

**PHARMACEUTICAL SCIENCE**

**Time : 3 hours**

**Maximum Marks : 150**

**(Q. 1 - 20) CARRY ONE MARK EACH**

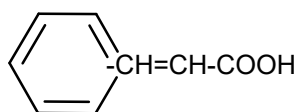
- An antidiabetic drug Pioglitazone used in Type 2 diabetes acts by**  
(a) Decrease of glucose uptake in muscles      (b) Increasing insulin sensitivity  
(c) Inhibiting intestinal  $\alpha$ -glucosidase      (d) Stimulating insulin secretion
- An angiotensin-II receptor blocker useful in treating hypertension is**  
(a) Enalaprilat      (b) Valsartan      (c) Atenolol      (d) Amlodipine
- Co-administration of NSAIDs with Warfarin may often lead to**  
(a) Antagonistic interaction  
(b) Interaction due to change in drug transport  
(c) Interaction due to disturbances in electrolyte balance  
(d) Additive or synergistic interaction
- Laminaria and Kelp are the principal genera, currently used for the industrial production of**  
(a) Carrageenans      (b) Agar  
(c) Fucans      (d) Alginic acid and alginates
- A transverse section of *Glycyrrhiza glabra* when treated with 80% sulphuric acid gave**  
(a) Deep yellow color      (b) No reaction, but only charring  
(c) Deep blue color      (d) Deep red color
- Microscopy of the bulbs of *Urginea indica* family Liliaceae shows**  
(a) Prisms of calcium oxalate      (b) Calcium carbonate and silica  
(c) Rosettes of calcium oxalate      (d) Raphides of calcium oxalate
- Streptomycin is a**  
(a) Di-acidic base possessing an aldehydic carbonyl group  
(b) Tri-acidic base possessing an aldehydic carbonyl group  
(c) Neutral compound possessing a ketonic group  
(d) Acid compound possessing a carboxyl group

8. The antihistaminic with diphenyl methyl group is
- (a) Methdilazine (b) Cyclizine hydrochloride  
(c) Pheniramine (d) Phenindamine
9. Heterocyclic rings present in pilocarpine are
- (a) Imidazole and Quinoline (b) Imidazole and Thiazole  
(c) Quinoline and phenanthrene (d) Imidazole and Dihydrofuran
10. The most important microbial virulence factor in etiology of meningitis is
- (a) Exotoxin (b) Components of the capsule  
(c) Coagulase (d) Hyaluronidase
11. Commonly used tetanus vaccine is produced by
- (a) Treatment of the causative organism with heat or UV light and finally obtaining the toxoid  
(b) Subculturing the virus at pH 10.4  
(c) Artificially generating antibodies to viral glycoproteins  
(d) Isolating the antigenicity genes from the causative organism
12. Which of the following equations is valid for standard B-DNA
- (a)  $A + T = G + C$  (b)  $A + T = 2(G + C)$   
(c)  $2(A + T) = 3(G + C)$  (d)  $A + G = T + C$
13. Clinical jaundice, typified by yellowing of the tissues is associated with elevated levels of
- (a) Serum lysozyme (b) Serum bilirubin  
(c) Serum creatinine (d) Serum g-glutamyl transferase
14. In NMR spectrometry, the chemical shift ( $\delta$ ) is expressed in
- (a) Parts per million (b) Gauss (c) Tesla (d) Hertz
15. In chromatographic separation, the different species in the sample, undergo the process of
- (a) Chemical interaction (b) Partition  
(c) Volatilization (d) Ionization
16. A target material used in the production of X-rays is
- (a) Potassium (b) Copper  
(c) Aluminium (d) Sodium
17. The requirement and guidelines for clinical trials, import and manufacture of new drugs as per the Drugs & Cosmetics Rules is given under Schedule
- (a) N (b) Y (c) A (d) B

