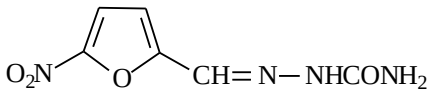
	TANTA UNIVERSITY **FACULTY OF PHARMACY** **DEPARTMENT OF PHARMACEUTICAL CHEMISTRY**			
	FINAL EXAM FOR THIRD YEAR PHARMACY STUDENTS			
	COURSE TITLE:	**Pharmaceutical Chemistry**		**COURSE CODE: 4061**
DATE:	**01/03/2021**	**FIRST SEMESTER:**	**TOTAL ASSESSMENT MARKS: 150**	**TIME ALLOWED: 120 MINUTES**

<u>This exam booklet contains 13 pages and 100 MCQ questions (1.5 marks each). Fill the separate answer sheet using blue pen only for electronic correction machine.</u>

1) The term microbe includes antifungal and antiprotozoal agents as well as the antibacterial agents
   a) True b) False

2) Oxidizing agents are particularly active against anaerobic bacteria and find use in the cleansing of contaminated wounds
   a) True b) False



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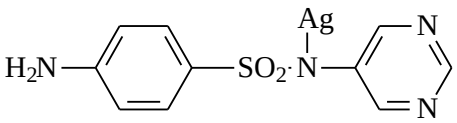

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3) Compound **1** is
   a) Nitrofurantoin b) Furazolidone c) Nitrofurazone d) None

4) Compound **1** is used as
   a) Topical antiseptic b) Urinary antiseptic c) GI antiseptic d) None

5) Compound **2** is
   a) Mafenide acetate b) Silver sulfadiazine c) None

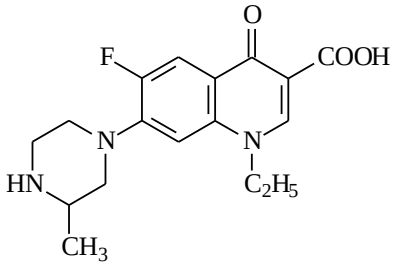
6) Amphotericin B and flucytosine are the only agents available for the treatment of systemic yeast infections
   a) True b) False

7) The fungistatic activity of conazoles is due to
   a) Inhibition of squalene epoxidase
   b) Damage to the cell membrane, with the loss of essential cellular constituents, such as potassium ion and amino acids
   c) Inhibition of lanosterol 14α-demethylase d) All e) None

8) Clotrimazole, ketoconazole, itraconazole and fluconazole have been introduced for the treatment of systemic fungal infections
   a) True b) False

9) Which antibiotic does act as an ionophore in bacterial cell membrane to cause the loss of potassium ion from the cell?
   a) Vancomycin b) Bacitracin c) Polymixin P d) Gramicidin e) None

10) A substance is classified as an antibiotic if the following conditions are met, **Except**
   a) It is a product of metabolism
   b) It is a synthetic product produced as a structural analog of naturally occurring antibiotic
   c) It antagonizes the growth or survival of one or more species of microorganisms
   d) It is effective in low concentrations e) None



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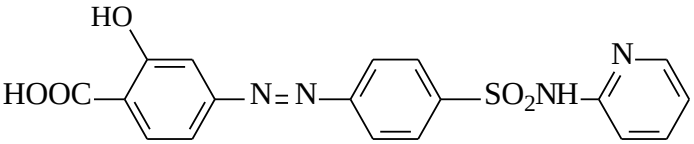

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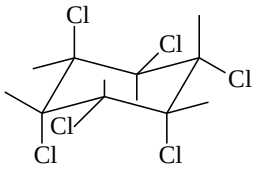
11) Compound **3** is
   a) Norflxacin b) Ciprofloxacin c) Ofloxacin d) Lomefloxacin e) Sparfloxacin

12) Nonbuffered glutaral is, **Except**
   a) Acidic b) Stable c) Lacking activity d) None

13) Compound **4** is
   a) Sulfapyridine b) Sulfadiazine c) Sulfisoxazole
   d) Sulfasalazine e) None

