ORIENTAL COLLEGE OF PHARMACY

Sem VII, Pharmaceutical Chemistry III (CBSGS) Question Bank (Answers marked in bold) (Total 100 MCQ's)

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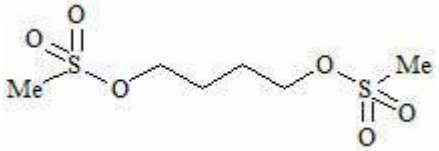
Set I: 50 questions

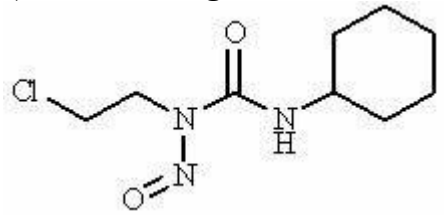
1) The following anticancer agent is called busulfan.



What is the drug's mode of action?

a) Metallating agent
b) Intercalator
c) Chain terminator
d) Alkylating agent

2) The following structure is used in the treatment of brain tumours.



What is the structure called?

a) Carmustine
b) Lomustine
c) Streptozotocin
d) Cyclophosphamide

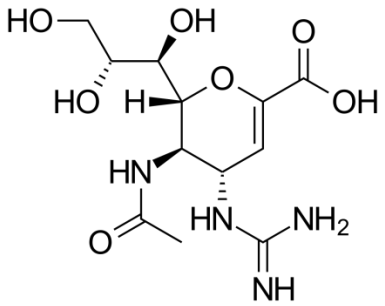
3) Once activated, the proton pump inhibitors bind to exposed amino acids in the proton pump. Which amino acid is involved?

a) serine
b) cysteine
c) lysine
d) histidine

4) Which of the following drugs inhibit herpes viruses?

a) Amantadine
b) Acyclovir
c) Oseltamivir
d) Azidothymidine

5) Identify the following structure and its mechanism.



a) Zanamivir, Neuraminidase inhibitor
b) Oseltamivir, Neuraminidase inhibitor
c) Ritonavir, Protease inhibitor
d) Zidovudine, NRTI

6) Which of the following diuretics is metabolised into the active substance canrenone?
a) Amiloride
b) Spironolactone
c) Epelerenone
d) Furosemide

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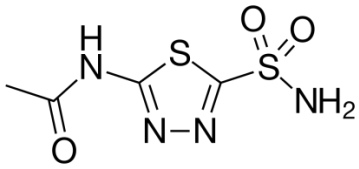
7) Identify the following drug:

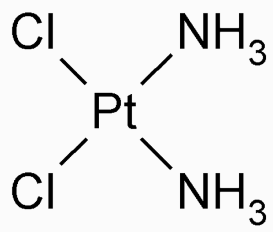


a) Acetazolamide
b) Acetohexamide
c) Amlodipine
d) Anakinra

8) Calcium channel blockers can be divided into three class based on their chemical structure. Which of the following is not a class of calcium channel blockers?
a) Nitrates
b) Penylalkylamines
c) Dihydropyridines
d) Benzothiazepines

9) Which receptor does the cardiac glycoside digoxin bind to?
a) ATP-dependent K^+ channel
b) Na^+/K^+ antiporter
c) ATP-dependent Ca^{2+} channel
d) Na^+/Ca^{2+} antiporter

10) Identify the following drug:



a) Cisplatin
b) Oxaliplatin
c) Abatecept
d) Pralidoxime

11) For synthesis of which drug we need to use o-nitro benzaldehyde

a) Amlodipine

b) Nifedipine

c) Nicardipine

d) Piperine

12) An electron withdrawing group should be present at 6 position of thiazide diuretics.

a) True

b) False

13) Example of a rationally developed drug is:

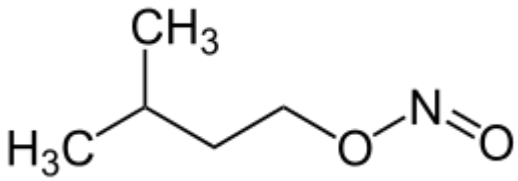
a) Lafutidine

b) Ranitidine

c) Cimetidine

d) Famotidine

14) Identify the following structure:



a) Isoamyl nitrite

b) Amyl nitrite

c) Pentaerythritol

d) Isosorbide dinitrite

15) Diuretic which results in severe hypokalemia is

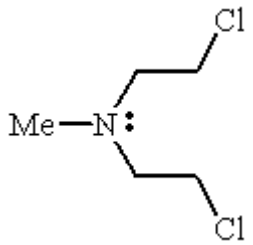
a) Trimterene

b) Chlorthiazide

c) Spironolactone

d) Mannitol

16) The following agent is used for the treatment of Hodgkin's lymphoma as part of a multi-drug regime. What is the name of the compound?