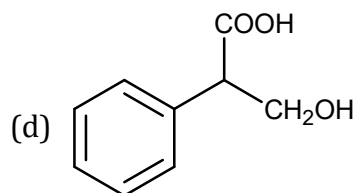
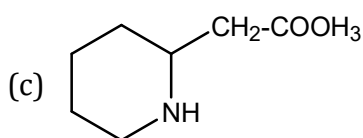
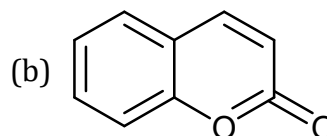
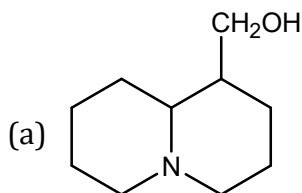
18. The growth of large particles at the expense of smaller ones, as a result of a difference in the solubility of the particles of varying sizes, is termed as
- (a) Interfacial phenomenon (b) Partitioning  
 (c) Erosive formulation (d) Ostwald ripening
19. Cyclic oligomers of glucose that form water soluble inclusion complexes, which are biocompatible and improve the bioavailability of drugs
- (a) Chlorophyll (b) Polyethylene glycol  
 (c) Cross povidone (d) Cyclodextrin
20. 'Draves test' is associated with measuring the efficiency of
- (a) Detergent (b) Witting agents  
 (c) Suspending agents (d) Adsorbent

**Q.21 to Q.75 CARRY TWO MARKS EACH.**

21. Effect of fibrates on blood lipids are mediated by
- (a) Inhibiting both synthesis and esterification of fatty acids  
 (b) Their interaction with peroxisome proliferator-activated receptors (PPARs)  
 (c) Reducing the conversion of HMG-CoA to mevalonate  
 (d) Sequestering bile acids
22. A cardioselective beta blocker with vasodilating properties is
- (a) Pindolo (b) Atenolol (c) Bisoprolol (d) Nebivolol
23. Choose the correct option



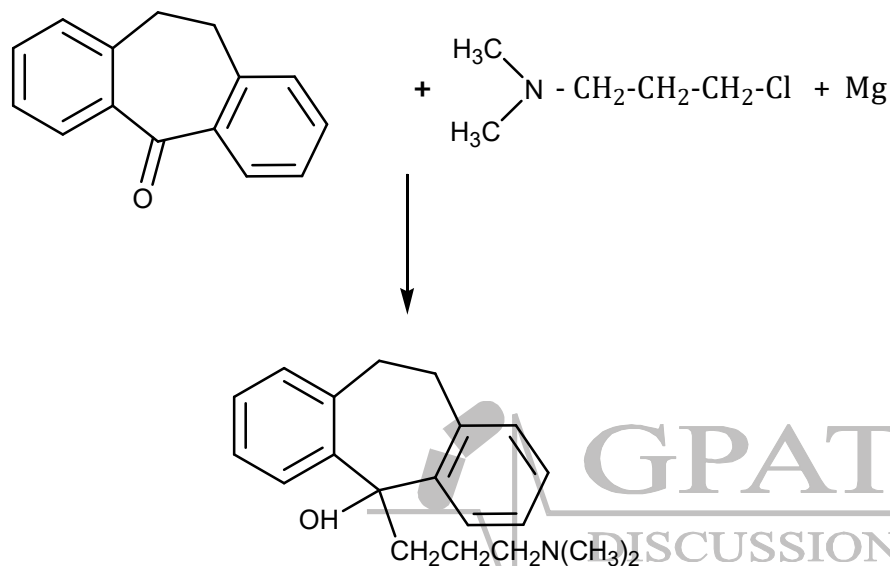
is the precursor for the biosynthesis of



**24. (-)-Hyoscyamine is**

- (a) 15-20 times more active as a mydriatic than (+)-hyoscyamine
- (b) Inactive as a mydriatic
- (c) 3-5 times less active as a mydriatic than (+)-hyoscyamine
- (d) 100 times more active as a mydriatic (+)-hyoscyamine