14) Which drug is **not** used for extra intestinal amebiasis?
   a) Metronidazole b) Chloroquine c) Dehydroemetine d) None



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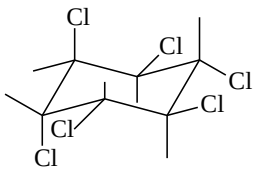

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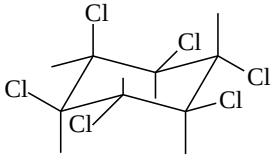


(7)

15) The active isomer of lindane is

a) **5** b) **6** c) **7** d) None

16) Griseofulvin is spiro compound

a) True b) False

17) Griseofulvin can be used topically

a) True b) False

18) Which drug inhibits the helminth-specific fumarate rductase?

a) Mebendazole b) Thiabendazole c) Albendazole d) None

19) The malarial parasites can and must synthesize their own pyrimidines

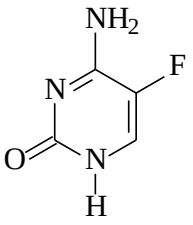
a) True b) False

20) 6-Methoxy analogs of cinchona alkaloids are more active and less toxic as antimalarial than the 2- or 4-methoxy analogs

a) True b) False

21) Dialkylaminoalkylamino of chloroquine and primaquine is optimal fo antmamarial activity

a) True b) False



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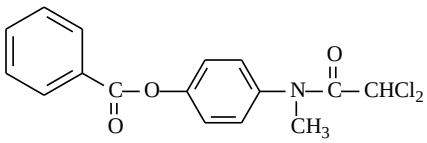

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22) Compound **8** is an antineoplastic prodrug

a) True b) False

23) Compound **9** is an antiamebic prodrug

a) True b) False

24) Dapsone is a dihydrofolate reductase inhibitor

a) True b) False

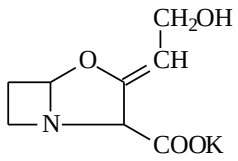
25) Reaction of sulfanilamide with guanidine followed by condensation with acetylacetone produces

a) Sulfapyridine b) Sulfadiazine c) Sulfamethazine
d) Sulfisoxazole e) None

26) Cotrimoxazole is a synergestic fixed dose combination
a) True b) False

27) The more active isomer of ethambutol is the
a) Dextro isomer b) Levo isomer c) Meso isomer d) All are equal

28) Which is **not** correct concerning fluoroquinolones?
a) 1,4-Dihydro-4-oxo-3-pyridinecarboxylic acid moiety is essential for antibacterial activity
b) Introduction of substituents at position 2 greatly reduces or abolishes activity
c) Substitution of positions 5, 6, 7 and 8 of the annulated ring usually enhances activity
d) Alkyl substitution at position 1 is essential for activity
e) None



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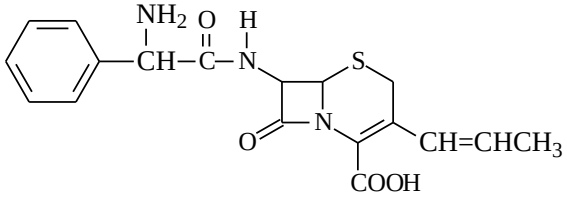
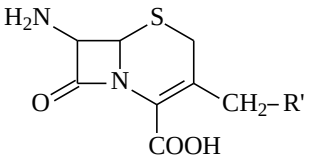


(11)

29) Compound **10** is
a) Sulbactam b) Tazobactam c) Clavulanate potassium d) None

30) Structure **11** is an orally active cephalosporin antibiotic
a) True b) False

31) Compound **11** is
a) Cephalexin b) Cefprozil c) Cefuroxime d) None



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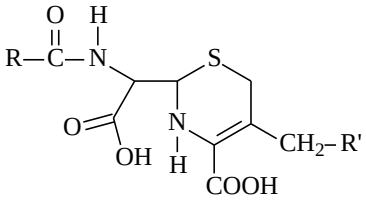

