



FACULTY OF SCIENCE

DEPARTMENT OF BIOTECHNOLOGY
DIPLOMA IN BIOTECHNOLOGY AND FOOD TECHNOLOGY

MODULE BTN2ADR
 DISEASE AND IMMUNE RESPONSE

CAMPUS DFC

FORMATIVE ASSESSMENT
SECTION 2

DATE: 9 June 2016

SESSION: 8:30-10:30

ASSESSOR(S): MR K MACLEAN

INTERNAL MODERATOR: MR L ALAGIOZOGLOU

EXTERNAL MODERATOR: N/A

DURATION 2 HOURS

MARKS FOR SECTION 1 25

MARKS FOR SECTION 2 95

TOTAL MARKS 120

NUMBER OF PAGES: 4 PAGES

REQUIREMENTS : 1 x QUESTION PAPER

INSTRUCTIONS TO STUDENTS:

THE EXAMINATION CONSISTS OF SECTION 1 AND SECTION 2.

ANSWER SECTION 1 ON THE MCQ CARDS PROVIDED.

ANSWER SECTION 2 IN THE EXAMINATION BOOKLET.

WRITE YOUR NAME ON MCQ CARDS AND PLACE THEM INSIDE YOUR ANSWER BOOKLET WHEN COMPLETE.

QUESTION 1:

- 1.1 Name 5 characteristics of an ideal antibiotic (5)
- 1.2 What is another term for antigenic determinant sites (1)
- 1.3 What is another term for the human leukocyte antigen (3)
- 1.4 Provide an alternate name for CD8⁺ T cells (3)
- 1.5 Draw and label the general structure of an immunoglobulin (5)
- 1.6 Name the pentameric immunoglobulin (1)
- 1.8 Define vaccinomics (Bonus 2)
- 1.9 Name 1 form of subunit vaccines. (1)
- 1.10 Soluble receptors exist on phagocytes called (NOD) receptors and NOD-like receptors (NLR's). What does NOD stand for? (Bonus 3)
- 1.11 Name 2 lymphoid organs. (2)
- 1.12 Name the 3 compliment activation pathways (3)

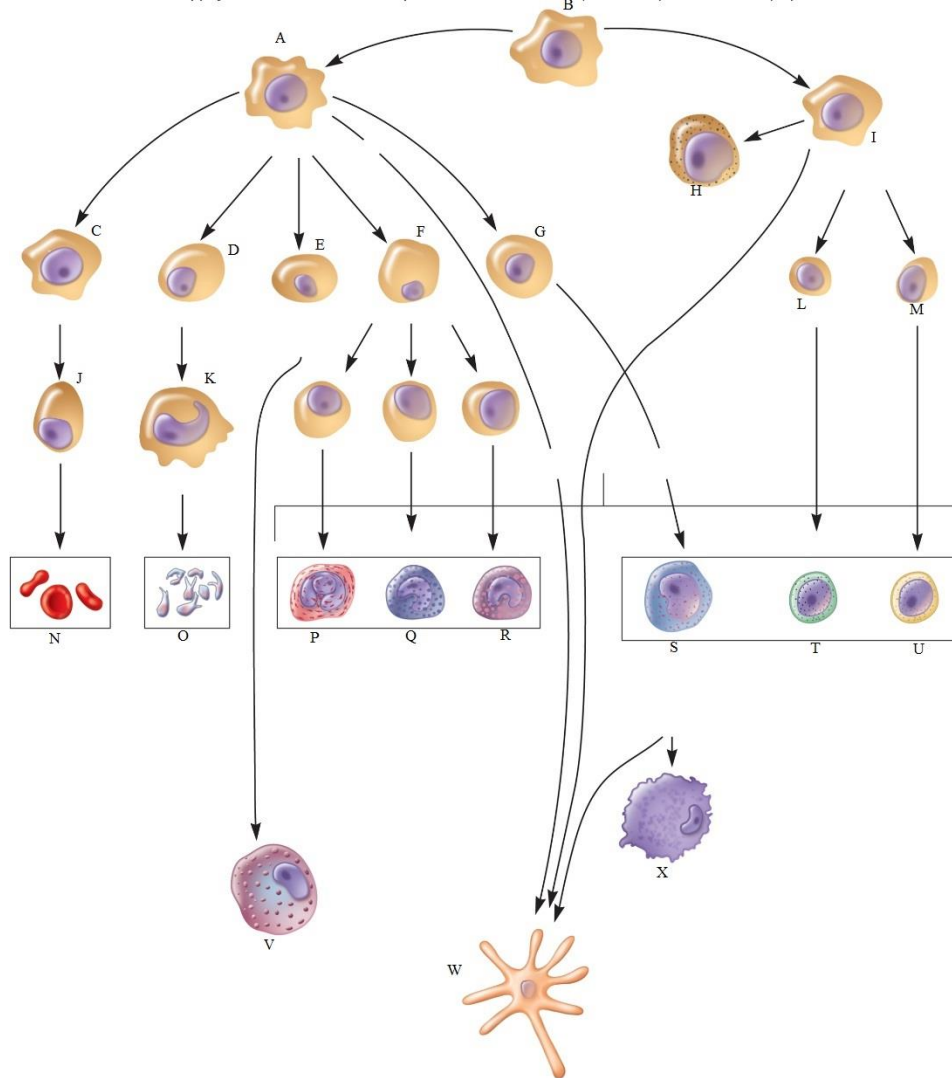
[24]