a) Mechlorethamine

b) Cyclophosphamide

c) Melphalan

d) Chlorambucil

17) Following drugs act as an arterials vasodilators

except one

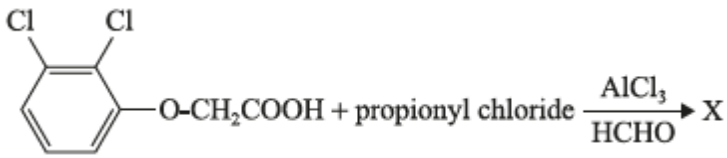
(a) Hydralazine

(b) Minoxidil

(c) Diazoxide

(d) **Sodium nitroprusside**

18) The synthesis of following drug is;



(a) X = ethacrynic acid

(b) X = meclofenamic acid

(c) Both

(d) None

19) The active metabolite of anticancer cyclophosphamide is

(a) N-hydroxy cyclophosphamide

(b) N-methyl cyclophosphamide

(c) N-acetyl cyclophosphamide

(d) N-propyl cyclopqosphide

20) Sulphonamide group is present at thiazide diuretic at position

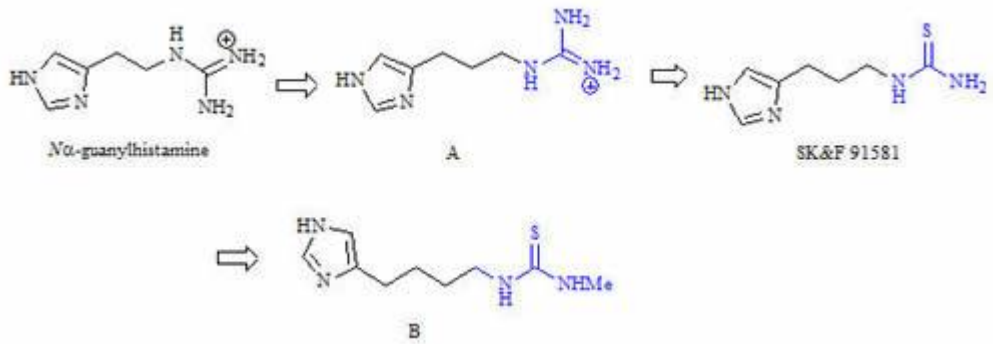
(a) 3

(b) 6

(c) 7

(d) 9

21) The following structures show some of the important molecules leading to the discovery of burimamide (B).

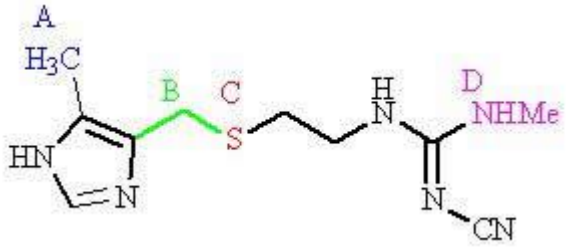


What strategy was used in developing burimamide from SK&F 91581?

a) extension
b) chain extension

c) substituent variation
d) isosteric replacement

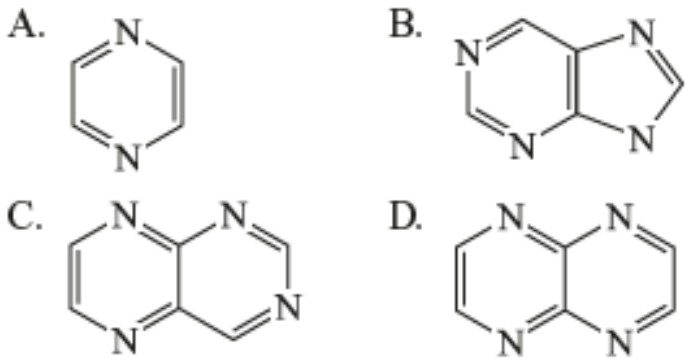
22) Two regions of cimetidine are susceptible to metabolism. Which regions?