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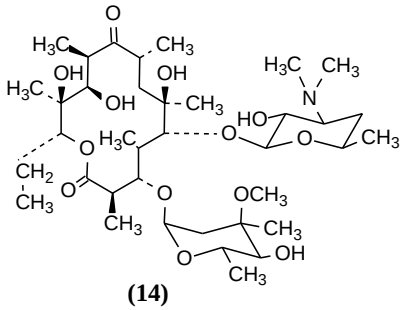
32) Hydrolysis of cephalosporins by acylase gives
a) **12** b) **13** c) Both (a) and (b) d) None

33) Which antibiotic acts on 30S ribosomal subunit?
a) Aminoglycosides b) Chloramphenicol c) Erythromycin
d) Lincomycin e) None

34) Chlorohexidine gluconate is
a) A Biguanide b) A cationic surfactant
c) Both (a) and (b) d) None



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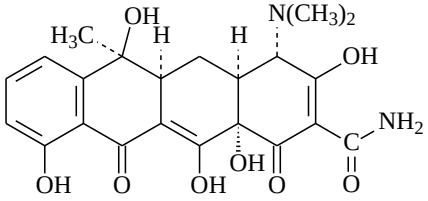


(15)

35) Which is **not** correct concerning **ring II** of kanamycin B?
a) It is deoxystreptamine ring b) Few modifications are possible
c) It is important for broad spectrum activity d) none

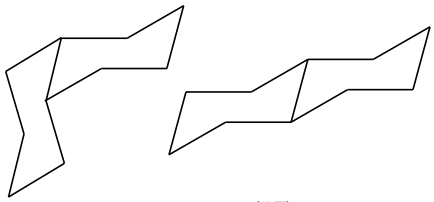
36) Structure **14** is
a) Lincomycin b) clindamycin c) Clarihtromycin d) Erythromycin

37) Compund **14** is used as an alternative to penicillins
a) True b) False

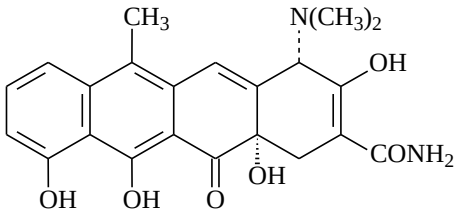
38) Compound **14** is
a) Active only against Gram positive bacteria
b) Active only against Gram negative bacteria
c) Broad spectrum antibiotic

39) Compound **15** is
a) Tetracyclin b) Oxytetracyclin c) Doxycyclin
d) Minocyclin e) None

40) In tetracycline, alkylation at C-11a leads to inactive compounds, demonstrating the importance of an enolizable β-diketone functionality at C-11 and C-12
a) True b) False



(16) **(17)**



(18)

41) The A/B ring fusion of tetracycline is demonstrated by structure
a) **16** b) **17**

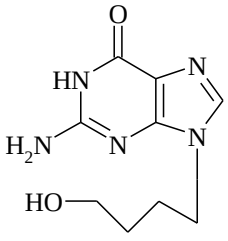
42) Structure **18** is
a) Anhydrotetracyclin b) Epianhydrotetracyclin c) None

43) Many β-lactamase-producing bacterial strains are sensitive to cefotaxime
a) True b) False

44) Which is **not** correct concerning quinoline antimalarial agents?
a) The 6-methoxy group is not essential for activity
b) A chlorine atom on the quinoline ring is optimal
c) 6-Methoxy analogs are active but toxic
d) Quinine has 8*S* and 9*R* configuration
e) None

45) Relocation of the nitro group in chloramphenicol abolishes activity
a) True b) False

46) Imipenem is *N*-formamidothienamycin:
a) True b) False



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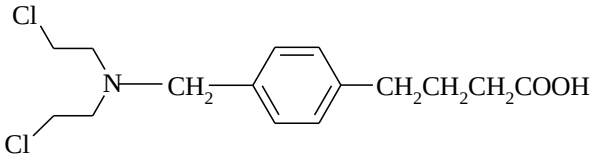