QUESTION 2:

Pleuri-potent stem cells in the bone marrow divide to form 2 blood cell lineages as shown in the diagram below. Label any 10 aspects (A-W) found within the diagram. In your answer book write only the letter with the corresponding answer.

[10]

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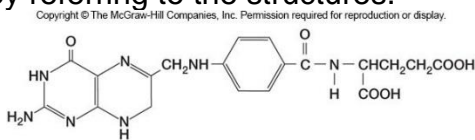
QUESTION 3:

Write an essay on the HIV replication cycle and state at which stages of the cycle would the various anti-HIV drugs be effective. (Half marks will be awarded for not using complete paragraphs).

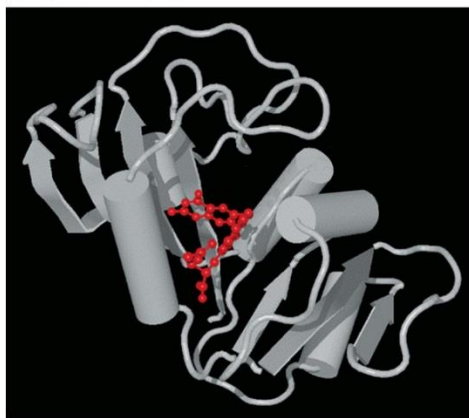
[10]

QUESTION 4:

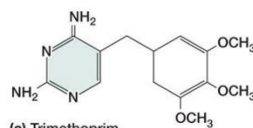
The figure below provides the structure of (a) dihydrofolic acid, (b) dihydrofolate reductase and (c) trimethoprim. Discuss the mechanism of action of the trimethoprim antibiotic by referring to the structures.

[6]

(a) Dihydrofolic acid (DFA)



(b) Dihydrofolate reductase



(c) Trimethoprim

Alex MacKerell, Ph.D.**QUESTION 5:**

Write an essay discussing the B-cell receptor, its make-up, mechanism of activation and the effects of its activation. (Half marks will be awarded for not using complete paragraphs).

[10]**QUESTION 6:**

Discuss all aspects of the capture ELISA including the mode of detection. You may use figures to illustrate your essay.

[10]**QUESTION 7:**

Write an essay discussing the pathophysiology, symptoms and diagnosis of bubonic plague (only half marks will be given for not using essay format).

[25]**TOTAL (95)**