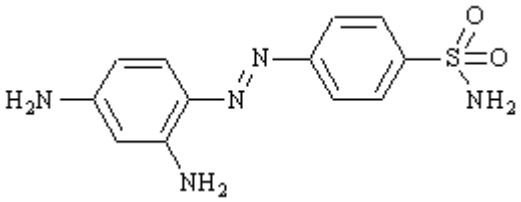
Course No: PHRM 3220 **Course Title: Pharmaceutical & Medicinal Chemistry (1)** **Date: 12/03/2017** **No. of Questions: (4)** **Time: 1hours** **Using Calculator (No)**	**University of Palestine** **First Midterm Exam** **2016/2017** **Total Grade: 30**	**Instructor Name: Mohammed Abuiriban** **Student No.: _____** **Student Name: _____** **College Name: Pharmacy** **Dep. / Specialist: _____** **Using Dictionary (No)**

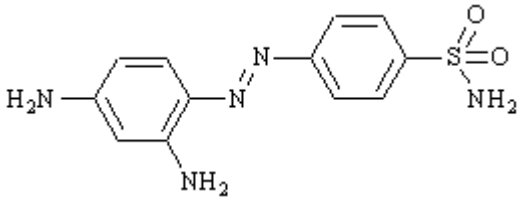
Question One: Choose the correct answer?

1. What is the name of the following structure?



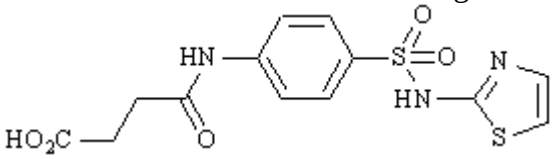
a. Sulfanilamide
b. Prontosil
c. Sulfathiazole
d. Sulfadiazine

2. Which of these statements is true about the following structure?



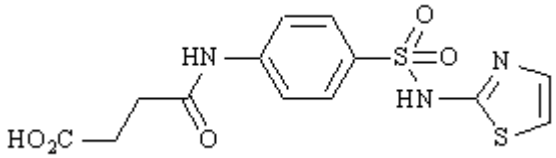
a. It is a prodrug which is converted to prontosil in the body.
b. It is a prodrug which is converted to sulfanilamide in the body.
c. It was the first active sulfonamide.
d. It shows antibacterial activity *in vitro*.

3. What is the name of the following structure?



a. Sulfanilamide
b. Benzoyl sulfathiazole
c. Succinyl sulfathiazole
d. Sulfathiazole

4. What type of infection is the following drug used for?



a. Urinary tract infections
b. Eye infections
c. Mucous membrane infection
d. Gut infections

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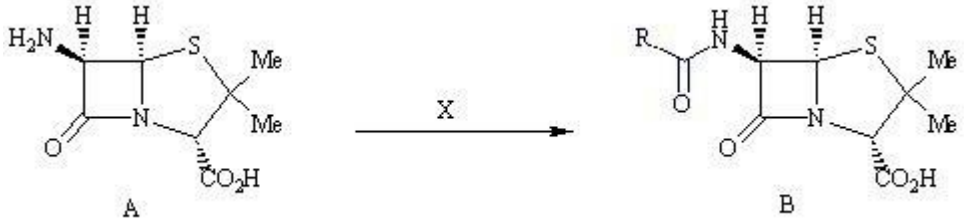
5. What are the requirements for good activity for sulphonamides?
a. Secondary aromatic amine group and a primary sulphonamide group
b. Primary aromatic amine group and a secondary sulphonamide group
c. Secondary aromatic amine group and a secondary sulphonamide group
d. None of the above

6. Why is penicillin G sensitive to acid and enzyme catalysed hydrolysis?
a. Ring strain
b. A reactive β-lactam carbonyl group
c. Nucleophilic influence of the acyl side chain
d. All of the answers are correct

7. What tactic is successfully used to increase the stability of penicillins to acid hydrolysis whilst retaining antibacterial activity?
a. Expanding one or other ring to relieve ring strain
b. Adding an electron withdrawing group to the β-lactam ring
c. Adding an electron withdrawing group to the acyl side chain
d. Removing the acyl side chain

8. What feature of ampicillin is important in its acid stability?
a. The carboxylic acid
b. The aromatic ring
c. The primary amine
d. The methyl groups

The following reaction is carried out to synthesis a range of semi-synthetic penicillins.



9. What is the name of structure A?
a. 6-aminopenicillin
b. 7-aminopenicillanic acid
c. Penicillanic acid
d. 6-aminopenicillanic acid

10. What is reagent X in the previous reaction?
a. An acid chloride
b. An amide
c. An alkyl chloride
d. An aryl chloride

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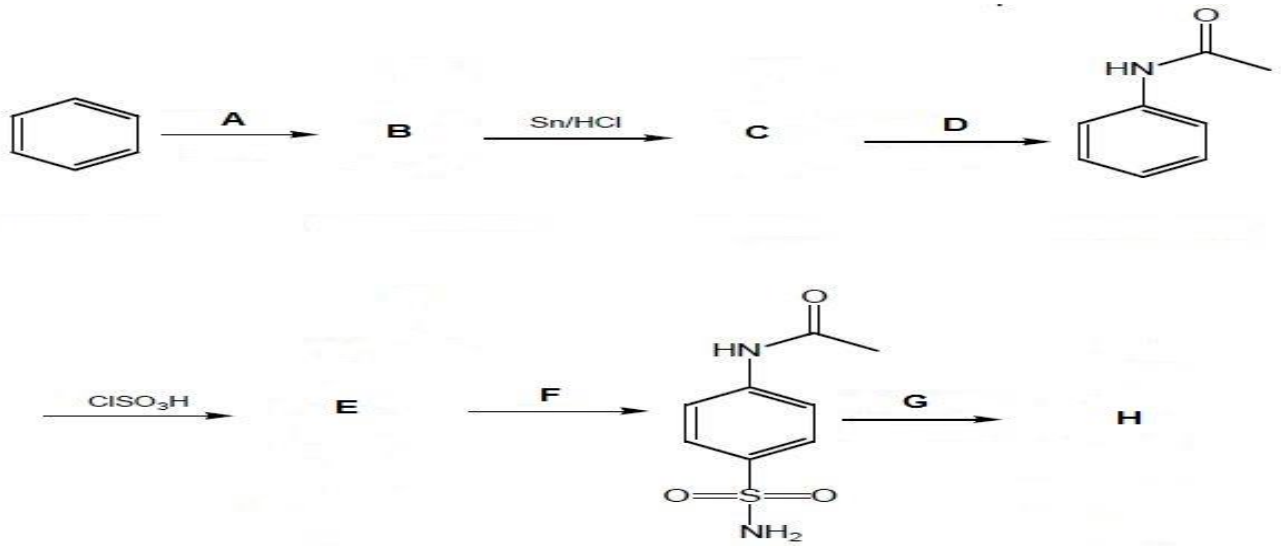
Question Two: Complete the synthesis of sulfanilamide?



Question Three: What are the important features for activity in penicillins? (Draw the structure).

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Question Four: Answer the following questions?

1. What modifications to the penicillin side chain can lead to an improvement in activity against Gram negative bacteria? Please give one example with structure.

2. Trimethoprim is administered with sulfamethoxazole in combination called Cotrimoxazole. Why they are given together? And draw the structure for both drugs?

3. Flucloxacillin is semi-synthetic penicillin. Draw the structure and mention what modifications were done to enhance the properties of this drug and why?

End of Questions

Good Luck