



KENYATTA UNIVERSITY

UNIVERSITY EXAMINATIONS 2011/2012

SECOND SEMESTER EXAMINATION FOR THE DEGREE OF MASTER OF
SCIENCE (MEDICAL BIOTECHNOLOGY)

SBC 505: BIOCHEMISTRY OF ANTIMICROBIAL ACTION

DATE: Friday 30th March 2012

TIME: 9.00a.m – 12.00p.m

INSTRUCTIONS:

SECTION A: Answer ALL questions (5 marks each)

Q1. Define with examples the terms antimicrobial agents and antibiotics

Q2. Allocate the group and mechanism of action to the antimicrobial agents below

i. Amikacin _____

ii . Framycetin _____

iii. Minocycline _____

iv. Cinoxacin _____

v. Monobactam _____

vi. Nalidixic acid _____

vii Metronidazole _____

viii Sulfadiazine _____

ix. Azithromycin _____

x. Clarithromycin _____

Q3. Protein synthesis in bacteria is a Class_____reaction which is effectively blocked by (name **three** classes of drugs)_1._____,_2._____,and 3. _____ among others.

Q4. Peptoglycan synthesis can be blocked at different steps by specific compounds; name the steps and the compounds

Q5. Name the various stages of DNA synthesis and the compounds that can inhibit each of the stages

Q6.

(a) Which one of the following DNA polymerase inhibitors is NOT a neocleoside?

- A. Didanosine
- B, Didioxycytidine
- C. Zalcitabine
- D. Zidovudine

(b) What is the mechanism of action for Protease Inhibitors class of Anti Retroviral Drugs?

- A. Prevent viral attachment
- B. Inhibit Viral coating
- C. Breakdown the DNA
- D. Inhibit cytochrome P450 enzymes

(c) Azoles are anti-fungal agents, which one of the following is not one of them?

- A. Fluconazole
- B. Clotrimazole
- C. Metronidazole
- D. Miconazole

(d) The following is NOT a mechanism of action for Azoles

- A. Inhibition of P450 enzymes
- B. Inhibition of replication
- C. Interfere with amino acid transport
- D. Antimetabolite

(e) Which one of the agents below has NO effect on fungus

- A. Penicillin G
- B. Greseofulvin.
- C. Flucytocine
- D. Nystatin

Q7. Name two compounds that have both antiprotozoal and antibacterial actions and their Designated mechanisms of action.

Q8. Which one of the following compounds has no effect against Mycobacterium tuberculosis?

- A. Rifamycin
- B. Cycloserine
- C. Streptomycin
- D. Amphotericin B

SECTION B: Answer ANY three questions (20 marks each).

- Q9. (a) Describe with examples the inhibition of pathogenic organisms by targeting formed structures.
- (b) Describe the mechanisms of transfer of resistance microorganisms.
- Q10. Discuss the roles of Plasmids and Transposons in development resistance to antimicrobial agents.
- Q11. Describe with examples the mechanisms of action for Immuno-modulators and Protease inhibitors classes of antiviral drugs
- Q12. Describe with examples the biochemical basis of bacterial resistance to antimicrobial agents.
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