GPAT QUESTION PAPER 1990 WITH ANSWER KEY

PY-PHARMACEUTICAL SCIENCES

Time : 3 hours **Maximum Marks : 200**

N. B. *(1) This question paper contains two parts, A and B.*
(2) Answer all questions from Part A.
(3) Answer any 20 questions from Part B.
(4) There will be no negative marking.

PART - A

N. B. *(1) There are 2 Section in this part.*
(2) Answer all question in both Section 1 and 2.
(3) Answer should be given in serial order in the answer book.
(4) Do not skip questions while writing the answers.
(5) Write the question number and show your answer by writing the alphabet (Against the No.) in capital letters.
(6) In section 1 each question carries 1 mark
(7) In section 2 each question carries 2 marks.
(8) A model is shown at the beginning of each section in part A.
(9) Answer to the question in this must be written in the first 3 (three) pages of the answer books only.

SECTION - A

CHOOSE THE CORRECT ANSWER

Multiple choice Questions

1.1. Reserpine on hydrolysis gives :

(a) Reserpic acid + Methyl alcohol + Trimethoxy cinnamic acid
(b) Reserpic acid + Acetic acid + Trimethoxy benzaldehyde
(c) Reserpic acid + Methyl alcohol + Trimethoxy benzoic acid
(d) Reserpic acid + Methyl alcohol + Trimethoxy cinnamaldehyde

1.2. Papaverine is

(a) 6,7 - dimethoxy -1- (3',4' – dimethoxy benzyl) isoquinoline
(b) 6,7 - dimethoxy -1- (3',4' – dimethyl benzyl) isoquinoline
(c) 6,7 - dimethoxy -1- (3',4' – dimethoxy benzyl) quinolone
(d) 6,7 - dimethoxy -1- (3',4' – dimethyl benzyl) quinolone

1.3. Titanium dioxide is commonly present in

(a) Vanishing cream
(b) Sunscreen cream
(c) Aqueous calamine cream
(d) Opthalmic cream

1.4. Powder ergot when treated with sodium hydroxide solution develops

(a) A strong odour of ammonia
(b) A strong odour of trimethyl amine
(c) A strong odour of indol
(d) A strong odour of urea

1.5. Salbutamol sulphate IP is assayed by

(a) Direct titration with standard sodium hydroxide solution
(b) Direct titration with standard sodium hydrochloric acid
(c) A known amount of standard acid is added and excess is titrated with standard alkali
(d) Dissolve in glacial acetic acid and titrated with standard perchloric acid using oracet blue.

1.6. Heparin prevent blood coagulation by

(a) Inhibiting thrombin catalysed conversion of fibrinogen to fibrin
(b) Precipitate blood calcium thereby prevent coagulation reactions
(c) Inhibiting enzyme reactions
(d) Converting ionized calcium into chelation

1.7. For the registration of pharmacist in the various states, the Pharmacy Act provide for the constitution of:

(a) Registration of tribunals
(b) Registrar of Co-operative societies
(c) Registrar of state pharmacy council
(d) Registrar of central pharmacy council

1.8. Powdered digitalis is dried at temperature :

(a) Not exceeded 60°C
(b) 65 °C
(c) 75 °C
(d) 100 °C

1.9. Prazepam differ in structure from diazepam by

(a) N- methyl group
(b) N –cyclopropyl group
(c) N-cyclopropyl methyl group
(d) N-propyl group

1.10. The mechanism of action of rifampicin involve

(a) Inhibition of bacterial DNA directed RNA polymerase
(b) Inhibition of mycolic acid synthesis
(c) Inhibition of protein synthesis
(d) Inhibition of transpeptidase

1.11. The UV- visible region in the electromagnetic spectrum of radiation is

(a) 200 – 400 nm
(b) 300 – 660 nm
(c) 400 – 800 nm
(d) 200 – 800 nm

1.12. The Mantoux test uses

(a) Old tuberculin
(b) Diptheria toxins
(c) Serum antigens
(d) Polysaccharide antigens

1.13. Rotosort is a machine used to sort out :

(a) Coated tablets
(b) Filled capsule
(c) Sealed ampoules
(d) Sealed containers

1.14. The volume of distribution of drugs is

(a) An expression of total body volume

(b) A measure of total fluid volume

(c) A relationship between the total amount of drug in the body and the concentration of the drug in the blood

