GPAT QUESTION PAPER 1991 WITH ANSWER KEY

PY-PHARMACEUTICAL SCIENCES

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

PART - A **(80 marks)**

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 - I

CHOOSE THE CORRECT ANSWER

Multiple choice Questions

1.1 Cortisone is

(a) 4 – Pregnane-12 α, 21 diol- 3, 20- dione

(b) 4 – Pregnene-17 α, 21 diol- 3, 11, 20- trione

(c) 4 – Pregnene-16 α, 21 diol- 3, 11, 20- trione

(d) 4 – Pregnane-17 α, 21 diol- 3, 11, - dione

1.2 Pregnenolone, an intermediate in synthesis of steroids, on oppeneur oxidation gives

(a) Progesterone (b) 9α- Flurocortisone

(c) Triamcinolone (d) α – Methyl Prednisolone

1.3 In congestive cardiac failure, digitalis glycosides are used because it increases

(a) The heart rate (b) The force of myocardial contraction

(c) The venous pressure (d) The cardiac filling pressure

1.4 Shrinkage of gel by extrusion of lipids is called

(a) Syneresis (b) Dilatancy (c) Plasticiy (d) Ebullition

1.5 The sweetening agent commonly used in chewable tablet formula is

(a) Sucrose
(b) Cyclamate Sodium
(c) Saccharin Sodium
(d) Mannitol

1.6 Carbamazepine is tricyclic antidepressant, It is classified as

(a) Benzodiazepine
(b) Arylalkonolamine
(c) Iminostilbene
(d) Benzimidazole

1.7 Sulfa drugs can be conveniently estimated using the reagent

(a) 4,4Dithiobis – (2-nitrobenzoic acid)
(b) Tris-(hydroxyl methyl) amino methane sodium nitrate
(c) N-(1-nepthyl) ethylene diamine
(d) N-ethylmalcimide

1.8 Testosterone can be commercially synthesis from

(a) Sarsapogenin
(b) Mexogenin
(c) Oubagenin
(d) Halotensin

1.9 Ehlrich's reagent is

(a) Bismuth iodide solution
(b) p-dimethyl aniline solution in alcohol
(c) p-dimethyl amino benzaldehyde solution
(d) p-dimethyl aniline solution in alcohol

1.10 The neurotransmitter is released at the sympathetic nerve fiber is

(a) Epinephrine
(b) Nor-epinephrine
(c) Acetylcholine
(d) Physostigmine

1.11 The dose of the drug is 5 mg/kg body weight, How much the drug is required for the boy of 12 years who weigh 21 kg.

(a) 0.5 mg
(b) 1.0 mg
(c) 1.5 mg
(d) 2.0 mg

1.12 Rancidity of fat is due to

(a) Oxidation
(b) Saponification
(c) Hydrolysis
(d) Neutralization

1.13 Resolution of monochromator is the ability to distinguish

(a) As a separate entities adjacent spectral features
(b) Separation of different colours
(c) Separation of UV light and Visible light
(d) Dispersing characteristics

1.14 Important activity noticed in testosterone

(a) Androgenic, Myotropic and Anabolic
(b) Progestinal, Myotropic and Anabolic
(c) Estrogenic, Myotropic and Anabolic
(d) Androgenic, Optometric and Catabolic

1.15 Fruits which are derived from plants Umbiliferae are all of the type

(a) Cremocarp
(b) Pericarp
(c) Epicarp
(d) Mesocarp

1.16 Amygdalin on hydrolysis gives

(a) Mendelonitrile + Benzaldehyde
(b) Mendelonitrile + Benzaldehyde + Glucose
(c) Mendelonitrile + Glucose
(d) Mendelonitrile + Benzaldehyde + Rhamnose

1.17 Erythromycin is an antibiotic. It belong to the class of

(a) Beta-lactum
(b) Aminoglycoside
(c) Macrolide
(d) Peptide

1.18 Vinblastin and Vincristine act by

(a) Interfering with synthesis of transfer RNA
(b) Inhibition of fragmention of DNA
(c) Binding to protein
(d) Incorporating into folic acid metabolism

