

## Unit 12 - Week 10 :

## Course outline

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● Lecture 49: Chemistry of penicillins

● Lecture 50: Resistance to beta-lactam antibiotics

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## Assignment 10

The due date for submitting this assignment has passed.  
As per our records you have not submitted this assignment.

Due on 2019-10-09, 23:59 IST.

- 1) Structurally, all penicillins have only  $\beta$ -lactam present in them.
- a) True  
b) False

a  
 b

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
b

1 point

- 2) Ampicillin is a bactericidal antibiotic.
- a) True  
b) False

a  
 b

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
a

1 point

- 3) Which of the following is not a semi synthetic antibacterial agent?

- a) Ampicillin  
b) Carbenicillin  
c) Sulfonamide  
d) Cephalexin

a  
 b  
 c  
 d

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
c

1 point

- 4) Penicillins exert their antibacterial action by inhibiting cell wall biosynthesis. Which cell wall biosynthetic enzyme is inhibited?

- a) carboxypeptidase  
b) transpeptidase  
c) glycosylase  
d) phosphatase

a  
 b  
 c  
 d

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
b

1 point

- 5) Which of the following inhibits protein synthesis by combining with the 50S subunit ribosome?

- a) Streptomycin  
b) Tetracycline  
c) Chloramphenicol  
d) Cephalosporin

a  
 b  
 c  
 d

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
c

1 point

- 6) Which one of the following inhibits DNA gyrase?

- a. Sulfanilamide  
b. Trimethoprim  
c. Erythromycin  
d. Ciprofloxacin

a  
 b  
 c  
 d

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
d

1 point

- 7) Which of the following statements is **CORRECT** in explaining the general penicillin-resistance of Gram-negative bacteria?

- a) Build up of high concentration of  $\beta$ -lactamase enzymes in the periplasmic space in case of Gram-negative bacteria  
b) A thicker cell wall in case of Gram-negative bacteria  
c) Gram negative bacteria have an extra barrier of outer hydrophilic membrane  
d) Gram negative bacteria produce smaller quantities of transpeptidase enzyme

a  
 b  
 c  
 d

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
a

1 point

- 8) What reaction is catalysed by a  $\beta$ -lactamase enzyme?

- a. The final cross-linking reaction to form the bacterial cell wall  
b. The hydrolysis of the acyl side chain of penicillin  
c. The hydrolysis of the four-membered ring present in penicillins  
d. The biosynthesis of the penicillin from LLD-ACV

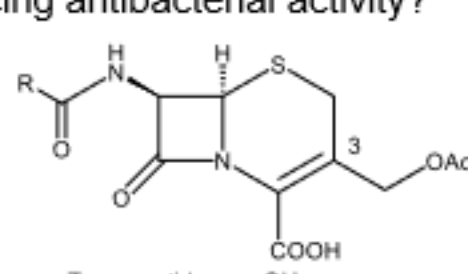
a  
 b  
 c  
 d

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
c

1 point

- 9) What role does the acetoxy methyl group at the 3-position of cephalosporins (as shown below) have in enhancing antibacterial activity?



- a. It acts as a steric shield and masks enzymatic attack at the  $\beta$ -lactam ring.  
b. It acts as a good leaving group when the  $\beta$ -lactam ring is opened.  
c. It takes part in a transesterification reaction with the carboxylic acid group.  
d. It increases the reactivity of the  $\beta$ -lactam ring by neighbouring group participation.

a  
 b  
 c  
 d

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
b

1 point

- 10) Clavulanic acid is

- a. an irreversible inhibitor of the transpeptidase enzyme  
b. a reversible inhibitor of L-alanine racemase  
c. a suicide inhibitor of serine based  $\beta$ -lactamase enzyme  
d. a reversible inhibitor of serine based  $\beta$ -lactamase

a  
 b  
 c  
 d

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
c

1 point

- 11) Prontosil is the first synthetic antibacterial agent found to be active against a wide range of infections. Which one of the following statements is **INCORRECT** regarding prontosil?

- a. It is a prodrug  
b. It shows its antibacterial activity both *in vitro* and also *in vivo*  
c. It is metabolised to sulphanilamide  
d. It is inactive against *Salmonella* infection

a  
 b  
 c  
 d

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
b

1 point

- 12) D-Cycloserine exerts its antibacterial action by inhibiting

- a. L-alanine racemase  
b. D-Ala-D-Ala ligase  
c. Carboxypeptidase  
d. Both a and b

a  
 b  
 c  
 d

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
d

1 point