(d) Proportional to bioavailability of the drug

1.15. Resolution of a spectrophotometer is

(a) Its wave length range

(b) Its ability to distinguish adjacent absorption bands

(c) Its capacity for its continuous use

(d) Its power to gather light according to source

1.16. Heloperidol is a major transquillizer. It belongs to the class of

(a) Carbamates

(b) Propanediol

(c) Butarophenone

(d) Phenothiazine

1.17. Glandular hair growing having a unicellular or occasionally a short uniserate pedicel with a unicellular or bicellular terminal gland is characteristics of

(a) Senna leaves

(b) Belladonna leaves

(c) Datura stramonium leaves

(d) Digitalis Purpurea leaves

1.18. Skeletal muscle relation produced by the drug .....is effectively antagonized by neostigmine

(a) Diazepam

(b) Succinylcholine

(c) Tubocurarine

(d) Aminophylline

1.19. Vitamin D_2 is

(a) 22,23-dihydro -5,6 cis –ergocalciferol

(b) 5,6 cis- chlorcalciferol

(c) 7- dehydrocholesterol

(d) 21,24 – dihydro 5,6 cis ergocalciferol

1.20. R.W.C. is used to identify the strength on an

(a) Antibiotics (b) Antipyretics (c) Antiseptic (d) Antiinflammatory

1.21. The colligative property of a solution is related to the

(a) Total number of solute particles

(b) pH

(c) Number of ions

(d) Number of ingredients

1.22. The essential structural unit for the anthelmentics activity of mebendazole is

(a) Benzoyl group

(b) Benzimidazole

(c) Methyl carbamates

(d) Imidazole

1.23. The anticoagulant activity of heparin sodium injection IP is estimated byusing :

(a) Female rats (b) Male rats (c) Rabbits (d) Sheep

1.24. The biological half-life of a drug (first order kinetics) is represented by

(a) 1/K (b) log K (c) 0.693/ K (d) 2.303 / K

1.25. Infra-red spectromety is a convenient method for understanding of

(a) Drug receptor interaction

(b) Functional group identification

(c) Physiochemical properties

(d) Conformational properties

1.26. Most commonly used amtimicrobial agent for intraperitoneal dialysis fluid is

(a) Chlorocresol
(b) Benzalkonium chloride
(c) Isopropyl alcohol
(d) None of the above

1.27. In the steroid nucleus, there are

(a) Six chiral center with nucleus i.e. 5,8,9,10,13, and 14
(b) Seven chiral center with nucleus i.e. 3,8,9,10,11, 12 and 14
(c) Six chiral center with nucleus i.e. 3,8,9,10,11, and 12
(d) Six chiral center with nucleus i.e. 5,7,9,10,13, and 16

1.28. Thermolabile immiscible liquid can be separated by

(a) Decantation
(b) Dilution
(c) Capacity centrifugation
(d) Counter current distribution

1.29. Sulphomethoxazole is an antibacterial drug. It is a

(a) Short acting drug
(b) Short and intermediate acting drugs
(c) Long acting drugs
(d) Mixed acting drugs

1.30. Wave number is the number of waves

(a) Per second (b) Per centimeter (c) Per inch (d) Per centimeter^3

1.31. The raw material for the synthesis of propranolol is

(a) α – napthylamine
(b) β naphthol
(c) α naphthol
(d) 1- nepthaldehyde

1.32. All the statement mentioned below about choral hydrate is true EXCEPT that it

(a) Produces hypnosis
(b) Produces analgesia
(c) Produce dependence
(d) Irritate gastric mucosa

1.33. In drug and cosmetics act and rules therunder, list of substances that should be sold by retail only on prescription of registered medical practitioner is given in

(a) Schedule H
(b) Schedule V
(c) Schedule X
(d) Schedule Q

1.34. Which is ideal combination for testing the solubility of an enteric coated capsule in alkaline medium ?

(a) Sodium bicarbobnate + Potassium hydroxide + Pepsin
(b) Sodium bicarbobnate + Sodium tauroglycocholate + Papain
(c) Sodium bicarbobnate + Pancreatin + Sodium tauroglycocholate
(d) Sodium bicarbobnate + Billirubin

1.35. Oxazepam is used in relief of psychoneurosis. It has lower incidents of side effects and reduced toxicity due to

(a) N-demethylation
(b) Ring oxidation
(c) Aromatic hydroxylation
(d) Conjugation of 3- hydroxyl group

1.36. The rate of diffusion of drug across biological membrane is

(a) Directly proportional to the concentration gradients
(b) Dependant on route of administration

