POST BASIC
BACHELOR OF SCIENCE (NURSING)

Term-End Examination,

June 2009

02783

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

- *Answer all questions.*
- *Choice, wherever, is indicated in the question itself.*

1. Write down ***three*** general functions and ***three*** specific functions of the proteins. **1½+1½=3**

2. (a) Name the two main components of blood.

   (b) Explain why the AB blood group is called the universal acceptor and Blood group O is called universal donor. **1+2=3**

3. (a) Define the term gluconeogenesis.

   (b) Explain the physiological significance of gluconco genesis pathway (Give ***any three*** points). **1+3=4**

OR

   (a) List the anabolic and catabolic path ways of lipid metabolism. **2**

   (b) Outline the catabolism of fatty acids and state its significance. **2**

4. (a) Using the general structure of amino acid, show how two amino acids join to become a dipeptide. **2**

   (b) Write examples of ***two*** specific small peptides and give their physiological roles. **2**

5. Describe the differences between ribonucleic acid (RNA) and deoxy ribonucleic acid (DNA) with respect to their : **1+1=2**

(a) Composition

(b) Function

6. Fill in the blanks of the following with suitable words : **½x4=2**

(a) The process that separates proteins from small molecules using a semi-permeable membrane is called _____.

(b) The combining power of atoms which is equal to the number of outer shell electrons transferred or shared is known as _____.

(c) The amount of _____ is drastically reduced in the cerebrospinal fluid (CSF) during pyogenic meningitis.

(d) The development of unpleasant odour and taste of fats exposed to air is called _____.

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PART-B

- *Answer all questions.*

1. State the measuring instrument and the unit you would use to measure each of the following quantities : **1+1=2**

   (a) Height of a 5 year old child.

   (b) Pulse rate

2. (a) How should you carry heavy objects so that your back does not feel the strain. **1+2=3**

   (b) Explain why you should do so in terms of the physical concept involved.

3. (a) Explain the process of "Suction". **1+2=3**

   (b) Give ***four*** examples of use of suction in health care setting.

4. What is Doppler effect ? State two applications of Doppler effect in medical care. **1+1=2**

5. Match the terms listed in Column I with the applications given in Column II : 4x½=2

	Column I		Column II
(a)	Laser	(i)	To sterilize operating rooms
(b)	Electron microscope	(ii)	For medical thermography
(c)	UV radiation	(iii)	As 'bloodless' knife in surgery
(d)	Infrared radiation	(iv)	Study of cells and tissues
		(v)	To Lisen fetal heart sound
		(vi)	Helps in thyroid up take

6. Fill in the blanks : 5x1=5

(a) The process in which a short electric shock is given to the chest to normalise irregular heart beat is called _____.

(b) The human eye behaves like a _____ lens in producing images.

(c) Heat is transferred by actual movement of matter in the process of _____.

(d) Breathing is possible due to _____ difference.

(e) A blood sample can be separated into layers containing particles of different densities by using a _____.

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PART-C

- *Answer all questions. Illustrate the answers wherever necessary.*

1. Write T for true and F for false against the statements in the answer book : ½x6=3

   (a) Yeast cells are unicellular microscopic organisms.

   (b) Facultative Aerobes are aerobic and cannot grow in the absence of oxygen.

   (c) *Neisseria* are oval cocci.

   (d) A localised chronic infection of subcutaneous tissue is Mycetoma.

   (e) Filaria disease is transmitted by the vector house fly.

   (f) Lister is known as the father of Immunology.

2. Fill in the blanks : ½x6=3

   (a) Fractional sterilization was devised by _____.

   (b) Wasserman Test is a complement fixation test for _____.

   (c) Capsomeres are subunits of the _____ coat.

   (d) A tumor caused by amoebiasis is called _____.

(e) Male gametocyte in *P.falciparum* is long and _____ shaped.

(f) Rhabdo viruses cause the disease_____.

3. Distinguish between ***any three*** of the following : **2x3=6**

(a) Ribosomes and Mesosomes

(b) Plague bacilli and Anthrax bacilli

(c) *Entamoeba histolytica and Escherichia coli*

(d) Simple stain and Differential stain

(e) Swab and Scab

(f) Typhus fever and Typhoid fever

4. Distinguish between baking and burning. State the three different types of moist heat used for sterilization. **4**

OR

Give the distribution of Primary and Secondary Lymphoid Organs in man. **4**

5. List the main characteristics of the viruses. **2**

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PART-D

- *Attempt all questions.*

1. Give ***three*** examples each of body building group and protective/regulatory category diet. 3

2. Explain the different types of dietary modifications. 5

3. List the diseases caused by the deficiency of the following nutrients. Enumerate the symptoms and dietary management for each deficiency disease. **3+3=6**

   (a) Vitamin C

   (b) Thiamin

   (c) Vitamin D.

4. Match the statements given in **Column A** with the terms given in **Column B** and write the answer in your answer book : **1x3=3**

	Column A		**Column B**
(a)	Regulation of pH of body fluids	(i)	Iodine
(b)	Sugar, starch and fibers	(ii)	Sodium
(c)	Green leafy vegetable	(iii)	Protein
		(iv)	Fats
		(v)	Carbohydrates
		(vi)	Carotene

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