PCH BP 601T, 6th semester, End sem examination, August 2021

MCQs: 20 x 1 Mark = 20 Marks

1. Which of the following statements is false for penicillins
The two hydrogen atoms on beta-lactam ring are in Cis confirmation
C-N in beta-lactam is the site for Penicillinase action
A carboxylic acid which makes the molecule highly unstable
A reactive carbonyl group

2. Penicillin undergo metabolic degradation by amidease to give
A carboxylic acid and Penicilloic acid
A carboxylic acid and Penicillanic acid
An aldehyde and Penicillanic acid
An aldehyde and 6-amino penicillanic acid

3. Nitro imidazoles are selective for
Aerobic bacteria due to their ability to reduce imidazole group
Anaerobic bacteria due to their ability to reduce nitro group into nitroso group
Anaerobic bacteria due to their ability to reduce imidazole group
Anaerobic bacteria due to their ability to oxidise nitro group into Amino group

4. Following Anthelmintic drug has two heterocyclic ring systems in it
Thiabendazole
Mebendazole
Albendazole
Oxibendazole

5. Tick the unfit statement for Fluconazole
A tetrazole, targetting fungal lanosterol 14α-demethylase
A nitroimidazole targetting fungal lanosterol 14α-demethylase
Even against azole resistant fungal infection
A triazole, targetting fungal lanosterol 14α-demethylase

6. 3,4,5-trimethoxybenzylmalonic ester is produced in the following way
Ethyl ester of 3,4,5-trimethoxydehydrocinnamic acid and ethylfomate
Ethyl ester of 3,4,5-trimethoxydehydrocinnamic acid and ethylfomate in presence of Sodium metal
Ethyl ester of 3,4,5-trimethoxydehydrocinnamic acid and methylfomate
Ethyl ester of 3,4,5-trimethoxydehydrocinnamic acid and methylfomate with Sodium metal

7. The following feature is incorrect as far as SAR of sulphonamides concerned
SO_2NHR, is an acidic moiety that features heavily as drugs
The amino group at 4th position could be modified to be prodrugs
Substituents imparting electron-rich characters to SO2 group, bacteriostatic activity dicreases
The active form of ionized sulphonamide is observed between the pKa values 6.6–7.4

8. In the general structure of Cephalosporin if you substitute S with O and C We get
Meropenem and Ertapenem respectively

Oxacepham and Carbacepham respectively
Oxapenem and Carbapenem
Aztreonam and Monobactam

9. A 20 fold increase in the biological activity is achieved in tetracycline with following modification
Elimination of hydroxy group at 6^{th} position
Converting free Carboxamide group to Nitrile group
Converting 3-hydroxy group to Nitrile group
Adding a glycylamino group to 9^{th} position

10. Choose the incorrect statement as far as the stability of beta-lactam ring is concerned
Adjacent thiazolidine ring confers further strain
The C=O bond in the acylamino side-chain is susceptible to nucleophilic attack
C=O of beta-lactam ring is reactive for nucleophilic attack
Acylamino side chain acts as an electron-withdrawing group making it an even stronger electrophile.

11. Sultamicillin is a prodrug of the type:
Bipartite
Mutual
Bioprecursor
Azo linked

12. The number of asymmetric centers in Erythromycin are
8
5
10
12

13. The antibiotic used to treat atypical tuberculosis is
Azithromycin
Erythromycin
Roxithromycin
Clarithromycin

14. Following is one of the reactant used along with glycerol in the synthesis Pamaquine
3-methoxy -2-nitro aniline
4-methoxy-3-nitro aniline
4-methoxy -2-nitro aniline
3-methoxy-3-nitro aniline

15. Isoniazid is bioactivated by the following enzyme
Catalase
Reductase
Catalase–peroxidase enzyme
Peroxidase

16. Rifampin and Rifabutin are semi-synthetic derivatives of
Rifamycin A
Rifamycin C
Rifamycin B
Rifamycin D &E

17. The anti-aids drug used for HIV-1 and HIV-2 as well as the resistant strain of AZT is
Lamivudine
Zalcitabine
Loviride
Ribavarine

18. Addition of nitrogen at C-8 in 4-Quinolones produced
Norfloxacin
Sparfloxacin
Clinafloxacin
Tosufloxacin

19. The typical reagent to perform the final cleavage of the peptide from the resin together with the removal of the side chain protecting groups in Solid phase synthesis is:
Fluoroacetic acid
Chloroacetic acid
Trifluoroacetic acid
Trichloroacetic acid

20. In solid phase synthesis, RINK Resin is suitable for attachment and release of
Carboxylic acid
Carboxamide
Peptide product
Amide

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Short answers: 6x5 Marks = 15 marks

1A. Explain the requirements of Solid Phase synthesis with examples. 2M
1B. Outline the synthesis of Nitrofurantoin with names of reactants, intermediates, product and reaction condition. Mention its use. 3M

2A. Explain the SAR of Erythromycin. 3M
2B. What are the advantages of prodrug concept of drug design? 2M

3A. Write the structure, mechanism of action and uses of:
i. Pyrazinamide ii. Ganciclovir iii) Ribavarin 2M
3B. Outline the synthesis of Chloroquine with the names of reactants, intermediates, products and reaction conditions. Mention its use. 3M

4. Write the scheme of synthesis of Metronidazole and Sulphacetamide 4M
4B. Write the structure and IUPAC name of silver Sulphadiazine. 1M

5A. What is Hammet constant? How it can be used as a parameter in QSAR studies? 3M
5B. Write the basic structural pharmacophore and show the numbering 2M

6A. Give the mechanism of action of
i. Carbenicillin ii. Albendazole iii. Ketoconazole
iv. Co-trimazole v. Ampicillin 5M

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