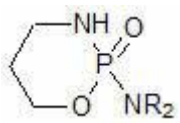
a) A and B
b) A and C
c) B and D
d) A and D
23) What is the IUPAC name of ethacrynic acid?
(a) [2,3-dichloro-4-(2-methylenebutyryl)phenoxy]acetic acid
(b) [2,3-dichloro-4-(2-methylenebutyryl)phenoxy]propionic acid
(c) **[2-chloro-4-(2-methylenebutyryl)phenoxy] acetic acid**
(d) [2,3-dichloro-4-(2-ethylenebutyryl)phenoxy]acetic acid

24) Acetazolamide is synthesized via which of the following intermediate?
(a) 1-amino-2-mercapto-1,3-thiazole
(b) 5-amino-2-mercapto-1,3,4-thiadiazole
(c) 1-amino-2-mercapto-1,3-thiazole
(d) 5-amino-2-mercapto-1,3,4-tetrazole

25) Basic ring system in triamterene is: 'C'



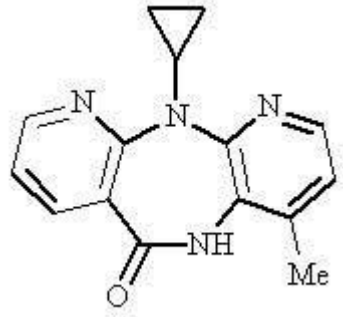
26) Cyclophosphamide is commonly used in anticancer therapy.



Which of the following statements is not true of the above structure?
a) It is relatively non-toxic.
b) It acts as a prodrug.

c) It cannot be taken orally.
d) The structure is metabolised to release acrolein.

27) Which of the following statements is true regarding the following structure (nevirapine)?



a) It is a nucleoside reverse transcriptase inhibitor (NRTI).
b) It binds to an allosteric binding site next to the substrate binding site of reverse transcriptase.
c) It is an achiral molecule.
d) It is an example of a second-generation drug of its class.

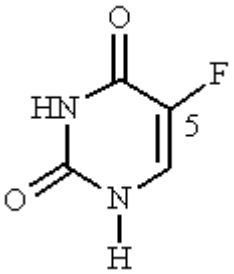
28) Which H2 antagonist has a multimodal action
a) Ranitidine
b) Lafutidine
c) Cimetidine
d) Nizatidine

29) Furan ring is present in
a) Ranitidine
b) Lafutidine
c) Cimetidine
d) Nizatidine

30) Histamine has _____ affinity for receptor subtypes
a) More
b) equal
c) less
d) none

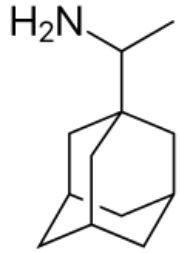
31) Enzyme on which imatinib acts is
a) Histone Deacetylase
b) DHFR
c) Tyrosine kinase
d) Thymidylate synthase

32) The following structure is used in the treatment of breast, liver and skin cancers.



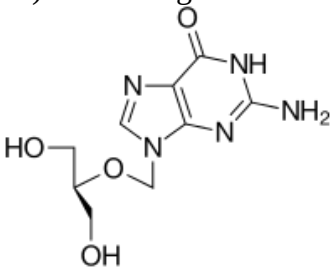
What is the target for the above structure?
a) DHFR
b) Thymidylate synthase
c) Tyrosine kinase
d) Histone deacetylase

33) Identify following drug



a) Amantadine
b) Rimantadine
c) Nifedipine
d) Amlodipine

34) Structure given below is of antiviral drug. Which viral infection does it treat?



a) HIV
b) HSV
c) H1N1
d) COVID-19

35) Thymidine, Trityl chloride and methyl sulfonyl chloride are starting materials for synthesis of
a) Chlorambucil
b) Cyclophosphamide
c) Zidovudine
d) Acetohexamide

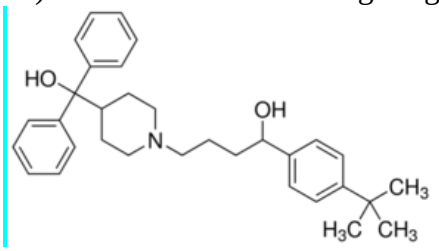
36) Lopinavir is combined with
a) Ritonavir
b) Saquinavir

c) Indinavir
d) Amprenavir

37) H2 antagonists containing thiazole ring is
a) Nizatidine and Famotidine
b) Cimetidine
c) Ranitidine
d) Lafutidine

