

No. of Printed Pages : 12

BNS-102/202

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

[B. SC. (N) PB]

Term-End Examination

December, 2025

**BNS-102/202 : APPLIED SCIENCES
(BIOCHEMISTRY, BIOPHYSICS,
MICROBIOLOGY, NUTRITION AND DIETETICS)**

Time : 3 Hours

Maximum Marks : 70

Note : 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.*

BNS-102/202-A**Part-A** (Marks : 18)**APPLIED SCIENCES—BIOCHEMISTRY**

Note : (i) *Attempt all the questions. All questions carry equal marks.*

(ii) *Follow the word limit as given below :*

3 marks : 200 words

2 marks : 50 words

1 mark : 20-30 words.

1. (a) Calculate the molecular weight of the following : 2

(i) Water

(ii) Glucose

Given : Atomic weight of H = 1, C = 12 and O = 16.

(b) Mention any *four* characteristics of metals. 1

2. (a) Name the inorganic salts responsible for hardness of water. 1
- (b) Explain the methods of softening permanent hard water. 1
- (c) Give an example of the following : 1
- (i) Solid-solid solution
- (ii) Solid-liquid solution
3. (a) List the different classes of lipids. $1\frac{1}{2}$
- (b) Explain any *three* biological functions of lipids. $1\frac{1}{2}$
4. (a) Define proteins. 1
- (b) Explain the factors affecting enzyme activity. 2
5. List any *three* abnormal constituents of urine. Explain their diagnostic significance. 3
6. Describe various factors which affect digestion and absorption of food. 3

BNS-102/202-B**Part-B**

(Marks : 17)

APPLIED SCIENCES : BIOPHYSICS

Note : (i) *Attempt all questions.*

(ii) *Attempt all parts of a question at one place.*

(iii) *Marks are indicated against each question.*

(iv) *Follow word limit as given :*

*1-2 marks within **20-40** words.*

1. (a) Identify the type of error (systematic/random) in the following experimental conditions. Also discuss how would you rectify the error :

(i) While reading the volume of liquid in a measuring cup, the surface of the liquid is held above or below the eye level. 1

(ii) Pointer of the weighing scale is not coinciding with zero when it is not loaded. 1

(b) For the units given below, identify the quality it measures : $\frac{1}{2} + \frac{1}{2} = 1$

(i) Meter

(ii) Ton

2. Read the following statements and state true (T) if it is correct and false (F) if it is incorrect : $4 \times \frac{1}{2} = 2$

(a) Change in body position does not affect the blood pressure in different parts of the body.

(b) A speed of 20 km/hr. is equal to 5.55 m/sec.

(c) Centre of gravity of a body is the point where the whole body weight is supposed to act.

- (d) Two pieces of different metals with equal weight when immersed in water experience equal upthrust force.
3. (a) Why is a person who is trying to lose weight is recommended to avoid fat rich food ? 1
- (b) Give *one* example from human body of Class I and Class III lever each. 1
4. (a) Write the difference between heat and temperature. 1
- (b) Name *two* mechanisms each which result in heat production and heat loss in a normal body. 1
- (c) Convert 100°C to $^{\circ}\text{F}$ scale. 2
- (d) State the reason why a high humidity is maintained in the operation theatre. 1
5. (a) Explain the following defects of eye : 2
- (i) Astigmatism
- (ii) Shortsightedness.
- How can they be corrected ?

(b) Write the medical use of Infrared radiations. 1

6. Fill in the blanks : $4 \times \frac{1}{2} = 2$

(a) Force between two charges is proportional to the distance between them.

(b) ECG is the record of of active heart muscles.

(c) works as natural cardiac pacemaker.

(d) Isotopes are the elements having same atomic number but different

BNS-102/202-C**Part-C** (Marks : 18)**APPLIED SCIENCES : MICROBIOLOGY**

Note : (i) *Attempt all questions.*

(ii) *Attempt all parts of a question at one place.*

(iii) *Answer the questions as per the following details.*

(iv) *Follow the word limit i.e. for 2 marks questions within 40-50 words, 5 marks within 150-200 words.*

1. Write in brief on the following : $4 \times 2 = 8$

(a) Morphological classification of fungi

(b) Infections/diseases caused by Staphylococci

(c) Methods of transmission of viruses

(d) Active acquired immunity

2. Explain the factors affecting growth of bacteria. 5

3. Fill in the blanks : 5×1=5
- (a) Treatment for Rabies was developed by
..... .
 - (b) The first known viral disease of man
discovered by Sir Walter Reed is
..... .
 - (c) Fermentation by bacteria involves
decomposition of
 - (d) Ribosomes are the centre of
synthesis.
 - (e) Souring of milk and cheese is caused by
Streptococcus

BNS-102/202-D**Part-D**

(Marks : 17)

**APPLIED SCIENCES—NUTRITION AND
DIETETICS**

Note : (i) *Attempt all questions.*

(ii) *Attempt all parts of a question at one place.*

(iii) *Follow the word limit as given :
1-2 mark within 20-40 words,
3-4 marks within 50-90 words.*

1. Explain the functions of the following minerals along with food sources : 2+2
 - (i) Calcium
 - (ii) Iron
2. (a) Explain the meaning of therapeutic diet. 1
 - (b) Describe different types of dietary modifications in diet during illness. 3

3. (a) Enlist any *two* health hazards due to exposure of the following : 2
- (i) Pesticides
 - (ii) Heavy metals
- (b) Explain the term 'food contamination'. 1
4. Describe the dietary management in the following conditions : 3+3
- (a) Diabetes Mellitus
 - (b) Fever and Infections

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