

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

**Term-End Examination**

**June, 2016**

01757

**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 the questions. The choice is internal.*

1. (a) Explain why persons with AB blood group are said to be Universal Acceptors.
- (b) Name the carbohydrate constituent of ATP and explain the significance of hydrolysis of ATP.  $1\frac{1}{2} + 1\frac{1}{2} = 3$
2. (a) Describe in brief the glucose tolerance test.
- (b) Name any one disaccharide. How are animals able to digest grass?  $1\frac{1}{2} + 1\frac{1}{2} = 3$
3. (a) Explain the significance of citric acid cycle.  $1\frac{1}{2}$
- (b) Name the abnormal constituents of urine which are responsible for certain pathological conditions.  $1\frac{1}{2}$

4. (a) Give the pH values of any three body fluids, other than water.
- (b) Write the name of the genetic or the hereditary material in human beings. How is it different in prokaryotes ?  $1\frac{1}{2} + 1\frac{1}{2} = 3$

5. Explain any *three* of the following terms in two or three sentences each :  $3 \times 1 = 3$

- (a) Metabolites
- (b) Gluconeogenesis
- (c) Isotonic Solutions
- (d) Lipoproteins
- (e) Atherosclerosis

6. Distinguish between any *two* of the following :  $1\frac{1}{2} + 1\frac{1}{2} = 3$

- (a) Diabetes mellitus and Diabetes insipidus
- (b) Plasma and Serum
- (c) Water Balance and Electrolytic Balance

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

*Answer all questions.*

7. What is a radioisotope ? 1
  
8. Why is the operation theatre uniform mostly cotton based ? 1
  
9. Give an example of the use of magnets in surgery. 1
  
10. State the law under which the foetus inside the amniotic fluid inside the uterus is protected till its birth. 1
  
11. What are the various factors which contribute to heat production in the body ? 2
  
12. What is suction ? Explain the working of a syringe. 2
  
13. Why does a person sitting on a wheel-chair fall backwards when it is suddenly moved ? Give reasons. 2

14. What is systematic error ? Give one example. 2

15. Fill in the blanks.  $5 \times 1 = 5$

(a) To see the objects at varying distances from the eye, the eye lens must change its \_\_\_\_\_ .

(b) A person with hypermetropia should use a \_\_\_\_\_ lens to correct the defect.

(c) \_\_\_\_\_ radiations activate ergosterol in the skin to form vitamin D.

(d) The structure of the ear allows sound waves from the outside ear to travel right up to the inner ear, where these vibrations are converted into \_\_\_\_\_ .

(e) The use of air rings and water mattress is based on the \_\_\_\_\_ law.

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

*Attempt all questions.*

- 16.** Write in brief about any *three* of the following :  $3 \times 2 = 6$
- (a) Difference between Algae and Fungi
  - (b) Endogenous and Exogenous infection
  - (c) Exotoxin and Endotoxin
  - (d) Antigen and Antibody
- 17.** (a) List any four chemical agents of destruction of microbes.
- (b) Explain any one in detail.  $2 \times 2 = 4$
- 18.** Given below are the statements. Write 'T' if you find the statement *True* and 'F' if it is *False* in your answer book.  $5 \times 1 = 5$
- (a) Ability of an organism to cause infection is called virulence. (T/F)
  - (b) An arthropod with four pairs of legs is called an insect. (T/F)
  - (c) A complement fixation test for Syphilis is called Wassermann test. (T/F)
  - (d) Non-pathogenic parasites cause disease. (T/F)
  - (e) Stich abscess is mostly caused by *Staphylococcus albus*.

19. Given below are the statements. Match Column 'A' with Column 'B' and write in your answer book.

3×1=3

*Column A*

*Column B*

- |                                       |                               |
|---------------------------------------|-------------------------------|
| (a) Arthropods which transmit disease | (i) <i>Treponema pallidum</i> |
| (b) Syphilis                          | (ii) Parasite                 |
| (c) Living on the cost of host        | (iii) Vector                  |
|                                       | (iv) Anthrax bacillus         |

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

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

- 20.** (a) Explain the meaning of 'Therapeutic Diet'.  
(b) Describe the types of dietary modifications that need to be made in case of diseases.  $1+4=5$
- 21.** Write three main functions of nutritional surveillance. 3
- 22.** Discuss the dietary management of a patient with cirrhosis of liver. 4
- 23.** (a) Differentiate between food infection and food intoxication.  
(b) List the food sanitation measures.  $2+3=5$
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