

**POST BASIC  
BACHELOR OF SCIENCE (NURSING)  
B.Sc. (N) (PB)**

01482 **Term-End Examination**  
**December, 2019**

**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 :*
  - Part A : Biochemistry – 18 marks*
  - Part B : Biophysics – 17 marks*
  - Part C : Microbiology – 18 marks*
  - Part D : Nutrition and Dietetics – 17 marks*
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.*
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**PART A**  
**(Biochemistry)**

*Answer all questions. Each question carries 3 marks. Choices are internal. Answer this Part A Biochemistry on separate answer sheet.*

1. (a) Distinguish between 'solute' and 'solvent'. 1  
(b) Explain the term 'Water Balance'. 2

**OR**

Explain the terms Hypertonic, Hypotonic and Isotonic solutions. 1+1+1=3

2. (a) Explain the term Buffer solution. 2  
(b) Distinguish between 'intracellular' fluid and 'interstitial' fluid. 1
3. (a) Define 'disaccharides'. Give two examples.  $1 + \frac{1}{2} + \frac{1}{2}$   
(b) Name two polynucleotides. 1

4. (a) Define Amino Acids. 1  
(b) List any four factors which affect enzyme activity. 2
5. (a) Enlist any four functions of blood. 2  
(b) Name two factors that cause turbidity in urine. 1
6. (a) Explain 'Malabsorption Syndrome'. 2  
(b) Write the meaning of Glycolysis. 1

**OR**

Define the following key words :

$$6 \times \frac{1}{2} = 3$$

- (a) Isotopes  
(b) Emulsion  
(c) Antigen  
(d) Obstructive jaundice  
(e) Atherosclerosis  
(f) Transcription

**PART B**  
**(Biophysics)**

Answer **all** questions.

1. (a) Name the four commonly used systems of units which have been used for measuring physical quantities.

(b) Write down the standards of measurement used in each of the four systems for the following physical quantities : 1+2=3

Physical Quantity	System 1	System 2	System 3	System 4
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Length

Mass

2. (a) State the underlying principle which is applicable to urinometer.

(b) State the purpose of urinometer. Explain the mechanism of its working. 1+2=3

3. Explain the source and importance of energy in the body. 3

4. (a) Write in brief about clinical thermometer.

(b) State any two advantages of mercury in thermometers. 2+1=3

5. Read the following statements carefully and write 'T' if the statement is true and 'F' if it is false.

$$5 \times \frac{1}{2} = 2 \frac{1}{2}$$

- (a) A short-sighted person requires convex lenses. (T/F)
- (b) X-rays are highly energetic electromagnetic waves. (T/F)
- (c) A long-sighted person cannot see far objects distinctly. (T/F)
- (d) The image is formed on the cornea of the eye. (T/F)
- (e) No work is done when a person climbs a hill or walks upstairs. (T/F)

6. Fill in the blanks in the following statements :

$$5 \times \frac{1}{2} = 2 \frac{1}{2}$$

- (a) In diathermy \_\_\_\_\_ current is passed through tissues for heating effect.
- (b) The electric charges in motion constitute the \_\_\_\_\_.
- (c) "Ohm" is the practical unit of \_\_\_\_\_ resistance.

- (d) When a current passes through a coil, it gives rise to a \_\_\_\_\_ around it.
- (e) EEG is the record of action potential of the \_\_\_\_\_ which appear on the surface of the brain.

**PART C**  
**(Microbiology)**

*Answer all questions. Answer all parts of a question at one place.*

1. Write two to three lines on any **four** of the following :  $4 \times 2 = 8$
- (a) Direct transmission and Indirect transmission
  - (b) Antigen and Antibody
  - (c) Primary host and Intermediate host
  - (d) Pathogenic and Non-pathogenic parasites
  - (e) Gram positive and Gram negative bacteria

2. Discuss the factors influencing infection. 5

3. Match the following :  $1 \times 5 = 5$

- | A   | B                         |
|---|---------------------------|
| (a) Toxins produced in intestine                          | (i) Virulence             |
| (b) Bacteria which grows in absence of oxygen             | (ii) Bodeltella Pertussis |
| (c) Whooping cough  | (iii) Parasites           |
| (d) Ability of an organism to cause infection             | (iv) Virus                |
| (e) An organism that draws nourishment from its plan/host | (v) Enterotoxins          |
|   | (vi) Aerobic              |
|   | (vii) Anaerobic           |

**PART D**  
**(Nutrition and Dietetics)**

*Answer **all** questions. Answer all parts of a question at one place. Answer on a separate answer sheet.*

1. (a) List the six major nutrient categories.  
(b) Differentiate between Macronutrients and Micronutrients.  
(c) Explain the functions performed by carbohydrates and fats.  $3+1+2+2=8$
  
2. (a) List the methods for assessing nutritional status.  
(b) Explain the clinical assessment for Protein Energy Malnutrition.  $2+3=5$
  
3. Discuss the dietary management in the following conditions :  $2+2=4$ 
  - (a) Jaundice
  - (b) Cirrhosis of liver

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