38) Target of PPI's is
a) Na+/K+ ATPase
b) Na+/H+ ATPase
c) H+/K+ Atpase
d) Histidine decarboxylase

39) Metabolism of following drug is primarily

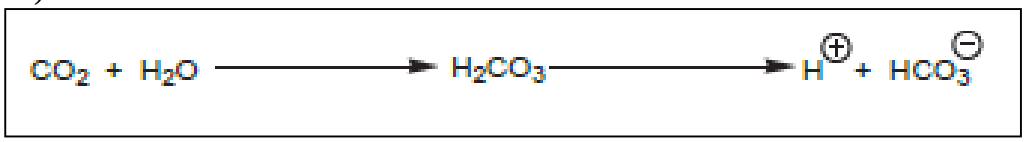


a) Aromatic oxidation
b) N-dealkylation
c) CH3 oxidation
d) Glucuronidation

40) Furfuryl alcohol, Dimethylamine and Formaldehyde are starting materials for synthesis of
a) Ethacrynic acid
b) Furosemide
c) Ranitidine
d) Acetazolamide

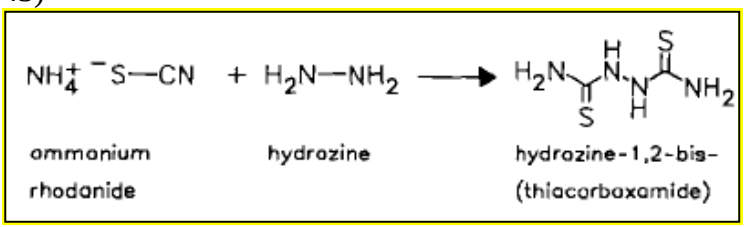
41) PPI's contain
a) Benzimidazole ring
b) Benzopyrrole ring
c) Benzopyridine ring
d) Benzpyrazole ring

42)



Above reaction is brought about by enzyme:
a) Carbonic anhydrase
b) Decarboxylase
c) ATPase
d) Kinase

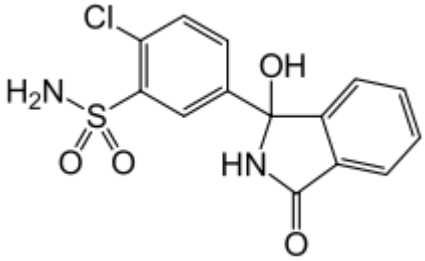
43)



Above reaction is first step in synthesis of:
a) Acetohexamide
b) Acetazolamide
c) Ethacrynic acid
d) Chlorthiazide

44) Hydrochlorthiazide is
a) Unsaturated analog of chlorthiazide
b) Saturated analog of chlorthiazide
c) Oxidized analog of chlorthiazide
d) Same as Chlorthiazide

45) Following drug acts on:



a) PCT
b) DCT
c) Lop of Henle
d) CT

46) Furosemide is
a) Phenoxy acetic derivative
b) anthranilic acid derivative
c) Propionic acid derivative
d) Acetic acid derivative

47) Aldosterone antagonist acting as diuretic is
a) Spironolactone
b) Triamterene
c) Amiloride
d) Acetazolamide

48) IUPAC name 6-chloro-1,1-dioxo-2*H*-1,2,4-benzothiadiazine-7-sulfonamide is of:
a) Hydrochlorthiazide
b) Chlorthiazide
c) Flumethiazide
d) Benzthiazide

49) Vincristine and Vinblastine inhibits cell cycle at:
a) G1 Phase
b) G2 phase
c) S Phase
d) M Phase

50) Bumetanide contains _____
(a) **Phenoxy group at 4th position**
(b) Phenoxy group at 5th position
(c) Phenoxy group at 3rd position
(d) Does not contain any phenoxy group.