**25.**



The reaction is known as

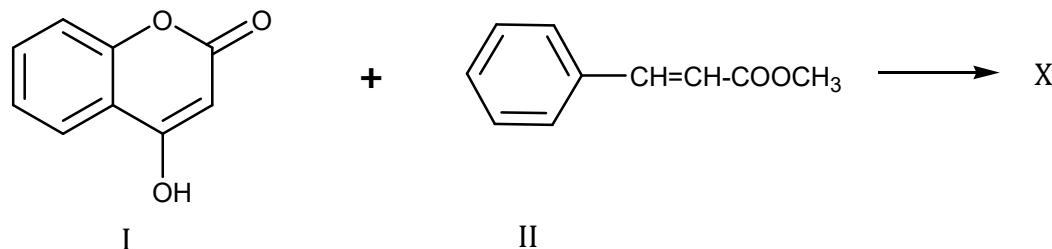
- (a) Grignard reaction
- (b) Gabriel phthalimide synthesis
- (c) Gomberg reaction
- (d) Reimer Tiemann reaction

**26. In thiazole diuretics, the position 7 is very important and is occupied by a**

- (a) CH<sub>3</sub> group
- (b) Free sulphamoyl group
- (c) Chloro group
- (d) Free - NH<sub>2</sub> group

**27. Compound I reacts with II to form X is**

X is



- (a) Ethyle biscoumacetate
- (b) Phenindione
- (c) Warfarin
- (d) Dicoumarol

28. A mass spectrum is obtained by plotting

- (a) Molecular weight versus peak height
- (b) Concentration versus peak height
- (c) Concentration versus degree of deflection of ions
- (d) Abundance of ions versus their m/e ratio

29. Aldehydes can be distinguished from other C=O containing compounds by IR, due to

- (a) The low frequency of absorption of aldehydes
- (b) The alkyl or group is attached to >C=O
- (c) The double bond present
- (d) The doublet at the C-H-stretching region

30. A super disintegrant in tablet formulation is

- (a) Sodium starch glycolate
- (b) Starch
- (c) PVP
- (d) Mg-Aluminium silicate

31. A drug was administered to 30 subjects as a tablet (30 mg), an oral aqueous solution (30 mg) and as an intravenous (0.3 mg). Mean AUC's (ng.hr/mL), dose normalized to 1 mg, for tablet, oral solution and IV were 0.91, 0.87 and 103.0 respectively.

- (a) 104.6%, 0.883%
- (b) 81%, 5.6%
- (c) 10.46%, 8.83%
- (d) 19%, 56%

Calculate the relative bioavailability of the drug in table compared to the solution to the oral solution absolute bioavailability of tables from.

32. When ammonium chloride is gradually and slowly incorporates in to an emulsion stabilized with ammonium oleate,

- (a) Emulsion will crack immediately
- (b) It will invert from o/w to w/o type
- (c) It will invert from w/o to o/w type
- (d) There will be no impact on its physical stability

33. A prescription requires 4 mEq/liter of hydrogen phosphate ion  $\text{HPO}_4^{2-}$ . How many milligrams of dibasic potassium phosphate,  $\text{K}_2\text{HPO}_4$  (molecular weight 174) will be required ?

- (a) 174 mg/liter
- (b) 130.5 mg/liter
- (c) 522 mg/liter
- (d) 348 mg/liter

34. Gram positive bacterial typically contain

- (a) Cell wall that lack peptidoglycans
- (b) Repeating units arabinogalactan and mycolates in their cellwalls
- (c) Peptidoglycan muramic acid and D-amino acids in their cell walls
- (d) Cell walls containing predominantly polysaccharides and glycoproteins

