

POST BASIC  
BACHELOR OF SCIENCE (NURSING)

B.Sc (N) (PB)

Term-End Examination,

June, 2013

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.*

## PART-A Biochemistry

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- Answer all questions.
  - Choice is internal
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1. Tabulate the differences between RNA and DNA with regard to their composition and function. 1.5x2=3
  
2. (a) Specify two chemical reactions that are not given by polysaccharides but given by monosaccharides. 1  
(b) State any two biological functions of carbohydrates. 2
  
3. (a) Define a radio isotope. 1  
(b) How are the following radio - isotopes used in the field of medicine ? 0.5x4=2
  - (i) Iodine
  - (ii) Calcium
  - (iii) Iron
  - (iv) Cobalt

**OR**

- (a) Define the term pH of a solution. 1
- (b) Which are the two components of a buffer system ? 1
- (c) Name any two important buffer systems in the human body. 1

4. (a) Name the final products of complete hydrolysis of fats and nuclei acids during digestion. 2
- (b) Which are the two major functions of metabolism in the living system ? 1
5. Explain the effect of change of temperature and change of pH , on the rate of enzyme activity. 1.5x2=3
6. Fill in the blanks with suitable words : 0.5x6=3
- (a) The yellow colour of urine of jaundice patients is due to presence of excess \_\_\_\_\_.
- (b) The bad smell and taste of fats and oils left exposed to air is due to the chemical process known as \_\_\_\_\_.
- (c) In pyogenic meningitis , the level of \_\_\_\_\_ in CSF is drastically reduced.
- (d) The major mechanisms in blood glucose regulation include the role of enzymes, \_\_\_\_\_ and hormones.
- (e) \_\_\_\_\_ blood group is called the universal acceptor.
- (f) \_\_\_\_\_ pathway is responsible for the partial oxidation of glucose into either pyruvic acid or lactic acid.

## PART-B Biophysics

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- *Attempt all questions.*
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1. Briefly describe *any two* of the following : 2+2=4
  - (a) Frictional force and its application in human body.
  - (b) Effects of gravitational force on human body.
  - (c) Infra - red radiation.
  
2. Define Machine . Give **two** examples of machines from Nursing Practice. 2
  
3. Define the followings. 1x5=5
  - (a) Pressure
  - (b) Siphon
  - (c) Conduction of heat
  - (d) Evaporation
  - (e) Electromyography
  
4. List the common defects of vision. 2
  
5. Fill in the blanks. 1x4=4
  - (a) Electric current is electric charge in \_\_\_\_\_ .
  - (b) Sound waves move four times faster in \_\_\_\_\_ than in air.
  - (c) The unit of length in the metric system is \_\_\_\_\_ .
  - (d) Substances that do not allow electrons to pass through them freely are called \_\_\_\_\_ .

## PART-C Microbiology

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- *Attempt all questions. Illustrate the answers wherever necessary.*
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1. Write T for true and F for false against the statements in the answer book.  $\frac{1}{2} \times 6 = 3$
- (a) Mycetoma is a chronic infection of subcutaneous tissue which most often affects the mouth cavity.
  - (b) The growth of organisms in the culture medium is called culture.
  - (c) Ability of the organism to cause infection is called virulence.
  - (d) Mycoplasma is a special group of micro organisms with thick cell walls.
  - (e) A parasite which entirely depends on the host for its existence is called facultative parasite.
  - (f) Ticks are six legged forms of arthropods .
2. Fill in the blanks :  $\frac{1}{2} \times 6 = 3$
- (a) Symbol is used for concentration of acid or alkali in the fluid is \_\_\_\_\_.
  - (b) The time between exposure to infection and the appearance of disease symptoms is called as \_\_\_\_\_ .

- (c) A small hard elevation on the skin is called a \_\_\_\_\_.
- (d) Vertebrate is an animal with \_\_\_\_\_.
- (e) An antigen which causes allergy is called \_\_\_\_\_.
- (f) A mature virus particle is called \_\_\_\_\_.

3. Distinguish between *any three* of the following :

- (a) Antitoxins and Agglutinins
- (b) Capsomeres and Peplomers
- (c) Pasteurization and tyndallization
- (d) Basic and Acidic stain
- (e) Epidemic and Endemic Typhus
- (f) Enterotoxin and Endotoxin

**2x3=6**

**OR**

State the three ways of cultivating an animal virus.

4. Answer *any three* of the following questions as directed :

**1x3=3**

- (a) How do you calculate the magnification of a microscope ?
- (b) Why are Mycobacteria called acid - fast bacilli ?
- (c) What is an autoclave ?
- (d) How is intestinal amoebiasis diagnosed ?
- (e) Name two viruses that can be acquired through needle injury.

5. How do we get the following worms in our body ? 3

- (a) Hook worm
- (b) Thread worm
- (c) Whip worm
- (d) Filaria worm
- (e) Ascaris worm
- (f) Tape worm

**OR**

Describe a sexual phase in the life - history of malarial parasite. 3

**OR**

Name the pathogens that causes typhoid, cholera and whooping cough in man. 3

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## PART-D Nutrition and Dietetics

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- *Attempt all the questions. Attempt all parts of a question at one place only.*
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1. (a) Define the terms , micronutrients and macro nutrients. 1+1+2+3=7  
(b) List the functions of the nutrients.  
(c) Explain the role of food in the prevention of disease.
  
  2. Describe the types of dietary modifications. 4
  
  3. Discuss the dietary management of a patient with Hepatitis . 3
  
  4. (a) List the two major causes of food infections and infestations. 1+2=3  
(b) List four food sanitation measures.
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