

## Unit 13 - Week 11 :

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# Assignment 11

The due date for submitting this assignment has passed.

**Due on 2019-10-16, 23:59 IST.**

## Assignment submitted on 2019-10-07, 06:36 IST

1) Construction of new analogues of erythromycin by manipulating the domains and modules of the biosynthetic gene cluster falls under the realm of 1 point

- a) Mechanistic enzymology  
b) Synthetic biology  
c) Proteomics  
d) Metabolomics

- a)  
 b)  
 c)  
 d)

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
b)

2) What are the building blocks used in the biosynthesis of 6-deoxyerythronolide B? 1 point

- a) Methylmalonyl SCoA and acetyl SCoA  
b) Propionyl SCoA and acetyl SCoA  
c) Malonyl SCoA and methylmalonyl SCoA  
d) Propionyl SCoA and methylmalonyl SCoA

- a)  
 b)  
 c)  
 d)

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
d)

3) Linking of the building blocks in a polyketide biosynthetic pathway is similar to a reaction known as 1 point

- a) Aldol condensation  
b) Diels Alder reaction  
c) Claisen condensation  
d) Michael addition

- a)  
 b)  
 c)  
 d)

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
c)

4) The enzyme that catalyses the carbon-carbon bond forming reaction involved in a polyketide biosynthesis 1 point

- a) Ketoreductase  
b) Ketosynthase  
c) Dehydratase  
d) Enoyl reductase

- a)  
 b)  
 c)  
 d)

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
b)

5) Malonyl CoA, labeled with <sup>14</sup>C in the methylene carbon, is used in excess as a substrate in a system *in vivo* for the synthesis of hexanoyl CoA, which is catalyzed by a fatty acid synthase complex. Acetyl CoA and other substrates are also present in the system, but acetyl CoA carboxylase is not. Which carbons in hexanoyl CoA will be labeled? 1 point

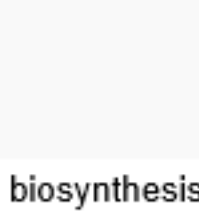
- a) C1 and C2  
b) C2 and C4  
c) C2, C4 and C6  
d) C4 and C6

- a)  
 b)  
 c)  
 d)

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
b)

6) The starter and extender units for the biosynthesis of the following polyketide (X) respectively are 1 point



- a) Acetyl CoA and Malonyl CoA  
b) Propionyl CoA and Malonyl CoA  
c) Propionyl CoA and Methyl malonyl CoA  
d) Acetyl CoA and Methyl malonyl CoA

- a)  
 b)  
 c)  
 d)

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
c)

7) The correct domain map of the **Module 1** for the biosynthesis of X is 1 point

- a) 

KS	AT	KR	DH	ACP
----	----	----	----	-----

  
b) 

KS	AT	KR	DH	ER	ACP
----	----	----	----	----	-----

  
c) 

KS	AT	ER	ACP
----	----	----	-----

  
d) 

KS	AT	KR	ACP
----	----	----	-----

- a)  
 b)  
 c)  
 d)

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
d)

8) The correct domain map of the **Module 2** for the biosynthesis of X is 1 point

- a) 

KS	AT	KR	DH	ACP	TE
----	----	----	----	-----	----

  
b) 

KS	AT	KR	ACP	TE
----	----	----	-----	----

  
c) 

KS	AT	ACP	TE
----	----	-----	----

  
d) 