1.19 Water attack test is used to identity the alkalinity in

(a) Type I glass
(b) Type II glass
(c) Type III glass
(d) All the three types

1.20 Select the drug that will aggravates bronchial asthma

(a) Amphetamine (b) Morphine (c) Propranolol (d) Tubocurarine

1.21 The presence of unpaired electron in metal ion complx meant for special analysis is called

(a) Paramagnetic
(b) Dimagnetic
(c) Bimagnetic
(d) Unimagnetic

1.22 The biological half- life of drug

(a) It is a constant physical property of the drug
(b) It is a constant chemical property of the drug
(c) It may be increased in patients with impaired renal failure
(d) It may be decreased in patients by giving the drug by rapid IV injection

1.23 The ilkovic equation in the polarographiac measurements is given by

(a) $V = \pi r^4 (\Delta P/8I).n$
(b) $i_d = 607ncD^{1/2}m^{2/3}t^{1/6}$
(c) $V = \frac{H^2r^2}{2} \cdot \frac{e}{m}$
(d) $P_0 - P = P_0\left(1 - e^{-abc}\right)$

1.24 The vitamin which has deodorant property is

(a) Vitamin A (b) Vitamin C (c) Vitamin D (d) Vitamin E

1.25 A type of flow in which viscosity increases when the substance agitated is

(a) Plastic (b) Psudoplastic (c) Dilatant (d) Thixotropy

1.26 Subcoating is given to the the tablets

(a) To increase the bulk
(b) To avoid deterioration due to microbial attack
(c) To prevent the solubility of in acidic media
(d) To avoid stickiness

1.27 Water resistance of glass container are tested by measuring

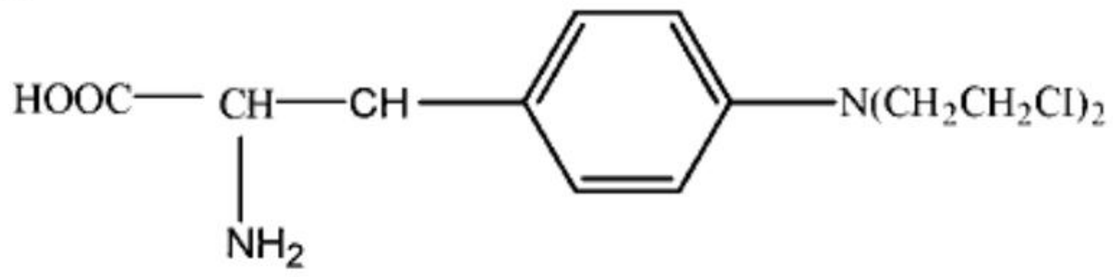
(a) Amount of alkali released into water
(b) Amount of acid released into water
(c) Estimation of silicate level
(d) Turbidity

1.28 The pH of pharmaceutical buffer system can be calculated by

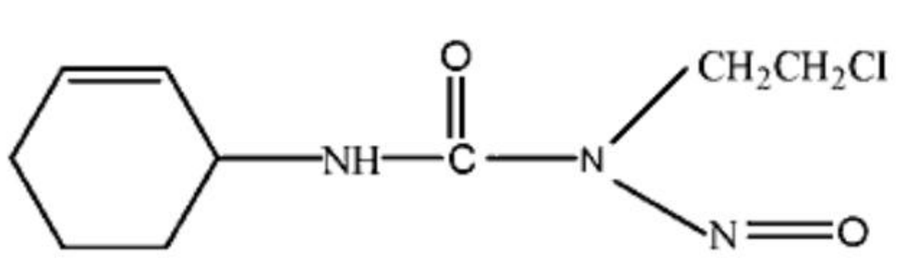
(a) pH partition theory
(b) Noyes whitney law
(c) Henderson-Hasselbaltch equation
(d) Michalis Menten Equations

