

The Royal University of Bhutan  
Paro College of Education  
Spring Semester Examination – 2012

**B.Ed(S) IV – Immunology and Microbiology (BIO307)**

**Full mark: 100**

**Pass mark: 50**

**Time: 3 hours**

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**Instruction:**

*Do not write for the first ten minutes. This time is to be spent in reading the questions. This question paper consists of two sections A and B. All the questions in section A is compulsory and Section B has choice. Read the instruction in each section carefully.*

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**Section A (40 marks)**

**Instruction:** Answer all the questions from this section.

**Question 1**

(15x2 marks)

Each question carries four possible answers. Choose the most appropriate answer from the given options.

- a. Red blood corpuscles are formed in the
  - A. Heart
  - B. Liver
  - C. Bone marrow
  - D. Kidney
  
- b. Which of the following is the preventive measure of hookworm infection?
  - A. Proper disposal of feces in areas away from habitations
  - B. Wearing shoes while walking
  - C. Washing hands after working in the garden
  - D. All of the above
  
- c. Congenital diseases are those which\_\_\_\_\_.
  - A. are deficiency diseases
  - B. are present from time of birth
  - C. are spread from man to man
  - D. occur during life time

- d. Typhoid is caused by \_\_\_\_\_.  
A. Escherichia  
B. Giardia  
C. Salmonella  
D. Shigella
- e. Which of the following is a mismatch?  
A. Botulism - Bacterial infection  
B. AIDS - Bacterial infection  
C. Malaria - Protozoan infection  
D. Ascariasis - Nematode infection
- f. T-lymphocytes mature in the \_\_\_\_\_, while B-lymphocytes mature in the \_\_\_\_\_.  
A. yellow bone marrow; red bone marrow  
B. thyroid follicles; bone marrow  
C. bone marrow; thymus  
D. thymus; bone marrow
- g. An inappropriate or excessive immune response to antigen is termed \_\_\_\_\_.  
A. appendicitis  
B. an allergy  
C. lymphedema  
D. mononucleosis
- h. Chemicals with anti-viral activity include the \_\_\_\_\_.  
A. Interleukins  
B. Cytokines  
C. Interferons  
D. Histamine
- i. Fever is caused by \_\_\_\_\_.  
A. Haptens  
B. Pus  
C. Phagocytes  
D. Pyrogens

- j. Which cells and which signaling molecules are responsible for initiating an inflammatory response?
- A. phagocytes ----- lysozymes
  - B. phagocyte ----- chemokines
  - C. dendritic cell----- interferons
  - D. mast cell ----- histamines
- k. What are antigens?
- A. Proteins found in the blood that cause foreign blood cells to clump
  - B. Proteins embedded in B cell membranes
  - C. Proteins that consist of two light and two heavy polypeptide chains
  - D. Foreign molecules that trigger the generation of antibodies
- l. If a newborn were accidentally given a drug that destroyed the thymus, what would most likely happen?
- A. all the leucocytes would stop to multiply.
  - B. All the lymphocytes would multiply aggressively.
  - C. T cells would not mature and differentiate appropriately.
  - D. B cells would be reduced in number and antibodies would not form.
- m. Patient reports severe symptoms of watery, itchy eyes and sneezing after being given a flower bouquet as a birthday gift. A reasonable initial treatment would involve the use of
- A. vaccine.
  - B. complement.
  - C. sterile pollen.
  - D. antihistamines.
- n. Which of these molecules is *correctly* paired with a source?
- A. lysozyme -----\_tears
  - B. interferons\_virus -----infected cells
  - C. antibodies -----\_B cells
  - D. all of the above pairs are correct.
- o. Which cell type produces antibodies?
- A. Macrophages
  - B. T-lymphocytes
  - C. B-lymphocytes
  - D. Lysosomes

### Question2

Fill in the blanks;

(5 x1marks)

- When cysticerci are found in the brain, the condition is called \_\_\_\_\_.
- Tuberculosis (TB) is a disease caused by a bacterium called \_\_\_\_\_
- Old red blood cells are destroyed in the \_\_\_\_\_
- \_\_\_\_\_ is a cell damaging or cell-destroying reaction that occurs when antibodies reacts with antigens on the surfaces of host cells.
- Cholera is caused by \_\_\_\_\_.

### Question 3

Write true or false against each statement

(5 x1marks)

- Mumps is a contagious disease that leads to painful swelling of the thyroid gland.
- Encephalitis is an acute inflammation of the brain.
- Dendritic cells originate in the spleen.
- Pneumonia is associated with the inflammation of the spleen.
- The antibodies involved in immune complex hypersensitivity are IgE and IgM.

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## Section B (60 marks)

**Instruction:** *In this section, there are **six** sets of questions. You are asked to choose any **five***

### Question 4

(4+ 2+ 3+ 3)

- Define the following terms:
  - Opsonisation
  - Agglutination
- Dengue fever also known as breakbone fever. Why?
- What cause fever? How does it help in defense mechanism of the body?
- Explain how inflammatory response takes place

### Question 5

(3+3+2+2+2)

- Differentiate between B cells and T cells of the immune system. How do the b cells respond to antigens?
- Differentiate active tuberculosis from inactive tuberculosis
- Explain phagocytosis
- Why is secondary immune system very quick and intense?
- How does skin serve as the first line of defense?

**Question 6****(5+3+2+2)**

- a. What does AIDS stand for? How is this disease transmitted? Suggest three measures for its prevention.
- b. Discuss how allergic reaction takes in the human body.
- c. How is selective media of microbial culture different from differential media of microbial culture?
- d. Define dipediasis

**Question 7****(2+2+5+3)**

- a. Explain the differences between inborn and acquired immunity.
- b. How does the cell mediated immune system work when our body is infected?
- c. Write an account on the types of anthrax and their symptoms.
- d. What are the ways through which a person may get infected by poliomyelitis? Write down its symptoms.

**Question 8****(4+3+3+2)**

- a. What is the causative agent of syphilis? Discuss the secondary stage of syphilis and also how it is transmitted.
- b. Discuss the action of antibiotic like Penicillins, Tetracyclines and Quinolones on prokaryotic cells.
- c. Phagocytic cells are necessary soldiers and scavengers. Justify.
- d. How does freezing temperature control the growth of micro-organisms?

**Question 9****(3+5+4)**

- a. How do granulocytes or Polymorphonuclear (PMN) help to strengthen the immunity of our body?
- b. Discuss the life cycle of plasmodium falciparum with the help of a labeled diagram
- c. Discuss the mode of transmission for the following diseases:
  - i. Ringworm
  - ii. Poliomyelitis