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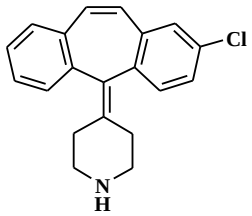


(**21**)

47) Compound No (**19**) is

a) Acyclovir
b) More active than acyclovir
c) Less active than acyclovir
d) Not active as antiviral

48) Compound No (**20**) is

a) Chlorambucil
b) Less toxic than Chlorambucil
c) More toxic than Chlorambucil
d) Melphalan

49) Compound No (**21**) is

a) Loratadine b) Desloratadine c) Azatadine d) None

50) The actinomycins comprise a large number of closely related structures. All of then contains the same chromophore, a substituted 3-phenothiazine-1,9-dicarboxylic acid. Each of the carboxylic group is bonded to a penta peptide lactone.

a) True
b) False

51) All are true about carmustine **Except**

a) Its mechanism of alkylation is by vinyl carbonium ion formation
b) Its mechanism of alkylation is by chloroethylamine formation
c) Its mechanism of alkylation is by methyl carbonium ion formation
d) It is a nitrosourea

52) All are true about entecavir **Except**

a) Its base is adenine
b) The pyrimidine analogs are inactive, and the exocyclic double bond is important for the activity.
c) Shifting the hydroxy group from the 3'-position to the 2'-position abolishes the activity.
d) Decreasing the carbocyclic ring size will reduce the anti-HBV activity.

53) The active isomer of triprolidine is

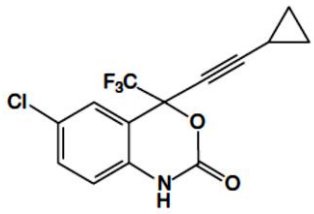
a) The cis isomer
b) The trans isomer

54) Carbinoxamine is more active H_1 antagonist than doxylamine because.

a) It has pyridyl group instead of the phenyl moiety
b) It has para chloro derivative
c) a + b
d) None

55) Clemastine

a) Has two chiral centers, each of which is of the (*R*) absolute configuration
b) Has two chiral centers, each of which is of the (*S*) absolute configuration
c) Has two chiral centers, one of which is of the (*R*) configuration and the other is of the (*S*) configuration
d) Has one chiral center which is of the (*R*) absolute configuration



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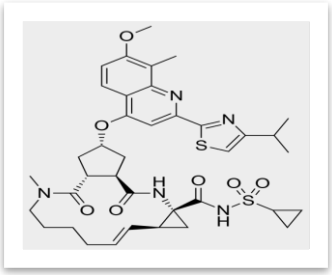


(**23**)

56) Compound No (**22**) is

a) Nevirapine which is a HIV protease inhibitor
b) Nevirapine which is a nonnucleoside reverse transcriptase inhibitor
c) Efavirenz which is a HIV protease inhibitor
d) Efavirenz which is a nonnucleoside reverse transcriptase inhibitor

57) Compound No (**23**) is

a) Sofosbuvir which is a nucleotide analog and it works by blocking the hepatitis C NS5B polymerase
b) Sofosbuvir which works by blocking the hepatitis C NS3 protease
c) Simeprevir which is a nucleotide analog and it works by blocking the hepatitis C NS5B polymerase
d) Simeprevir which works by blocking the hepatitis C NS3 protease

58) In doxorubicin, removals of the methyl group of 4-methoxy increases its potency.

a) True b) False

59) Ketotifen is

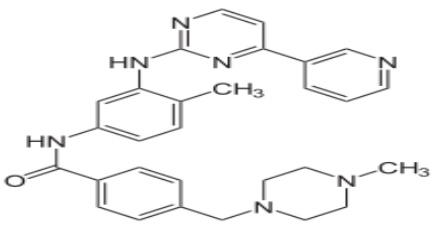
a) Mast cell stailiizer b) H1-antagonist
c) Leukotriene inhibitor d) a + b

60) Clemastine is an example of

a) Ethanol amines H_1-antagonists
b) Ethylenediamines H_1-antagonists
c) Propylamines H_1-antagonists.