1.29 Chlorambucil is an anti-cancer drug. Its structure is

(a)



(b)



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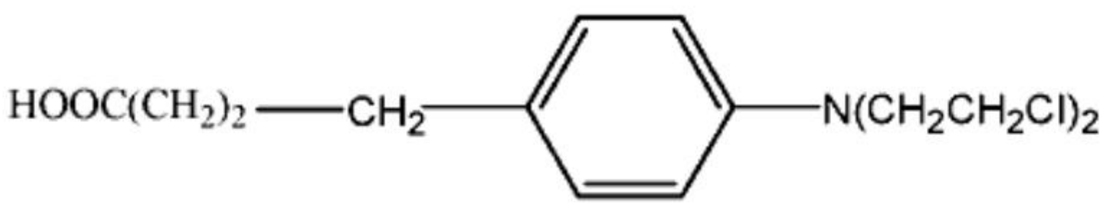

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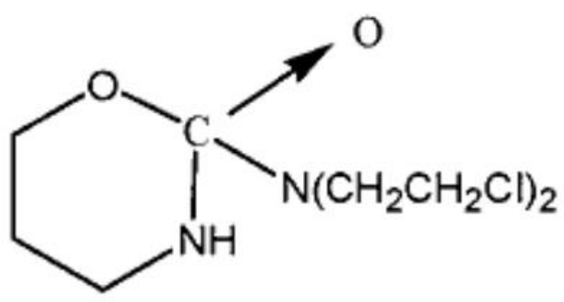


1.30 The stationary phase in TLC is

(a) Adsorbent

(b) Liquid held between glass plate and adsorbent

(c) Glass plates

(d) None of the above

1.31 Digoxin:

(a) Has Its action terminated by metabolism in the liver

(b) Has A plasma $t_{1/2}$ of 6 hours

(c) Should be given half of its normal dose to hypothyroid patients

(d) Provide benefit in atrial fibrillation by increasing the force of contraction

1.32 The ingredients mentioned below are commonly used as the coating agents for film coating EXCEPT

(a) Cellulose acetate phthalate

(b) Carnauba wax

(c) Hydroxy ethyl cellulose

(d) Sodium carboxy methyl cellulose

1.33 Morphine is the drug of choice for

(a) Urinary tract infection

(b) Colic pain

(c) Bronchial asthma

(d) Cardiac asthma

1.34 Drug used in treatment of bronchial asthma usually

(a) Block both α and β adrenergic receptors

(b) Stimulate α receptors but block β receptor.

(c) Stimulate β receptors but block α receptor.

