BNS-102 : APPLIED SCIENCES

Time: 3 hours
Maximum Marks : 70

Note : This question paper consists of four parts, Part A, B, C and D. Answer all questions

PART A

(Biochemistry)

Attempt all the questions.

1. Classify the following as Chemical or Physical change : (0.5x4=2)

(i) Decaying of leaves by Bacteria
(ii) Powdering of glass marble
(iii) Erosion of rock into soil by water
(iv) Curdling of milk

2. Fill in the blanks : (0.5x4=2)

(i) A compound formed by combining metal and non metal with oxygen is called_____
(ii) The sugars which undergo fementation are _____ sugars.
(iii) Lipid protein complexes are mainly found in cell membrane and_____
(iv) A solution containing same salt content and osmotic pressure as blood is called as _____solution.

3. (a) Differentiate between soap and detergent.

(b) Define the process of softening of water. Describe the process of softening used for temporary and permanent hard water. (2+3=5)

4. (d) Differentiate between an enzyme and a catalyst.

(b) Describe the characteristics of an enzyme. (2+3=5)
OR
Explain the biological functions of lipids. (5)

5. List the abnormal constituents of urine and the diseases associated with each of the abnormal constituents. (2+2=4)
OR
Describe the abnormalities associated with carbohydrate metabolism. (4)

PART B

(Biophysics)

Attempt all the questions.

1. Define Newton's first law of mtion. Give two examples from nursing to explain this law. (1+3=4)

2. Diagrammatically explain how the heat balance is maintained in the body. (3)

3. Fill in the blanks : (1x5=5)

(i) Numerical value and a unit are two characteristic of_____.
(ii) the error due to incorrect calibration of the instrument or incorrect procedure is called as_____
(iii) Rate of change of displacement is referred as_____.
(iv) _____ diathermy is helpful in the treatment of joint diseases and joint stiffness.
(v) Barometer is used to measure _____.

4. Name the principles of physics applicable in the following: (1x5=5)

(i) Underwater Exercises
(ii) Working of B.P. Apparatus
(iii) Water mattress and air cushions
(iv) Drainage of fluid from chest cavity
(v) Drawing medicine in a syringe from an ampule

PART C

(Microbiology)

Attempt all the questions.

1. Write T for true and F for false against the statements in the answer book. (0.5x6=3)

(i) Clostridium grows in presence of oxygen. T/F
(ii) Bacillary dysentry is caused by Salmonella typhae T/F
(iii) Entero bacteria are gram negative,non-sporing bacilli. T/F
(iv) White spots and ulcers in the mouth cavity of an infant are caused by candida albicans. T/F
(v) Typhus fever is transmitted by Rat Flea. T/F
(vi) E. coli produces an exotoxin. T/F

2. Fill in the blanks: (0.5x6=3)

(i) An organism which lives inside the body of the host is known as_____.
(ii) An agent capable of transferring a pathogen from one organism to another is called _____.
(iii) The principal site of the respiratory enzymes of bacteria is known as_____.
(iv) DNA is responsible for transferring of_____.
(v) Hair like processes present outside the cell wall are called_____.
(vi) Antibodies that neutralise toxins of bacteria are called_____.

3. Distinguish between Rubella and Rubeola virus. (4)
OR
Differentiate between Innate and Adaptive immunity.

4. Differentiate between Cocci and Bacilli. (3)

5. (a) List the techniques of studying Microbes.

(b) Write the effect of heat on Micro-organisms. (3+2=5)
OR
Describe general characteristics of Mycoplasma. (5)

PART D

(Nutrition & Dietetics)

Attempt all the questions.

1. Wtite any two functions of each of the following nutrients : (3)

(i) Carbohydrate
(ii) Protein
(iii) Calcium

2. Discuss dietary management for a patient with Acute Renal Failure. (5)

3. Write briefly food sanitation measures.

4. Fill in the blanks : (1x6=6)

(i) Low purine diet is given during management of_____.
(ii) High levels of circulatory lipids and cholesterofin the blood is called_____.
(iii) Lodized oil is given in injection form to control_____.
(iv) One of the dietary factors contributing to delayed milestones in children is _____ deficiency.
(v) Collagen formation in any type of wound healing is hastened by _____ .
(vi) Deficiency of niacin causes_____.