Set 2: 50 questions:

Hypoglycemics and Insulin Analogues

1) Metformin belongs to which of the chemical class of anti-diabetic drug?
(a) Biguanides
(b) Thiazolidinediones
(c) Sulfonylureas
(d) Alpha-glucosidase inhibitor

2) Metformin have the following property except:
(a) It activates GLUT-1 transport and increase glucose uptake
(b) It absorbs vitamin B-12
(c) It causes lactic acidosis
(d) It activates GLUT-4 transport and contraindicates in pregnancy

3) An example of sulfonyl urea is
(a) Metformin
(b) Tolbutamide
(c) Rosiglitazone
(d) Repaglinide

4) Hypoglycemic agent with 1-(hexahydro-1H-azepin1-yl)-3-(p-tolylsulphonyl) urea is
(a) GliCiazide
(b) Tolazamide
(c) Tolbutamide
(d) Gliburide

5) Which of following hypoglycemic agent is thiazolidinedione derivative?
(a) Rosiglitazone
(b) Metformin
(c) Tolbutamide
(d) Miglitol

6) First-generation sulfonylureas include all the following except
(a) Acetohexamide
(b) Glipizide

(c) Tolazamide
(d) Tolbutamide

7) Which one of the following statements about biguanides is not true?
A. Don't stimulate insulin Release
B. Decrease hepatic glucose production
C. Renal Dysfunction is not a contraindication for their use
D. Can be combined with sulfonylureas

Antihistaminics

1) What is the relationship of fexofenidine and terfenidine?
(a) Metabolite
(b) Bioisoster
(c) Higher homolog
(d) Lower homolog

2) Which one of the following is second generation H1 -Anti histamine?
(a) Cetrizine
(b) Cinnarizine
(c) Pheneramine
(d) Promethazine

3) Which of following is metabolite of hydroxyzine?
(a) Astemizole
(b) Cetrizine
(c) Loratadine
(d) Terfenadine

4) Which of the following H_2 receptors antagonist has the highest affinity for CYP450?
(a) Nizatidine
(b) Ranitidine
(c) Cimetidine
(d) Famotidine

5) Cimetidine is developed from which of the following compounds?
(a) Metiamide
(b) Ranitidine
(c) Procainamide
(d) Terfenadine

6) Ranitidine is a
(a) H_2 antagonist
(b) H_1 antagonist
(c) Beta adrenergic antagonist
(d) Alpha adrenergic antagonist

Thrombolytics, Anticoagulants, Antiplatelets

1) Which of the following is coumarin containing anticoagulant?
(a) Heparan
(b) Warfarin
(c) Aspirin
(d) Clopidogrel

2) All of the following are antiplatelet agents except
(a) Acetylsalicylic acid
(b) Acetaminophen
(c) Ticlopidine
(d) Dipyridamole

3) Acetyl salicylic acid is
(a) Sulindac
(b) Aspirin
(c) Mefenamic acid
(d) Nalidixic acid

4) Low dose aspirin acts as an anti-platelet aggregating agent by which one of the following mechanisms? Find the correct answer.
(a) It acts as a suicide substrate for COX-1 enzyme present in platelets
(b) It acts as a transition state analog for COX-2 enzyme present in the platelets
(c) It acts as a reversible inhibitor of lipoxigenase present in the platelets
(d) It acts as an affinity label of oxidoreductases present in the platelets

Antihyperlipoproteinemics

1) Which of the following is a cholesterol absorption inhibitor?
(a) Atorvastatin
(b) Ezetimibe
(c) Fenofibrate
(d) Nicotinic acid

2) Which of the followings is the most effective monotherapy for raising HDL cholesterol?
(a) Statins
(b) Niacin
(c) Ezetimibe
(d) to-3-Fatty acids

3) Simvastatin has which of the following rings?
(a) Indole
(b) Pyrrole
(c) Naphthyl
(d) Pyridine

4) The basic ring present in atorvastatin is:
(a) Indole
(b) Pyrrole

(c) Napthalene
(d) Furan

Vasodilators/Sympatholytics

1) Chemical name of hydralazine is
(a) 1-Hydrazinophthalazine
(b) 4-Hydrazinophthalazine
(c) N, N-Diaminothalazine
(d) Phthalic hydrazine

2) Diazoxide has
(a) 1,2,4-benzothiazine
(b) 1,2,3-benzothiazine
(c) 2,3,4-benzothiazine
(d) 1,3,4-benzothiazine

3) Which isomer of propranolol is more active?
(a) Meso
(b) Levo
(c) Dextro
(d) Racemic

4) Which of following is ultra short acting cardioselective beta blocker?
(a) Atenolol
(b) Nebivolol
(c) Esmolol
(d) Propranolol