(d) Stimulate α and or β receptors

1.35 The formula for the preparation of ascorbic acid injection I.P. may include

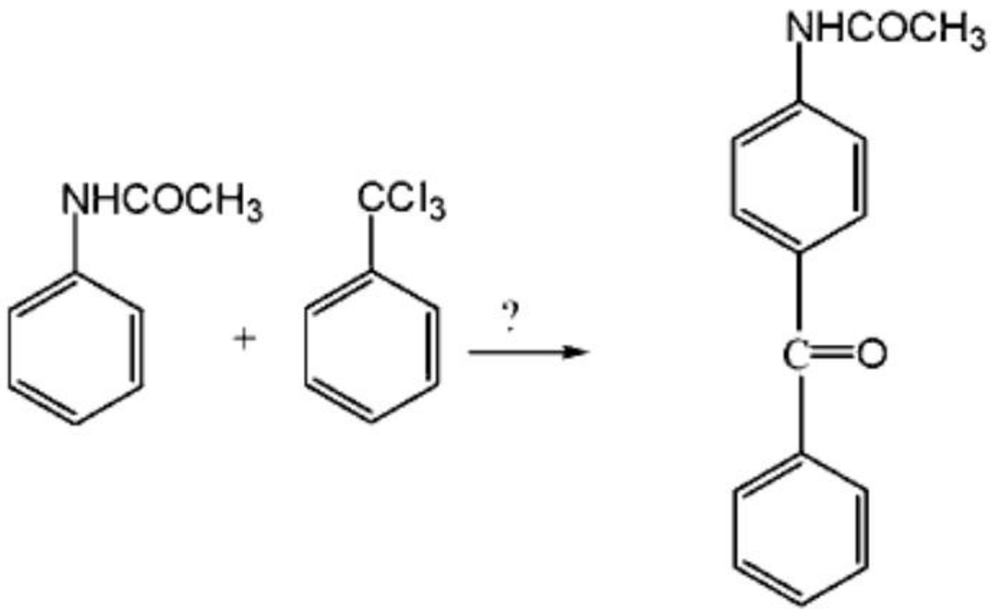
(a) Glacial acetic acid

(b) Dilute hydrochloric acid

(c) Propylene glycol

(d) Sodium carbonate or sodium bicarbonate or sodium hydroxide in water

1.36 The chemical reaction shown below can be carried out using the reagent listed from A to D Indicate the correct one.



(a) CH_3HgBr (b) CH_3Cl (c) $AlCl_3$ (d) CH_3COONa

1.37 Lactose is the most widely used diluent in the tablet formulation. However it is not used in the formulation of one of the following

(a) Pyrazinamide (b) Ibuprofen (c) Sulfacetamide (d) Isoniazide

1.38 The area under the serum concentration time curve of the drug represents:

(a) The biological half life of the drug

(b) The amount of drug in the original dosage from

(c) The amount of drug absorbed

(d) The amount of drug excreted in the urine

1.39 Vinca alkaloids are isolated from

(a) *Catharanthus roseus* and contain indole and indoline moieties

(b) *Rosco chromogens* and contain indole and indoline moieties

(c) *Catharanthus roseus* and contain quinoline and quinaldine moieties

(d) *Catharanthus indicus* and contain indole and quinoline moieties

1.40 Aprotic solvent have

(a) Acidic properties

(b) Basic properties

(c) Both acidic and basic properties

(d) No acidic or basic properties

SECTION - II

MATCH THE FOLLOWING

2.1 The antibiotics and their adverse effect are mentioned below

1. Chlormphenicol	A. Hemolytic anaemia
2. Erythromycin	B. Hepatotoxicity
3. Cephlosporins	C. CNS toxicity
4. Streptomycin	D. Nephrotoxicity
	E. Ototoxicity

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

2.2 Permitted limit of ethylene oxide in various products are mentioned below. Match them.

1. Opthalmic preparations	A. 5 ppm
2. Hard gelatin capsule shells	B. 10 ppm
3. Surgical material	C. 15 ppm
4. Intra uterine devices	D. 25 ppm
	E. 35 ppm

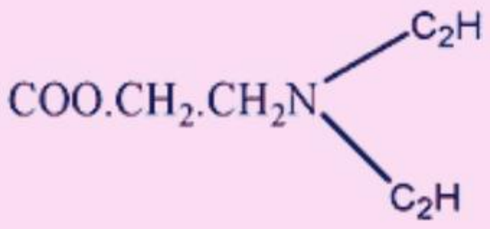
(a) 1-E, 2-B, 3-C, 4-A
(b) 1-A, 2-B, 3-D, 4-E
(c) 1-A, 2-D, 3-C, 4-B
(d) 1-A, 2-E, 3-C, 4-D

2.3 Expression of the following terms are given A to E. Match them correctly

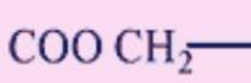
1. Beer's Law	A. $T = 1 / l_a$
2. Absorptivity	B. $\log l_0/l = abc$
3. Absorbance	C. $a = bc$
	D. lab = In loc 2 calm

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

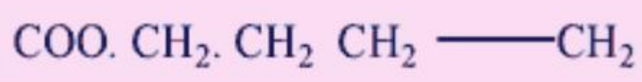
2.4 The side chain as given from 1 to 4 is present in local anesthetics listed A to E. match them correctly

(1) 

