagnosis and treatment of various types of tumours and cancer.
 - (c) Treatment of Leukaemia (blood cancer)
 - (d) Diagnosis and treatment of thyroid malfunction.

2.
 - (a) List any **two** disadvantages of using hard water for cleaning purposes. $2+1=3$
 - (b) Write any **two** methods of converting permanent hard water into soft water.

3. Give reasons for **any two** of the following : $1+1=2$
 - (a) RBCs suffer no damage when suspended in isotonic saline solution.
 - (b) Antacids relieve the burning sensation in hyperacidity patients.
 - (c) Polyunsaturated fatty acids are important in our diet.
 - (d) Fats are preferred over carbohydrates for meeting the energy requirements of the body under well-fed conditions.

4. (a) Write the three major groups of carbohydrates and give one example for each group. $1\frac{1}{2}+1\frac{1}{2}=3$
- (b) Explain the following properties of monosaccharides. $1+1=2$
- (i) Reducing ability (ii) Fermentation
5. Write a brief note on *any one* of the following : 3
- (a) Blood clotting and its significance
- (b) Malabsorption syndromes.
- (c) Abnormal constituents of urine and their diagnostic relevance.
6. Fill in the blanks with suitable words : $\frac{1}{2}\times 6=3$
- (a) Buffer solutions contain a weak base and _____ .
- (b) Soaps are sodium or potassium salts of _____ .
- (c) Co-enzyme A is a derivative of the water-soluble vitamin _____ .
- (d) The three main sources of glucose in blood are, dietary carbohydrates, glycogenolysis and _____ .
- (e) Ammonia derived from the catabolism of amino acids, is converted into _____ before excretion.
- (f) The decrease in pH of blood lead to _____ .

PART-B Biophysics

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- *Attempt all questions.*
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1. (a) What is systematic error ? 1+1
(b) State the precautions you will follow while taking weight of patient on weighing machine.

2. (a) Define Acceleration. 1+2
(b) What is the difference between flow of blood from arteries to capillaries and from capillaries to heart ?

3. (a) Define pressure. 1+2
(b) Give four examples of pressures being used in human body.

4. Explain the mechanism of heat balance in normal body. 2

5. Match the terms listed in column I with the statements given in Column II. $4 \times 1 = 4$

| Column I | Column II |
|----------------------------|---|
| (a) Visible light | (i) To locate ulcer. |
| (b) Power of accommodation | (ii) To focus images on the retina of the eye. |
| (c) Barium X-ray | (iii) To sterilize operation theatre and medical instruments. |
| (d) Refraction of light | (iv) To treat jaundice in infants. |
| | (v) Used for relieving pain in Spondylysis backache etc. |
| | (vi) The capacity of eye lense to change its focal length. |

6. Read the following statements and write 'T' in your answer book if the statement is true and 'F' it is false. $3 \times 1 = 3$

- (a) Strong magnets are used in surgery to remove foreign bodies of iron from regions difficult to reach.
- (b) Copper is poor conductor of electricity.
- (c) Brain pacemaker is used for patients with cerebral palsy.

PART-C Microbiology

- Attempt all questions. Illustrate the answers wherever necessary.

1. Fill in the blanks : 6x½=3
- (a) Bacteriostatic drugs only _____ the growth of bacteria.
 - (b) Typhoid bacilli are not killed even when _____ .
 - (c) The viruses that infect bacteria are called _____ .
 - (d) Isolation of the virus from the host cell was first done by _____ .
 - (e) The antibodies which cause bacteria to form clumps are called _____ .
 - (f) *Enterobius vermicularis* is commonly known as _____ .
2. Write T for *true* and F for *false* against the statements in the answer book : 6x½=3
- (a) Streptococci are cocci in clusters.
 - (b) Bacteria which grow only in the absence of oxygen are called aerobes.
 - (c) Diphtheria bacilli are strictly anaerobic.
 - (d) *Treponema pallidum* causes venereal disease syphilis in human beings.
 - (e) Myxotoxicosis is a disease caused by myxotoxin.
 - (f) Ability of the organisms to cause infection is called virulence.

3. Distinguish between *any three* of the following : 3x2=6
- (a) Obligatory and facultative parasite.
 - (b) *Clostridium tetani* and *Corynebacterium diphtheriae*.
 - (c) Syphilis and epidemic typhus.
 - (d) Subclinical and nosocomial infection.

OR

State the direct and indirect methods of transmission by which the pathogenic organisms pass from the patient to a healthy man. 3+3=6

4. Attempt *any three* of the following : 2x3=6
- (a) Fractional sterilization
 - (b) Binary fission in bacteria
 - (c) Rhabdoviruses
 - (d) Retro-viruses
 - (e) Toxins.

PART-D Nutrition and Dietetics

- *Attempt all the questions.*
 - *Attempt all parts of the questions at one place.*
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- (a) Enlist three distinct types of carbohydrates and their functions. $1\frac{1}{2}+1\frac{1}{2}=3$
 - (b) State any **three** functions of iron.

 - (a) Describe the influence of Disease on food intake and dietary pattern. $2+3=5$
 - (b) Explain the importance of assessing nutritional status of an individual.

 - (a) Explain the importance of planning the therapeutic diet. 2
 - (b) Describe the dietary management of a patient with peptic ulcer. 3

 - (a) Define the terms food intoxication. $1+3=4$
 - (b) Enlist the food sanitation measures that you will take as a nurse to prevent food illness in the hospital.
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