(c) Indirectly proportional to membrane thickness

(d) None of the above

1.37. In sugar coating of tablets subcoating is done

(a) To prevent moisture deposition

(b) To round the edge and build tablet size

(c) To smoothen the surface

(d) To prevent the tablet from breaking due to vibration

1.38. One of the detectors used in gas chromatography

(a) Bolometer

(b) Thermal conductivity detector

(c) Golay detectors

(d) Giger Counter

1.39. Alkloids in chinchona bark are detected by

(a) Iodine test

(b) Thalleioquine test

(c) Liebermann –Burchard test

(d) Nessler's test

1.40. 2- amino -5-chorbenzophenone is the convenient starting material for the synthesis of

(a) Nitrazepam (b) Diazepam (c) Choramphenicol (d) Trimethoprim

SECTION - B

MATCH THE FOLLOWING

2.1 Given below are some of the associate colloids, Match the correct type from the list A to E

1. Sodium lauryl sulphate	A. Anionic
2. Cetyl trimethyl ammonium bromide	B. Cationic
3. Polyoxy ethelene lauryl ether	C. Nonionic
4. Dimethyl dodecyl ammonio propane sulphate	D. Ampholytics
	E. None

(a) 1-B, 2-A, 3-D, 4-C

(b) 1-A, 2-B, 3-C, 4-D

(c) 1-C, 2-D, 3-A, 4-E

(d) 1-A, 2-B, 3-C, 4-E

2.2 Given below are the essential pharmacophores for the drugs mentioned from A to E, match them

1. 1, 4 benzodiazepine	A. Pindolol
2. β –lactum fused with thiazolidine	B. Amoxycillin
3. Ethylene diamine	C. Ethambutol
4. Aryloxypropanolamine	D. Salbutamol
	E. Oxazepam

(a) 1-B, 2-A, 3-D, 4-C

(b) 1-A, 2-B, 3-C, 4-D

(c) 1-E, 2-B, 3-C, 4-A

(d) 1-A, 2-B, 3-C, 4-E

2.3 The drugs mentioned below are produced by species mentioned from A to D.

1. Rifampicin
2. Nystastin
3. Amphotericin B
4. Candicidin

A. *Streptomyces griseus*
B. *Bacillus polymyxa*
C. *Streptomyces mediterranei*
D. *Streptomyces nodosus*
E. *Streptomyces noursei*

(a) 1-B, 2-A, 3-E, 4-C
(b) 1-A, 2-B, 3-C, 4-D
(c) 1-E, 2-B, 3-C, 4-A
(d) 1-C, 2-E, 3-D, 4-B

2.4 Given below are some important drugs. find out the correct constitution listed A to E derived from them

1. *Cephalis ipecacunha*
2. *Papaver Somniferous*
3. *Cascara sagruda*
4. *Myristica fragnans*

A. Cineole
B. Safrole and myresticin
C. Morphine
D. Antraquinone glycoside
E. Emetine

(a) 1-E, 2-C, 3-D, 4-B
(b) 1-A, 2-B, 3-C, 4-D
(c) 1-E, 2-B, 3-C, 4-A
(d) 1-C, 2-E, 3-B, 4-D

2.5 The side chain responsible for the biological activity of drug listed from A to E are given below.match them correctly

1. $-NH-CH(CH_3)-CH_2-CH_2-N(C_2H_5)_2$
2. $-CH_2-CH_2-SO_2-CH_2-CH_2$
3. $-O\text{-}CH_2-CH_2-N(CH_3)_2$
4. $-NH-C_6H_3(OH)\,CH_3N(C_3H_5)_2$

A. Amodiaquine
B. Tinidazole
C. Choroquine
D. Diphenhydramine
E. Chlorpromazine

(a) 1-C, 2-B, 3-D, 4-A
(b) 1-A, 2-B, 3-C, 4-D
(c) 1-E, 2-B, 3-C, 4-A
(d) 1-C, 2-E, 3-B, 4-A

2.6 The following form under schedule A of the drug and cosmetics act utilized for applying for licenses listed A to E, match them

1. Form 8
2. Form 12 A
3. Form 19
4. Form 24 C

A. Application to import drugs for personal use
B. Application for grant of license to sell, stock or distribute drug
C. Application to import biological products
D. Application to manufacture homeopathy drugs
E. Application to important drugs for research purposes

(a) 1-B, 2-A, 3-D, 4-C
(b) 1-A, 2-B, 3-C, 4-D
(c) 1-C, 2-A, 3-B, 4-D
(d) 1-C, 2-E, 3-B, 4-D