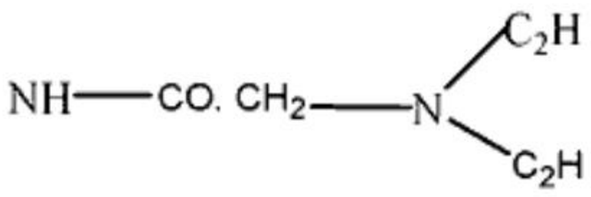
(A) Procaine

(2) 

(B) Lidocaine

(3) 

(C) Cenzocaine

(4) 

(D) Butesin

(E) Dibucaine

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

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

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

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

2.5 Match the suitable test organism for assaying the antibiotics mentioned below

1. Doxycycline	A. Bacillus cereus
2. Rifampicin	B. Bacillus pumilus
3. Streptomycin	C. Streptomyces saprophyticus
4. Tetracycline	D. Bacillus subtilis
	E. Micrococcus leteus

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

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

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

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

2.6 The region of spectrum for the following are given in term of wavelength (cm) in A to E. Match them correctly.

1. X- Rays	A. $10^6 - 10^5$
2. UV- Rays	B. $10^5 - 10^4$
3. Visible - Rays	C. $10^8 - 10^6$
4. Infrared- Rays	D. $10^4 - 10^2$
	E. $10^2 - 10$

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

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

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

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

2.7 The causative organism of the disease is given and the drug used for the treatment is indicated in A to E. Match them.

1. *E. Histolytica*	A. Clofazimine
2. *P.falciparum*	B. Chlormphenicol
3. *S. typhi*	C. Emetine
4. *M. leprae*	D. Methamine
	E. Mebendazole

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

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

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

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

2.8 Match the correct mechanism of action for the diuretic agents mentioned below

1. Acetazolamide	A. Increases the serum K^+ level
2. Chlorthiazide	B. Competitively antagonizes aldesterone
3. Spironolactone	C. Inhibit active Na^+ secretion, decreasing K^+ exeretion in distal nephron

4. Triamternene

D. Inhibit Carbonic anhydrase

E. Inhibit electrolyte re-absorption in the distalportion of ascending limb of the loop of Henle.

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

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

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

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

2.9 The position -5 of barbituric acid analogous mentioned below have substituent's as indicated in A to E. Match them properly to identify correct structure.