61) Loratadine's nomenclatine is 4-(8-chloro-5,6-dihydro-11H-benzo [6,7]-cyclohepta[1,2-b]pyridine-11-ylidene-1-carboxylic acid ethyl ester

a) True b) False



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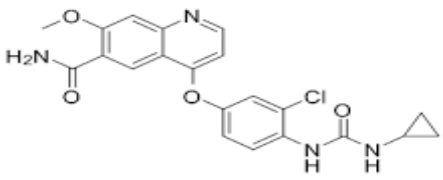


(**25**)

62) Structure No.**24** is

a) Imatinib b) Ponatinib c) b) lenvatinib d) Afatinib

63) Drug No. (**24**) is used as second line CML treatment, and it binds to the T315I mutated kinase successfully.

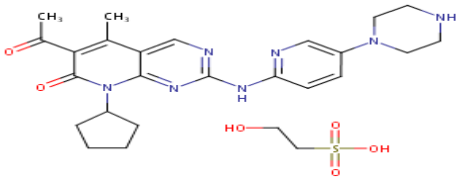
a) True b) False

64) Structure No. (**25**) is

a) Imatinib b) lenvatinib c) Ponatinib d) Palbociclib

65) All are true about drug No (**25**) **<u>Except</u>**

a) It is an epidermal growth factor receptor inhibitor
b) It is a vascular endothelial growth factor receptor inhibitor
c) It is used to treat people with differentiated thyroid cancer
d) It binds to the ATP binding site and to the neighboring region via a cyclopropane ring, adopting an Asp-Phe-Gly (DFG)-"in" conformation.



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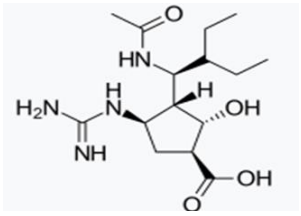

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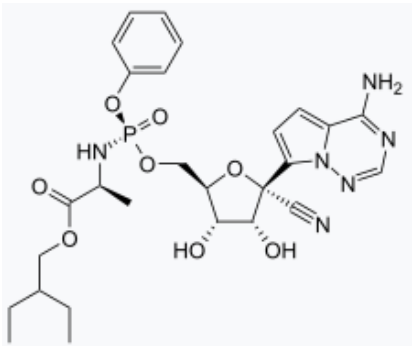


(**28**)

66) Compound No (**26**) is palbociclib and it is intended for postmenopausal women with estrogen receptor (ER)-positive, human epidermal growth factor receptor 2 (HER2)-negative metastatic breast cancer.

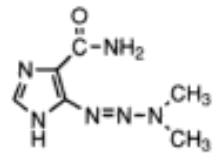
a) True b) False

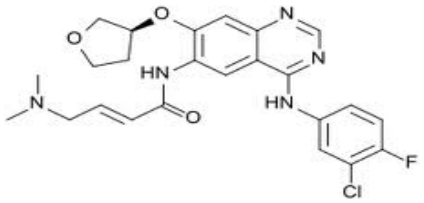
67) Structure No. (**27**) is

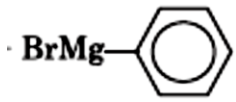
a) Sialic acid b) Zanamivir c) Oseltamivir d) None

68) Structure No. (**28**) is

a) Remdesivir b) Simeprevir c) Sofosbuvir d) Peramivir







(**29**) (**30**) (**31**)

69) Structure No. (**29**) is
a) Lomustine and its mechanism of alkylation is by chloroethylamine formatation
b) Lomustine and its mechanism of alkylation is by methyl free radical formation
c) Dacarbazine and its mechanism of alkylation is by chloroethylamine formatation
d) Dacarbazine and its mechanism of alkylation is methyl free radical formation