KS	AT	KR	ACP
----	----	----	-----

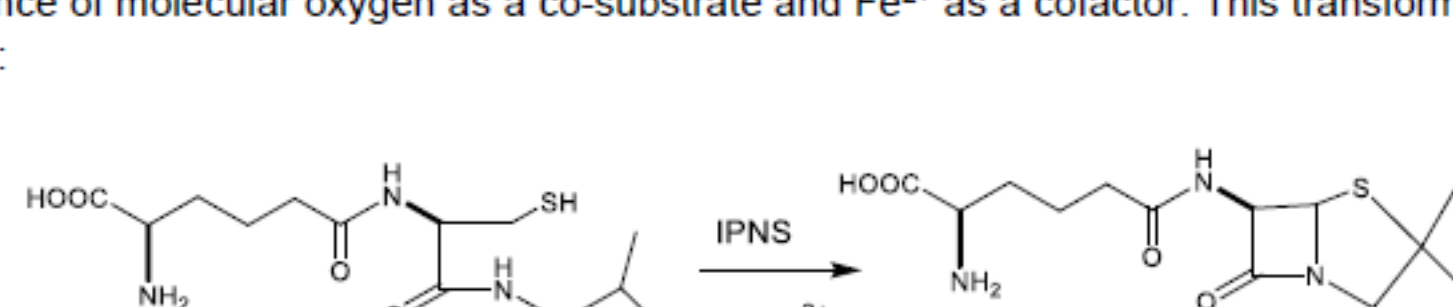
- a)  
 b)  
 c)  
 d)

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
b)

### Read the following passage and answer question numbers 9 and 10

**Passage:** Isopenicillin N is the first metabolite obtained from fermentation of any penicillin producing fungi. The enzyme Isopenicillin N synthase carries out a double cyclization of tripeptides LLD-ACV in presence of molecular oxygen as a co-substrate and Fe<sup>2+</sup> as a cofactor. This transformation is shown below:



9) Which of the following statements is **TRUE** regarding penicillin biosynthesis? 1 point

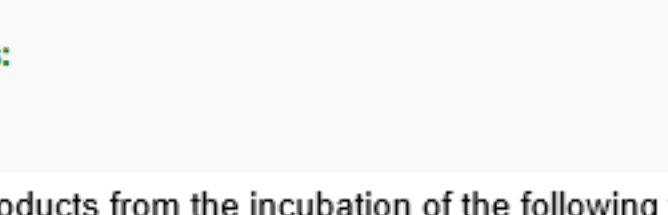
- a) The transformation involves one 2-electron oxidation  
b) The C-N bond is formed first followed by C-S bond formation.  
c) The C-S bond is formed first followed by C-N bond formation.  
d) Both C-N and C-S bonds are formed in a concerted manner

- a)  
 b)  
 c)  
 d)

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
b)

10) One of the products from the incubation of the following tripeptide Y with IPNS under usual conditions 1 point



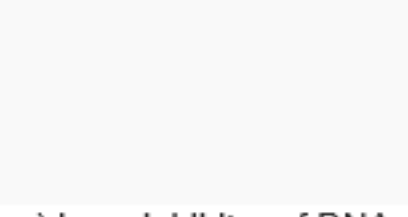
- a)   
b)   
c)   
d)

- a)  
 b)  
 c)  
 d)

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
a)

11) Acyclovir (structure shown below) is an inhibitor of DNA polymerase selectively in virus-infected cells. This is because 1 point



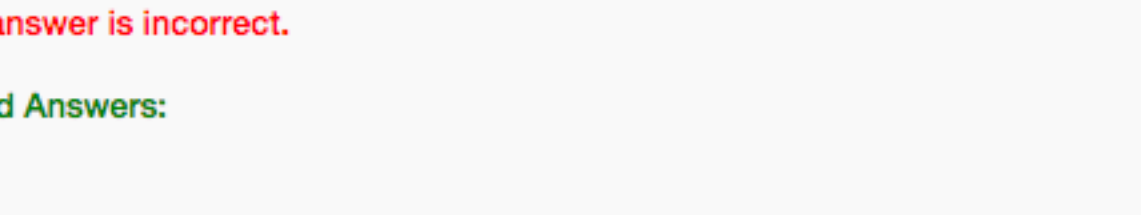
- a) Acyclovir is converted first to the monophosphate only by viral thymidine kinase  
b) Acyclovir does not enter non-infected cells  
c) Acyclovir is converted first to the monophosphate only by host thymidine kinase  
d) Acyclovir triphosphate is not accepted by host DNA polymerase

- a)  
 b)  
 c)  
 d)

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
a)

12) The drug(s) used for treatment of HIV from the following list is/are: 1 point



- a) I and II  
b) II and III  
c) II and IV  
d) Only II

- a)  
 b)  
 c)  
 d)

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
c)