2.7 Listed below are the instruments used for measuring the factors given in A to E. match them

1. Rotational viscometer
2. Penetrometer
3. Hansen-paddle equipment
4. Glass electrode semisolids

A. Shear rate
B. Melting point
C. For consistency and hardness of relatively rigid
D. Dissolution of granules and tablets
E. pH indicating electrode

(a) 1-B, 2-A, 3-D, 4-C
(b) 1-A, 2-C, 3-D, 4-E
(c) 1-E, 2-B, 3-C, 4-A
(d) 1-C, 2-E, 3-B, 4-D

2.8 Symptoms for the following diseases are indicated from A to E. match them

1. Cushing's syndrome
2. Addison's disease
3. Grave's disease
4. Crohn's disease

A. Hyperthyrodism
B. Inflammatory bowel
C. Decreases production of cortisol
D. Increased production of cortisol

(a) 1-B, 2-A, 3-D, 4-C
(b) 1-A, 2-B, 3-C, 4-D
(c) 1-E, 2-C, 3-A, 4-B
(d) 1-C, 2-A, 3-B, 4-D

2.9 Some possible causes are mentioned in A to E for the following defects during the film coating of tablets, match them

1. Chipping
2. Cracking
3. Orange peel
4. Blistering

A. Poor spreading of sprayed droplets
B. Overheating during spraying
C. High internal stresses in film
D. Excess coating process
E. Precipitate of polymer due to high temperatureor poor solvent

(a) 1-B, 2-A, 3-D, 4-C
(b) 1-A, 2-B, 3-C, 4-D
(c) 1-E, 2-B, 3-C, 4-A
(d) 1-D, 2-C, 3-A, 4-B

2.10 Match the biological activity listed under A to E for following drugs

1. O-2-naphthyl- m, N-dimethylthio carbanilaste
2. Trans – 1,4,5,6 –tetrahydro-1-methyl-2[2-(2-thienyl)vinyl]Pyrimidine
3. 2,4-diamino -5-(p-chorophenyl)-6-ethylpyrimidine
4. p-(di-2-choroethyl) aminophenyl butyric acid

A. Antineoplastic
B. Anthelmentic
C. Antimalarial
D. Antifungal

(a) 1-D, 2-B, 3-C, 4-A
(b) 1-A, 2-B, 3-C, 4-D
(c) 1-D, 2-B, 3-C, 4-A
(d) 1-C, 2-A, 3-B, 4-D

2.11 Match the correct method of sterilization listed A to E for the following drugs

1. Tetracycline injection
2. Insulin injection
3. Quinine injection
4. morphine injection

A. Sterilized by dry heat
B. Sterilized by heating with bactericide
C. Sterilized by bacterial filtration
D. Sterilized by aseptic method
E. Sterilized by heating in an autoclave

(a) 1-B, 2-A, 3-D, 4-C (b) 1-A, 2-B, 3-C, 4-D

(c) 1-E, 2-B, 3-C, 4-A (d) 1-D, 2-C, 3-E, 4-B

2.12 Given below are the receptors and their antagonists. match them correctly

1. GABA receptors	A. Buprenorphine
2. Histmaine GH_2 receptors	B. Diazepam
3. Opiate receptors	C. Ranitidine
4. β-adernergic receptors	D. Nifedipine
	E. Atenolol

(a) 1-B, 2-A, 3-D, 4-C (b) 1-B, 2-C, 3-A, 4-E

(c) 1-E, 2-B, 3-C, 4-A (d) 1-C, 2-E, 3-B, 4-D

2.13 The names of equations for various expression are given below. match themCorrectly

1. $i_d = 607nCD^{1/2}m^{2/3}t^{1/6}$	A. Mark- Houwink
2. $V=\frac{\pi r^4 t\Delta P}{8In}$	B. Likovic
3. $[n] = kM_{\alpha}$	C. Poiseuille
4. $T_g = (0.5 - 0.67)\, T_m$	D. Boyer-Beaman
	E. Beer-lambert

(a) 1-B, 2-A, 3-D, 4-C (b) 1-A, 2-B, 3-C, 4-D

(c) 1-B, 2-C, 3-A, 4-D (d) 1-C, 2-A, 3-B, 4-D

2.14 The various equipments are used for size reduction of material of different nature. Match them correctly

1. Rod mill	A. Sticky material
2. Fluid energy mill	B. Abrasive material
3. Cutting mill	C. Thermolabile material
4. Revolving mill	D. Fibrous material
	E. Thermostable material