70) Structure No (**30**) is
a) Imatinib b) lenvatinib c) Ponatinib d) Afatinib

71) Oxaliplatin is a tarns isomer in which one pair of ligands are bidentate anions of intermediate leaving ability and the other pair are amine.
a) True b) False

72) All are true about Foscarnet **Except**
a) It is phosphonoformic acid
b) Phosphonoacetic acid retains similar activity against HSV-1, HSV-2
c) Substitution on the alpha-carbon of PAA is tolerable.
d) Elongation of the acid chain as phosphonopropionic acid losses all activity

73) Structure No (**31**) is used in the preparation of
a) Diphenhydramine b) Bromodiphenhydramine
c) Chlorocyclizine d) Chlorpheniramine

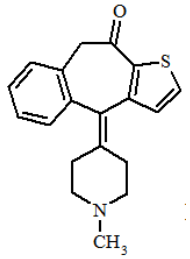
74) All are true about antazoline **Except**
a) The side chain nitrogen is involved in pyrolidine ring
b) The side chain nitrogen is involved in imidazoline ring
c) The more soluble and less irritant salt is the phosphate salt
d) The phosphate salt is used as eye drops

75) A drug that has three antineoplastic function groups
a) Anthracyclines b) Bleomycin
c) Mitomycin C d) None

76) The three function groups of question No. 75 are the following **Except**
a) Aziridine ring b) Carbamate group
c) Quinone group d) Nitrozourea

77) Pemirolast can be considered an analogue of one portion of the cromolyn structure in which the carboxy group has been replaced with

a) An isosteric tetrazole moiety. b) An isosteric triazole moiety.
c) An isosteric imidazole moiety. d) None



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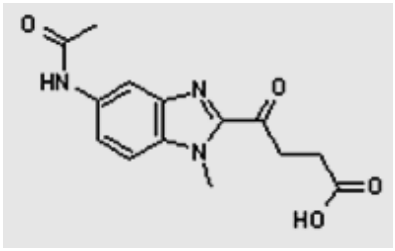
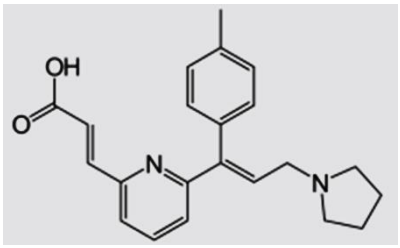


(**33**)



(**34**)

78) The structure No. (**32**) is

a) Montelukast b) Ketotifen c) Pemirolast d) None

79) In the preparation of bendamustine, the second step after the preparation of compound No (**33**) is

a) Reduction by H/Pd-C b) Addition of NaOH
c) Addition of oxirane d) Addition of POCl

80) Structure No. (**34**) is

a) Acrivastine which is a first generation antihistaminic
b) Acrivastine which is a second generation antihistaminic
c) Triprolidine which is a first generation antihistaminic
d) Triprolidine which is a second generation antihistaminic

81) One of the drawbacks of antacid medicines that contain Aluminum (Al) is

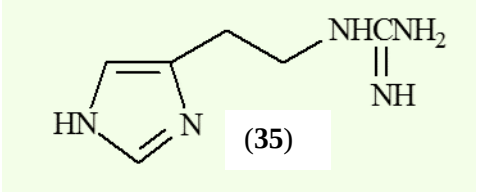
a) Diarrhea b) Constipation
c) Gynecomastia d) Gastric ulcer

82) All are true about criteria of ideal antacid **Except**

a) It should be non-toxic and platable
b) It should in the pH 10-12
c) It should be rapidly effective and maintain its effect over a long period of time
d) It should not affect the absorption of food

83) Structure No. (**35**) is

a) 4-Methylhistamine which has H_2> H_1 receptor antagonism
b) Guanylhistamine which has weak H_2 receptor antagonism
c) Burimamide which has full H_2 receptor antagonism
d) Metiamide which has full H_2 receptor antagonism



(**35**)

84) Despite burimamide and metiamide have full H_2-antagonist activity, they produce thiourea toxicity.

a) True b) False

85) All are true about SAR of H_2-receptor antagonists **Except**

a) The imidazole ring of histamine is required for activity.

b) Separation of the ring and the nitrogen group with the equivalent of a four-carbon chain appears to be necessary for optimal activity.

c) The isosteric thioether link is present in the drugs approved.

d) The terminal N-group should be a polar, non-basic substituent for maximal activity.