35. Quaternary structure of a protine molecule refers to
- (a) Specific association to two or more copies of a polypeptide chain to result in a biologically activemolecule  
 (b) Regular seen local structure within a polypeptide chain  
 (c) The portion of the polypeptide chain that comes into contact with another protein molecule  
 (d) The portion of the structure that gets stabilized upon binding to nucleic acid
36. A blood sample is treated with alkaline phosphotungstic acid to form tungsten blue, which is estimated colorimetrically to give a positive reaction. The sample contains
- (a) Protein (b) Serum creatinine  
 (c) Serum phenylalanine (d) Uric acid
37. Two important steps for plant regeneration by organogenesis are
- (P) Establishment of callus cultures (Q) Initiation of somatic embryogenesis  
 (R) Germination of seeds (S) Initiation of cell suspensions
- (a) Q, S (b) P, R (c) P, S (d) Q, R
38. Two tests for ephedrine are
- (P) A solution in dilute HCl, treated with copper sulphate and sodium hydroxide gives a violet colour  
 (Q) An alcoholic solution gives a red colour with  $\text{FeCl}_3$   
 (R) On shaking with solvent ether, the organic layer shows purple while the aqueous layer becomes blue  
 (S) A solution of vanillin gives a violet-red colour
- (a) Q, S (b) P, S (c) P, R (d) Q, R
39. Dried fruits of sweet fennel has two the following properties
- (P) 80 % of E-anethole, 10 % of methyl chavicol and 5% (+)-fenchone as constituents  
 (Q) 65-75 % (+) Linalool as a constituent  
 (R) The fruit is a diankene, almost cylinder and surrounded by large stylopod  
 (S) The fruit is elongated and surrounded by calyx
- (a) P, R (b) Q, S (c) P, S (d) Q, R
40. Dihydroxy acetone phosphate is involved in the biosyntheses of two of the following
- (P) Serotonin (Q) Triacylglycerol  
 (R) Pyruvate (S) Methionine
- (a) P, Q (b) P, R (c) Q, S (d) Q, R
41. The virus responsible for SARS can be described by two of the following features
- (P) It contains double-stranded DNA and requires two complementary strands to be synthesized to serve as mRNA  
 (Q) It has distinctive club shaped particles projecting from the surface, appearing like a crown

(R) It contains plus-strand RNA that can serve directly as mRNA

(S) It is a retrovirus and requires extracellular DNA for replication

(a) P, Q

(b) P, S

(c) Q, R

(d) R, S

42. Two of the following facts are associated with Ethylene oxide gas

(P) It is non toxic and non inflammable and used for sterilization

(Q) It is a colourless inflammable gas. Toxic in nature and used for sterilization

(R) It is diluted with CO<sub>2</sub>

(S) It cannot penetrated plastic and paper packaging

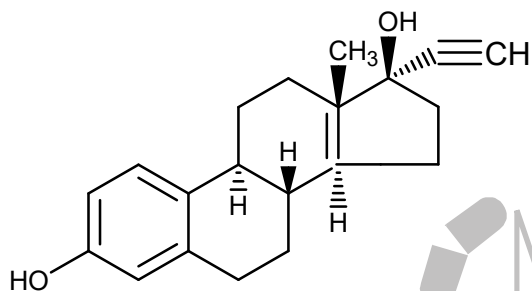
(a) P, R

(b) P, S

(c) R, S

(d) Q, R

43.



(P) Is active parenterally

(Q) Shows greater activity orally than parenterally

(R) Is orally inactive

(S) Has no parenteral activity

(a) P, S

(b) Q, R

(c) R, S

(d) P, S

44. Tranexamic acid is

(P) Trans-4-amino methyl cyclohexane carboxylic acid

(Q) A polypeptide

(R) An inhibitor of proteolytic enzymes including plasmin

(S) Used for the prophylaxis of hemorrhage associated with excessive fibrinolysis