1. Phenobarbital
2. Barbital
3. Probarbital
4. Pentobarbital

A. $-C_2H_5, -C_2H_5$

B. $-C_2H_5, -CH(CH_3)_2$

C. $-C_2H_5, -C_6H_5$

D. $-C_2H_5, -\underset{\displaystyle CH_3}{\underset{|}{CH}}-CH_2-CH_2-CH_3$

E. $-CH_3, C_6H_5$

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

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

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

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

2.10 The following drug can be prepared starting from the intermediate given in A to E. Match them

1. Atenolol
2. Ibuprofen
3. haloperidol
4. Isoniazide

A. 4-OH phenylacetamide

B. γ -picoline

C. 4 NH_2 quinoline

D. Isobutyl benzene

E. 4-(p-chlorophenyl) 4- OH piperidine

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

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

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

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

2.11 Choose the most appropriate instruments / apparatus listed from A to E for the study of the following

1. Thiamine
2. Ferrous ions
3. Acidity of carboxylic acid
4. Barium sulphate

A. Colorimeter

B. pH meter

C. Flurimeter

D. colourimeter

E. Nephelometer

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

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

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

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

2.12 Following drugs are tested with reagents listed in A to E. Match them correctly

1. Asparic acid
2. Dextran
3. Nicotine

A. α – Nepthol in alcohol

B. 2, 6 dichloro phenol indophenol

C. Ninhydrin

4. Vitamin A

D. Antimony trichloride in chloroform

E. Potassium bismuth iodide solution

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

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

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

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

2.13 Match the antibiotics with their mechanism of action correctly

1. Ampicillin
2. Chlormphenicol
3. Nystatin
4. Rifampicin

A. Inhibition of nucleic acid synthesis

B. Inhibition of cell wall synthesis

C. Inhibition of growth by competitive antagonism

D. Inhibition of protein synthesis

E. Inhibition of cell membrane function

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

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

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

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

2.14 As per drug and cosmetics acts, match correct schedule to their respective titles

1. Schedule P
2. Schedule Q
3. Schedule S
4. Schedule FF

A. Standard for poison

B. Standard for cosmetics

C. Standard for ophthalmic preparations

D. Life period of the drug

E. Coal tar colour used in cosmetics.

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

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

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

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

2.15 The source and constituents of the following umbelliferous fruits are listed in A to D. Match them correctly

1. Caraway
2. Fennel
3. Dill
4. Coriender

A. *Foeniculum vulgare* – Anethole / Fenchone

B. *Carum carvi*– Carvone

C. *Anethum graveolens*– Cuminic aldehyde

D. *Coriendrum sativum*– linalool

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

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

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

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

2.16 Given below are the microscopic diagnostic features of the drug listed in A to E. Choose the appropriate one.

1. Cluster crystal of calcium oxalate
2. Candelabra trichomes
3. Phloem fibres
4. Glandular trichomes

A. *Stramonium* leaves

B. *Cinamon bark*

C. *Alexandrian senna*

D. *Digitalis purpurea*

E. *Verbascum thapus*

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

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

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

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

2.17 In the preparation of capsule shell the ingredients mentioned are present for the specific purpose. Match them.

1. Preservatives	A. Mineral oil
2. Aids Solubility	B. Essential oil
3. Organoleptic additive	C. Titanium dioxide
4. Opacifier	D. Fumaric acid
	E. Propyl paraben

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

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

2.18 The emulsent and their sources are given below. Match them

1. Karaya	A. Synthetics
2. Carageenan	B. Collegen
3. Gaur	C. Sea wood
4. Gelatin	D. Gum exudates
	E. Seed extract

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

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

2.19 List below are some schedules 1 to 4 and the rule A to E. match them correctly

1. C	A. List of medicine required to be taken only under supervision of R.M.P.
2. F	B. Biological and special products
3. G	C. Provision applicable to vaccines, toxins, antigens andSera
4. M	D. GMP requirement of factory premises plants,Equipment etc.
	E. Standards for surgical dressing

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

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

2.20 Preparation listed 1 to 4 are assayed by the given in A to E. Match them correctly

1. Heparin sodium injection I.P.	A. Biological assay using prostate glands of immature rats
2. Gentamycin injection I.P.	B. Biological assay using *clostridium welchi* Type A antitoxin
3. Mixed gonadotropin antitoxin I.P.	C. Microbiological assay using method A
4. Chorionic gonadotropin inj. I.P.	D. Biological assay using sheep plasma
	E. Biological assay using human plasma

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

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

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. (a) Give the systematic names, structural formulas of some biological important purine bases
   (b) What is biuret test? Which type of compounds are usually tested ?
   (c) Caffeine on treatment with $KClO_3$ and HCl gave two products. What are they ? Give complete equation

4. Give the IP assay method for sodium ascorbate IP (Monosodium -1- ascorbate)Give reaction

5. (a) Give an expression for Stoke's law
   (b) What does it indiacates ?

6. (a) How do you test for rancidity of Archis oil IP ?
   (b) Ascorbic acid $\xrightarrow[\text{Boil}]{\text{HCl}}$ A + B + C, What are A, B and C ?

7. Give complete equation

$$\alpha\text{ - terpineol} \xrightarrow{\text{NOCl}} \text{A} \xrightarrow{\text{Re arrangment}} \text{B} \xrightarrow[-\text{HCl}]{C_2H_5ONa} \text{C} \xrightarrow[\Delta - H_2O]{H_2SO_4} \text{D}$$

what are A,B, C, and D ? Given the complete equation.