86) Ranitidine is the first clinically used H_2-antagonist. Gynecomastia in patients treated for ≥ 1 month may occur.

a) True b) False

87) Famotidine is more potent than cimetidine as it contains:

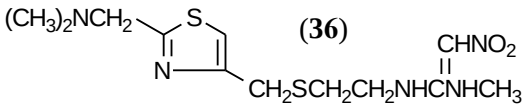
a) 1 Guanido gp b) 2 Guanido gp

c) 3 Guanido gp d) 4 Guanido gp

88) The structure No. (**36**) is

a) Cimetidine b) Ranitidine

c) Famotidine d) Nizatidine



(**36**)

89) The benzimidazole is transformed within the acid compartment of the parietal cells to an inhibitor molecule which reacts covalently with the essential (OH) function on the enzyme.

a) True b) False

90) The triple therapy for treatment of *H. pylori.* is consists of one of the following:

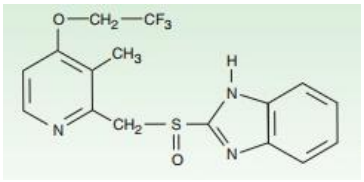
a) Omeprazole b) Pirenzepine

c) Proglumide d) Bisacodyl

91) The structure No. (**37**) is

a) Cimetidine b) Ranitidine

c) Famotidine d) Nizatidine



(**37**)

92) Esomeprazole is the (*S*) enantiomer of omeprazole, which is the pharmacologically inactive enantiomer.

a) True b) False

93) Sucralfate has no proteolytic activity and exerts its antiulcer effect through systemic action.

a) True b) False

94) Misoprostol:

a) Is a semisynthetic derivative of PGE_1.

b) Exhibits antisecretory (agonist at parietal cell prostaglandin receptors)

c) Exhibits cytoprotectant (increase in GI mucus and bicarbonate secretion) effects.

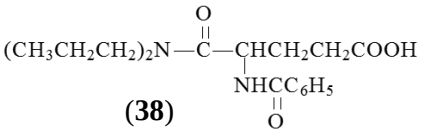
d) All of the above.

95) One of the selective muscarinic (M1) receptor antagonists is

a) Pirenzepine
b) Misoprostol
c) Proglumide
d) Bisacodyl

96) The structure No. (**38**) is

a) Pirenzepine
b) Misoprostol
c) Proglumide
d) Bisacodyl



(**38**)

97) All are true about stimulant laxatives **<u>Except</u>**

a) They act by stimulation of motor activity of the GIT

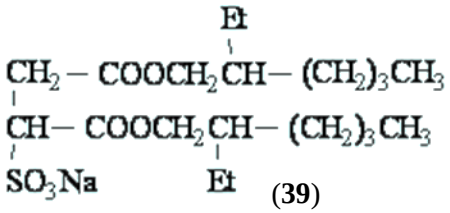
b) They have effect on the water reabsorption and secretion

c) Bisacodyl is one their example

d) They lubricate the intestinal tract and facilitate the passage of feces.

98) Structure No. (**39**) is

a) Surfactant or wetting agent.
b) Lower surface tension and permit the intestinal fluids to penetrate the fecal mass
c) Docusate Sodium
d) All of the above



(**39**)

99) It is a synthetic congener of meperidine, inhibits excessive gastrointestinal propulsion by slowing intestinal motility.

a) Diphenoxylate Hydrochloride
b) Docusate Sodium
c) Dronabinol
d) Metoclopramide

100) Metoclopramide is:

a) Antidiarrheal Drugs
b) Antiemetics
c) Digestants
d) Adsorbents