KATHMANDU UNIVERSITY
End Semester Examination
June/July, 2023

Marks Scored:

Level : B.Pharm.
Year : III

Course : PHAR 324
Semester : II

Exam Roll No. :

Time: 30 mins.

F. M. : 20

Registration No.:

Date 10 JUL 2023

SECTION "A"
[20 Q. × 1 = 20 Marks]

Encircle the correct option of the following multiple choice questions.

1. Cycloserine acts as an antimetabolite for
   a. Alanine b. Glycine c. Valine d. Tryptophan

2. One of the following is inactive form of thyroid
   a. T3 b. T4 c. rT3 d. rT4

3. The drug that contains nitrothiazole functional group is
   a. Metronidazole b. Tinidazole c. Nitazoxanide d. Praziquantel

4. Which one of the following is **NOT** a DNA chain terminator?
   a. Acyclovir b. Valacyclovir c. AZT d. Amantadine

5. Which one of the following exists as polycation at the physiological pH?
   a. Cephalosporin b. Monobactam c. Macrolide d. Aminoglycoside

6. One of the following is common among Metronidazole, Tinidazole and Nitazoxanide
   a. They contains imidazole.
   b. They are prodrug.
   c. They are mutagenic.
   d. They are orphan drug.

7. Accumulation of Chloroquine inside the food vacuole of the protozoa is due to
   a. Acidic nature of the drug which gets ionized inside the basic environment of the food vacuole
   b. Basic nature of the drug that gets protonated inside the food vacuole
   c. It forms complex with iron that prevent its outflow
   d. Chloroquine accumulate only in the cytoplasm

8. The drug that has acidic functional group as it has to mimic natural substrate such as prostaglandin is
   a. Rosiglitazone b. Metformin c. Ibuprofen d. Piroxicam

9. Which one of the following is a standard Grignard initiator?
   a. Dibromoethane
   b. Tetrahydrofuran
   c. Acetonitrile
   d. Cuprous chloride

10. One of the following is not a common structural feature of NSAIDs
    a. Centre of Lipophilicity
    b. Aromatic or heteroaromatic ring
    c. Acidic centre
    d. Tautomerismcentre

11. The toxicity due to metabolism of cyclophosphamide is due to the generation of
    a. A strong nucleophile
    b. A strong electrophile
    c. An intermediate that interact with the Dopamine receptor in kidney
    d. An intermediate that interact with Glutathion at the bladder

12. The drug that interact with G-quadriplexes is known as
    a. Angiogenesis Inhibitors
    b. Telomerase Inhibitors
    c. Proteases Inhibitors
    d. Metastasis Inhibitors

13. Metal containing beta lactamase is
    a. A
    b. B
    c. C
    d. D

14. Methimazole cannot inhibit peripheral deiodination of T4 because
    a. It has methyl group at N1 position
    b. It has electron withdrawing substitution at N2 position
    c. It is not hydrophilic enough
    d. It does not have functional group for ionic interaction

15. One of the following is selective agonist of H1 receptor?
    a. 1- methylhistamine
    b. 2-Methylhistamine
    c. 3-Methylhistamine
    d. 4-Methylhistamine

16. Which one of the following is a metabolite of Terfenadine that is used as a drug because it is considered to be safer?
    a. Loratidine
    b. Cetrizine
    c. Diphenhydramine
    d. Fexofinadine

17. All naturally occurring prostaglandins has one of the following substitution pattern
    a. Cis double bond at C-13
    b. Trans double bond at C-13
    c. Alfa hydroxyl group at C-13
    d. Carboxyl group at C-13

18. Insulin form hexamer by its coordination with
    a. Iron
    b. Molybdenum
    c. Copper
    d. Zinc

19. Transition state analogue that is used as antiviral drugs is
    a. Saquinavir
    b. Cidofovir
    c. Foscarnet
    d. Lamivudine

20. In antihistaminic drugs,
    a. Amine group should be secondary
    b. It should follow 5 atom rules
    c. The two aryl moiety attached to the connecting atom should be noncoplanar
    d. They do not show stereoselectivity

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SECTION "B"
[5Q. × 3 = 15 marks]

Attempt *ANY FIVE* question.

1. Discuss the antimetabolite action of 5-FU.
2. Mention the structural requirement for COX-2 inhibitors.
3. Justify the acidic character of glitazone.
4. What is green chemistry synthesis? How is Tolbutamide synthesized based on this principle? [1+2]
5. Discuss the chemistry of Artemisinin.
6. Write a shore note on stability of insulin.
7. Discuss the benefit and interaction between Gentamicin and beta lactam.

SECTION "C"
[5Q. × 5 = 25 marks]

8. Write a note on drugs that inhibit mycolic acid synthesis.
9. Classify NSAIDs drugs. Write down the synthesis of Indomethacin.
10. Write down the synthesis of Ibuprofen highlighting the separation of dimer produced as a byproduct.
11. Give the classification of oral hypoglycemic agent. Discuss the difference between the first and second generation Sulfonylureas. [2.5+2.5]
12. Write down the SAR of tetracycline. How the epimerization in tetracycline can lead to its toxicity? [4+1]
13. Discuss the chemistry of Azole Antifungal Agents.
14. Discuss the development of Cimetidine.

SECTION "D"

[2Q. × 7.5=15 marks]

15. Discuss the chemistry and mechanism of action of following anticancer class of anticancer drugs. [2.5+2.5+2.5]
    a. Alkylating agents
    b. Antimetabolite
    c. Antisense

16. Write down the SAR of penicillin and Cephalosporin highlighting their stability in acid environments and against beta lactamase.

17. Give the chemical classification of antihistaminic drugs. Write down the SAR of the first generation antihistaminic drugs. [3.0+4.5]