(a) 1-B, 2-A, 3-D, 4-C (b) 1-A, 2-B, 3-C, 4-D

(c) 1-A, 2-C, 3-D, 4-B (d) 1-C, 2-E, 3-B, 4-D

2.15 Match the drugs in A to E which inhibit the following enzymes

1. Carbonic anhydrase	A. Dicloxacillin
2. Dihydrofolatesynthtase	B. Physostigmine
3. β –lactumase	C. Acetazolamide
4. Acetylcholinesterase	D. Sulphanilamide
	E. Ibuprofen

(a) 1-B, 2-A, 3-D, 4-C (b) 1-A, 2-B, 3-C, 4-D

(c) 1-E, 2-B, 3-C, 4-A (d) 1-C, 2-D, 3-A, 4-B

2.16 Given below are some of the important drugs. appropriate tests are listed in A to E. match them correctly

1. Cardiac glycoside	A. p-dimethylaminobenzaldehyde
2. Ergot alkaloids	B. Fluorescence test
3. Quinidine sulphate	C. Liebermann Burchard test
4. Camphor	D. 2,4 dinitrophenyl hydrazine
	E. Benedict's test

(a) 1-B, 2-A, 3-D, 4-C (b) 1-A, 2-B, 3-C, 4-D

(c)1-E, 2-A, 3-B, 4-D (d) 1-C, 2-E, 3-B, 4-D

2.17 The undesirable effects of the antibiotics are listed in A to E. match them

1. Tetracycline	A. Gray-baby syndrome
2. Strptomycin	B. Discolouration of teech
3. Chloramphenicol	C. Jaundice
4. Rifampicin	D. Obesity
	E. Ototoxicity

(a) 1-B, 2-E, 3-A, 4-C (b) 1-A, 2-B, 3-C, 4-D

(c) 1-E, 2-B, 3-C, 4-A (d) 1-C, 2-E, 3-B, 4-D

2.18 Choose the most appropriate strating material listed in A to E for the synthesis of the following

1. Riboflavin	A. p-antisidine
2. Progesterone	B. 3,4 diemthyl aniline and D- ribose
3. Isoniazide	C. Diosgenin
4. Indomethacin	D. γ- picoline
	E. Lumiflavine

(a) 1-B, 2-C, 3-D, 4-A (b) 1-A, 2-B, 3-C, 4-D

(c) 1-E, 2-B, 3-C, 4-A (d) 1-C, 2-E, 3-B, 4-D

2.19 Absorption frequency (cm^{-1}) in IR spectroscopy for carbonyl group are given in A to E match them

1. –COCl	A. 1720
2. $-\overset{\overset{O}{\|}}{O}-C$	B. 1735
3. –CHO	C. 1750
4. $-CONH_2$	D. 1776
	E. 1812

(a) 1-B, 2-A, 3-D, 4-C (b) 1-A, 2-B, 3-C, 4-D

(c) 1-D, 2-E, 3-B, 4-A (d) 1-C, 2-E, 3-B, 4-D

2.20 Following are the prefixes used in nomenclature which signifies as indicated from A to E. match them

1. Levo	A. not all the same atom
2. Ortho	B. Rotate the plain polarized light to the left
3. Poly	C. Made up of many group

4. Hetero

D. Signifies the 1,2 position in benzene ring

E. Three –configuration

(a) 1-B, 2-A, 3-D, 4-C

(b) 1-A, 2-B, 3-C, 4-D

(c) 1-E, 2-B, 3-C, 4-A

(d) 1-B, 2-D, 3-C, 4-A

PART - B

(Marks : 120)

N.B. ***1. Answer any twenty questions.***
2. If more than 20 questions are attempted, only the first 20 will be considered.
3. All questions carry equal marks.

3. Classify emulsifying agents in accordance with the type of film they form at theinterface. Give 2 example for each

4. Define creaming, inversion, sedimentation – instability of emulsions.
Give theprinciple and procedure for the assay of Glyceryl trinitrate tablets I.P.

5. (a) What is the source of squill and Indian squill ?
(b) In what crystalline form the calcium oxalate occure in squill ?
(c) Give the names of the adulterants of belladonna
(d) What is the difference between hyoscamine and atropine ?

6. (a) Give the manes of the organism used in the following biological assay
1. Diphtheria antitoxin 2. Gas gangrene antitoxin
3. Tetanus Antitoxin 4. Typoid vaccine
(b) What is 'sham test' in pyrogen testing ?