(a) P, S

(b) P, R

(c) Q, R

(d) R, S

45. Prostaglandines are derivatives of

(P) C<sub>25</sub> acid

(Q) 7-(2 cyclohexyl) pentenoic acid

(R) C<sub>20</sub> prostanoid acid

(S) 7-(2 octyl cyclopentyl) heptanoic acid

(a) P, Q

(b) R, S

(c) P, R

(d) Q, S

46. Two ex-officio members of the Drugs Technical Advisory Board under Drugs and Cosmetic Act are  
 (P) The Drugs Controller Genral of India  
 (Q) The President, Medical Council of India  
 (R) The Secretary, Pharmacy Council of India  
 (S) The Director, National Institute of Pharmaceutical Education and Research, India  
 (a) P, Q (b) P, R (c) R, S (d) P, S
47. Calfactant is  
 (P) A sterile non-pyrogenic lung surfactant intended for intratracheal instillation to premature infants  
 (Q) A synthetic surfactant popularly used to prepare total parenteral nutrition to premature infants  
 (R) A potent chelating agent used to prevent metal induced oxidation process  
 (S) An extract of natural surfactant from calf lungs  
 (a) P, Q (b) R, S (c) P, S (d) Q, R
48. In cross-over bioavailability studies, in which the subjects must be rested for sufficient time between each drug administration to ensure that 'washout' is complete. Practically, wash-out is deemed complete, when  
 (P) 95% is wash out (Q) 100% is wash out  
 (R) 5 biological half-lives have elapsed (S) 2 biological half-lives have elapsed  
 (a) P, R (b) P, S (c) Q, R (d) Q, S
49. Two reference electrodes are  
 (P) Glass membrane electrodes (Q) Sb/Sb<sub>2</sub>O<sub>3</sub> electrodes  
 (R) Calomel electrodes (S) Silver/silver-chloride electrodes  
 (a) P, Q (b) Q, S (c) R, S (d) P, R
50. Polarography can be used for the  
 (P) Simultaneous determination of several analytes  
 (Q) Study of resistance of solution  
 (R) Study of current potential relationship  
 (S) Study of optical activity of organic compounds  
 (a) P, S (b) Q, S (c) P, R (d) P, Q
51. Primary amines show  
 (P) Two N-H stretching bands in the range of 3500-3300 cm<sup>-1</sup>  
 (Q) Only one band in the region 3500-3300 cm<sup>-1</sup>  
 (R) -NH band in primary amine results in a broad band in the region 1640-1560 cm<sup>-1</sup>  
 (S) The typical -NH<sub>2</sub> stretching value at 1715 cm<sup>-1</sup>  
 (a) Q, R (b) P, R (c) P, S (d) Q, S



**52. The drug Disulfiram is**

(P) Known to inhibit dopamine  $\beta$ -hydroxylase and cause noradrenaline depletion

(Q) A substance that produce aversive reaction to alcohol

(R) Known to stimulate dopamine  $\beta$ -hydroxylase

(S) Used in barbiturate poisoning

(a) P, S

(b) Q, R

(c) R, S

(d) P, Q

**53. Two important attributes associated with L-asparaginase**

(P) An enzyme obtained from *E. coli* and is administered parenterally

(Q) An enzyme obtained from *Streptococcus caespitosus* and is administered orally

(R) Used in acute lymphocytic leukemia

(S) Used as a fibrinolytic agent

(a) P, S

(b) P, R

(c) Q, R

(d) Q, S

**54. Amikacin is**

(P) A semisynthetic aminoglycoside and a derivative of kanamycin

(Q) A semisynthetic aminoglycoside and a derivative of tobramycin

(R) It is administered parenterally and does not cause nephrotoxicity and ototoxicity

(S) It is administered parenterally and is both nephrotoxicity and ototoxicity

(a) P, Q

(b) P, R

(c) P, S

(d) Q, S

**Q.55-70 Are Matching Exercise Match Group I with Group II and identify the correct combinations**

**55. Group I**

Plant

(P) Thorn apple

(Q) Henbane

(R) Deadly nightshade

(S) Foxglove leaves

(a) P-2, Q-1, R-4, S-3

(c) P-3, Q-4, R-2, S-1

**Group II**

Source

(1) Dried leaves and flowering tops of *Hyoscyamus niger*

(2) Dried leaves and flowering tops of *Datura atramonium*

(3) Leaves of *Diditalis purpurea* dried at a Temperature below 60°C

(4) Dried leaves and other aerial parts of *Atropa bellodona* or *Atropa acuminata*