5) Selective α-1 blocker is:
(a) Prazosin
(b) Atenolol
(c) Salbutamol
(d) Losartan

6) Which basic moiety is present in Prazosin structure?
(a) Quinoline
(b) Isoquinoline
(c) Quinazoline
(d) Indole

7) The antihypertensive agent also used for hair regrowth is
(a) Nitroglycerin
(b) Nitroprusside
(c) Minoxidil

(d) Verapamil

Agents affecting Renin-Angiotensin Pathway and Calcium Blockers

1) One of them is not a prodrug. Identify.
(a) Benzepril
(b) Captopril
(c) Quinapril
(d) Ramipril

2) What is the starting material for synthesis of captopril?
(b) Acetoacetic acid
(b) Methacrylic acid
(c) Alanine
(d) Formic acid

3) The antihypertensive drug with a tetrazole nucleus is
(a) Diazoxide
(b) Valsartan
(c) Taludipine
(d) Fosinopril

4) Chemically, diltiazem is
(a) 1,4 dihydropyridine derivative
(b) phenyl alkyl amine derivative
(c) benzothiazepine derivative
(d) benzothiazole derivative

5) Which type calcium channel is blocked by Nifedipine ?
(a) T-type
(b) N-type
(c) P-type
(d) L-type

6) Chemically nifedipine is
(a) 1,4 dihydropyrimidine derivative
(b) 2,4 dihydropyrimidine derivative
(c) 1,4 dihydropyridine derivative
(d) 2,4 dihydropyridine derivative

Diuretics

1) Acetazolamide can be synthesized from on of the following intermediates.
(a) 5-amino-2-mercapto-1,3-thiazole
(b) 5-amino-2-mercapto-1,3,4-thiadiazole
(c) 5-amino-2-mercapto-1,2,3-thiadiazole
(d) 5-amino-2-mercapto-1,3,4-tetrazole

2) Which of following is anthranilic acid derivative?

(a) Furosemide
(b) Bumetanide
(c) Ethacrynic acid
(d) Chlorthiazide

Antiarrythmic Agents

1) The anti arrythmatic drug quinidine is a
(a) (+) Stereoisomer of quinine
(b) (–) Stereoisomer of quinine
(c) (+) Racemic mixture of quinine
(d) (-) Racemic mixture of quinine

Antivirals agents including anti-HIV agents

1) Which one of the following antiviral agent exhibits the greatest selective toxicity for the invading virus? (a) Interferon
(b) Amantadine
(c) Acyclovir
(d) Zidovudine

2) Amantadine is the drug used as
(a) Antibacterial
(b) Antiviral
(c) Antifungal
(d) Antiprotozoal

3) Antiretroviral Raltegravir is unique because of which of the following actions?
(a) Integrase inhibition
(b) CCR5 Co-receptor antagonism
(c) Fusion inhibition
(d) Reverse transcriptase inhibition

4) Nevirapine is a ?
(a) Protease inhibitor
(b) Nucleoside reverse transcriptase inhibitor
(c) Non-nucleoside reverese transcriptase inhibitor
(d) Fusion inhibitor

Anti-Cancer agents

1) Which of the following drug is a phenyl alanine derivative?
(a) Chlorambucil
(b) Carmustine
(c) Melphalan
(d) Dacarbazine

2) Acreloin toxicity is associated with:
(a) Cyclophosphamide

(b) 6-Mercaptopurin
(c) Melphalan
(d) Dacarbazine

3) The active metabolite of anticancer cyclophosphamide is
(a) N-hydroxy cyclophosphamide
(b) N-methyl cyclophosphamide
(c) N-acetyl cyclophosphamide
(d) N-propyl cyclopqosphide

4) Methotrexate exerts its action by
(a) Interfering with purine synthetase
(b) Intracellular formation of an amine adducts
(c) Forming conjugate with nucleic acid
(d) Inhibiting the synthesis of folic acid

5) MOA of fluorouracil is
(a) Inhibition of spindle formation
(b) Inhibition of thymidylate Synthesis
(c) Alkylating DNA
(d) Inhibiting ATP formation

6) Chemotherapeutic agent, which does not inhibit the microtubule formation is
(a) Paclitaxel
(b) Colchicine
(c) Vincristine
(d) Vinblastine