7. What is importance of deaeration in capsulation ? How it is achived ?

8. Classify neuromuscular blocking agents according to their mechanism of action

9. (a) What is source of caffeine ?
(b) What is its chemical name ?
(c) What happened when caffeine is treated with chorine and the resulting compound is treated with methanolic NaOH, product obtained is further boiled dilute HCl ? Give equations.

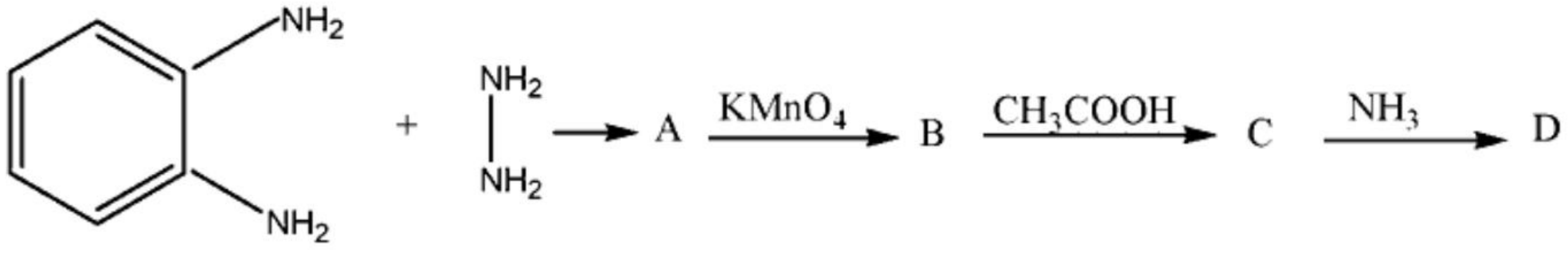
10. Explain why ranitidine, an H_2 receptor antagonist is more active and more selective than cimetidine

11. (a) Define
1. Palisade ratio
2. Stomatal number
3. Stomatal index
(b) 80 is the number of stomata per unit area. Ordinary epidermal cells present in the area. Calculate the stomatal index

12. (a) Outline the assay of ephedrine Hydrochloride I.P.

    (b) Define standard preparation and units of activity in microbial assays of antibiotic.

13. Synthesis of pyrazinamide is outlined below. Write the structure for A, B, C and D



14. (a) Mention the important constitution and source of the following

    1. Beeswax 2. Spermaceti 3. Wool alcohol

    (b) Give the specific method for Keller –Killani test. Which of the component in the respective plant drug is detected by this test ?

15. Which factor alter insulin requirements ?

16. (a) What is an 'ideal' antimalerial drug ?

    (b) What are the four different ways by which antimalerial drug exert their action ?

17. (a) Name the different components of the aerosol package

    (b) What are different objectives behind coating of tablets

18. Give the structural activity relationship of the following drug

    (a) Promethazine (b) Chorpromazine (c) Thioridazine (d) Trifluperazine

19. What is role of plastisizers in tablet coating ?

20. Define pM indiacators. Name the important pM indicators.

21. Give synthesis of the following drugs.

    (a) Meprobamate (b) Metronidazole (c) Chorpheniramine

22. What are different method of locating end point in potentiometric titrations ?

23. (a) Define:

    1. Hypotonic 2. Hypertonic 3. Isotonic

    (b) Calculate the amount of sodium chloride required to made 100 ml. of a 2% solution of the given local anaesthetic isotonic with blood serum. Molecular wt of local anaesthetic = 339.5, Molar concentration of Blood = 0.030.

24. (a) What is drug regimen in combination theraphy of leprosy ?

    (b) Why chemotheraphy leprosy is hampered ?

25. Give reasons for the following :

    (a) In the determination of Ca^{++} ions by complexometry using Erichrome black T asindicated a little magnesium EDTA is added

    (b) Tetrabutyl ammonium hydroxide is the preferred titration in the titration of acidic substance by nonaquaous method.

(c) Ammonia and EDTA forms complexes with metal ions like Cu^{++}, Ag^{+} butammonia is not used as a titrant in complexometry.

26. Write the merits and demerits of anabolic streroids. Mention the names of two official preparations.

27. What happens when ?, Give equations
    (a) Sodium salt of tolune p- sulphonamide is condensed with n-butyl isocynate.
    (b) Benzhydryl bromide is treated with 2-dimethyl amino ethanol in presence of alkali.
    (c) m-nitrobenzaldehyde is treated with butyric anhydride, the resulting compoundis reduced and iodinated.

End of paper