(b) P-1, Q-2, R-3, S-4

(d) P-2, Q-3, R-4, S-1

**56. Group I**

Drugs

(P) Kaolin

(Q) Keiselguhr

(R) Calamine

(S) Tac

(a) P-1, Q-4, R-3, S-2

(c) P-2, Q-1, R-4, S-3

**Group II**

Source

(1) Natural diatomaceous earth consisting of siliceous skeletons of fossils

(2) Purified native hydrated aluminium Silicate

(3) Hydrated magnesium silicate

(4) An ore contain zinc oxide with a small Amount of ferric oxide

(b) P-2, Q-4, R-1, S-3

(d) P-3, Q-2, R-1, S-4

**57. Proof for the following in the natural products is obtained by some reactions.**

**Group I**

Natural Products

(P) Cholesterol-nature of ring

(Q) Ephedrine-secondary amino group

(R) Morphine-secondary -OH group

(S) Caffeine-nature of ring

(a) P-3, Q-1, R-2, S-4

(c) P-3, Q-4, R-1, S-4

**Group II**

Reactions

(1) Treatment with  $\text{HNO}_2$  forms a nitroso compound

(2) Selenium dehydrogenation gives Diel's hydrocarbon

(3) With  $\text{CH}_3\text{I}$  in aqueous  $\text{KHO}$  gives (-) codeine, which is not soluble in alkali; codeine can be oxidized with chromic acid to codeinone

(4) Oxidation with potassium chlorate in hydrochloride acid gives diamethyl alloxan and methyl urea

(b) P-2, Q-1, R-3, S-4

(d) P-4, Q-2, R-1, S-3

**58. Derivatives of cortisol and their structural modification are**

**Group I**

Derivative

(P) Prednisolone

(Q) Dexamethasone

(R) Betamethasone

(S) Triamcinolone

(a) P-2, Q-1, R-3, S-4

(c) P-2, Q-4, R-3, S-1

**Group II**

Structural modification

(1) 1, 2-dehydro,  $9\alpha$ -fluoro,  $16\alpha$ -methyl

(2) 1, 2-dehydro

(3) 1, 2-dehydro,  $9\alpha$ -fluoro,  $16\beta$ -methyl

(4) 1, 2-dehydro,  $9\alpha$ -fluoro,  $16\alpha$ -hydroxy

(b) P-1, Q-3, R-4, S-2

(d) P-3, Q-2, R-1, S-4

**59. Group I**

Drugs

- (P) Clofazimine
- (Q) Ketoconazole
- (R) Melphalan
- (S) Dapsone
- (a) P-1, Q-2, R-3, S-4
- (c) P-3, Q-4, R-2, S-1

**60. Group I**

Industrial dryers

- (P) Drum dryer
- (Q) Fluidized bed dryer
- (R) Spray dryer
- (S) Freeze dryer
- (a) P-1, Q-3, R-4, S-2
- (c) P-4, Q-2, R-1, S-3

**61. Group I**

Name of equation

- (P) Noyes & Whitney equation
- (Q) B.E.T equation
- (R) Stokes equation
- (S) Higuchi equation
- (a) P-4, Q-2, R-3, S-1
- (c) P-3, Q-1, R-2, S-4

**62. Group I**

Types of coating

- (P) Seal coating
- (Q) Sub coating
- (R) Polishing

**Group II**

Starting material for synthesis

- (1) p-chloronitro benzene
- (2) L-phenyl alanine
- (3) -N-(4-chlorophenyl)-O-phenylenediamine
- (4) 2,4-dichloro phenylbromide and glycerine
- (b) P-4, Q-3, R-1, S-2
- (d) P-2, Q-1, R-4, S-3