8. (a) What is HLB ?
   (b) Draw the HLB scale and suggest suitable classification for various surfactant on basis of HLB value of scale
   (c) A polyhydric alcohol fatty acid ester gave a saponification number 48.0 , the corresponding acid gave an acid number of 280. What is HLB value of ester ?

9. Give the pharmacology of the following. Answer should not exceed 4 sentence in each case
   (a) Nitrazepam (b) Ethacranic acid (c) Hydralazine HCl

10. (a) What is passive diffusion? Give the mathematical representation of Ficks law of diffusion.
    (b) A 250 ml infusion contain 18.65 g of potassium chloride. How many milliequivalent of KCl are present ?
    Mol. Wt of KCl = 74.6.

11. (a) Suggest the names of important types of stomata according to the characters ofguard cells
    (b) Give the name of 3 different types of trichomes present in medicinal plants.What is Cicatrix?

12. Draw complete equation to show what happen when following reaction are carried out ?
    (a) Tropine is treated with mendalic acid
    (b) Morphine is demethylated and product allylated
    (c) Cocaine is treated with hot dilute acid

13. (a) Write the full structure of any three drugs which are prepared startingfrom m-choroanilline.
(b) Give chemical nomenclature of chlordiazepoxide

14. (a) Name the three physiochemical properties which are important for drug activity.
(b) The K_a of acetic acid is 1.75×10^{-5}. Calculate pK_a

15. The general structure of tetracycline is an octahydro analogous ofnaphthalene on which a number of substituent's are possible. Write thestructure and number of the positions.

16. Why glucouronidation is most common conjugative pathway in drug metabolism ? Give three resons. Give one example of one drug molecule.

17. (a) What is major difference between the following chromatographic techniques ?
(i) Paper and thin layer chromatography
(ii) Gas- liquid and high pressure liquid chromatography
(b) Define Gradient elution

18. Product A,B,C, and D are formed by the following chemical reactions. Complete the equation by writing the structures.
1. α – napthol + Epichlorhydrine $\rightarrow$ (A)
2. (A) + isopropylene $\rightarrow$ (B)
3. Piperazine + Diethyl carbamylchoride $\rightarrow$ (C)
4. (C) + Methyl iodide $\rightarrow$ (D)

19. (a) Write the toutomeric form of barbituric acid.
(b) Give synthesis of metronidazole

20. caffeine has the UV absorption maximum at 272 mμ.1316 g of this drug was dissolved inenough water to make 1 litre. Exactly 10 ml of this solution was dilute to 100 ml and absorbance of thissolution in 1.0 cm cell at 272 mμ was 0.854 .
(i) Calculate molar absorptivity of caffeine
(ii) Calculate the concentration of unknown solution of this drug which gave an absorbance of 1.022 in 2.0 c of cell.
The molecular weight of caffeine is 194.2

21. The IR absorption band of an organic compound are observed as follow:
3080, 2960, 1680, 1580, 1430,1360, 755 and 690 cm^{-1} . Indicate the functional groups corresponding to these bands (The empirical formula of thiscompound is C_8H_8O)

22. Define the following term used in parenteral filtration:
(a) Polishing (b) Cold sterilization (c) Impaction

23. Describe the terms mentioned below and give two example of each
(a) Antipruritis (b) Keratoplastics (c) Keratolytics

24. (a) What is sterile water for injection? How you will identify the oxidisable impurities in it ?

(b) Calculate the amount of sodium chloride required to adjust 500 ml of a 0.5 %solution of procaine hydrochloride isotonic with blood plasma.

The F.P.D. of 1% solution of procaine HCl is -0.12 ?C and sodium chloride is -58° C.

25. Mention the possible drug-drug interaction of the following combinations

(a) Aluminum hydroxide gel with isoniazide

(b) Aspirin with heparin injection

(c) Phenytoin with sulphasomidine

26. Define the following terms used in tablets coating

(a) Opaquants (b) Bridging (c) Compression coating

27. Define the term mentioned below used in aerosol technology :

(a) Leak test (b) Biological test (c) Spray test

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