**Group II**

Pharmaceutical material dried

- (1) Antibiotic solution
- (2) Tablet granules
- (3) Gelatin
- (4) Suspension of kaolin
- (b) P-4, Q-2, R-3, S-1
- (d) P-3, Q-2, R-4, S-1

**Group II**

Equation

- (1)  $\frac{dM}{dt} = \frac{DS}{h}(C_s - C)$
- (2)  $\frac{P}{Y(P_0 - P)} = \frac{1}{Y_m b} + \frac{b-1}{y_m b} \frac{P}{P_0}$
- (3)  $v = \frac{d^2(P_s - P_0)g}{18\eta_0}$
- (4)  $Q = \sqrt{\frac{DC_s t}{2A - C_s}} \cdot (2A - C_s)$
- (b) P-2, Q-4, R-1, S-3
- (d) P-1, Q-2, R-3, S-4

**Group II**

Coating material

- (1) HPMC
- (2) Carnauba wax
- (3) Gelatin

(S) Film coating

(a) P-4, Q-3, R-2, S-1

(c) P-3, Q-1, R-2, S-4

**63. Group I**

Interacting drugs

(P) Verapamil and Atenolol

(Q) Clozapine and Co-trimoxazole

(R) Alcohol and Flunitrazepam

(S) Ramipril and amiloride

(a) P-4, Q-2, R-3, S-1

(c) P-3, Q-4, R-2, S-1

**64. Group I**

Receptors

(P)  $\beta$ -adrenergic (Type 2)

(Q)  $\alpha$ -adrenergic (Type 1)

(R) Dopaminergic (Type 2)

(S) 5-hydroxytryptamine (Type 1A)

(a) P-1, Q-4, R-3, S-2

(c) P-2, Q-3, R-4, S-1

**65. Group I**

Drugs

(P) Terbinafine

(Q) Cidofovir

(R) Imatinib

(S) Stavudine

(a) P-1, Q-2, R-3, S-4

(c) P-2, Q-3, R-4, S-1

**66. Group I**

Materials used

(P) Sodium chloride

(Q) Glass

(R) Quartz

(S) Potassium hydrogen phthalate

(4) PEG4000

(b) P-3, Q-1, R-2, S-4

(d) P-1, Q-2, R-3, S-4

**Group II**

Pharmacological effect

(1) Increased risk of hyperkalemia

(2) Bradycardia and asystole

(3) Increased risk of bone marrow suppression

(4) Severe CNS depression

(b) P-2, Q-3, R-4, S-1

(d) P-4, Q-1, R-2, S-3

**Group II**

Agonists

(1) Phenylephrine

(2) Bromocriptine

(3) Ritodrine

(4) Buspirone

(b) P-3, Q-2, R-4, S-1

(d) P-3, Q-1, R-2, S-4

**Group II**

Mechanisms

(1) Inhibition of reverse transcriptase

(2) Selective inhibition of squalene epoxidase

(3) Inhibition of DNA polymerase

(4) Tyrosine kinase inhibitor

(b) P-4, Q-3, R-2, S-1

(d) P-3, Q-2, R-1, S-4

**Group II**

Instrumental techniques

(1) Colorimetry

(2) UV spectrophotometry

(3) X-ray diffraction

(4) IR spectrophotometry

(a) P-1, Q-2, R-3, S-4

(c) P-3, Q-4, R-1, S-2

**67. Group I**

Drugs

(P) Iopanoic acid

(Q) Cyclizine hydrochloride

(R) Chlorothiazide

(S) Chlorambucil

(a) P-1, Q-2, R-3, S-4

(c) P-4, Q-3, R-1, S-2

**68. Group I**

Techniques

(P) Potentiometry

(Q) Polarography

(R) Colorimetry

(S) Column chromatography

(a) P-1, Q-4, R-3, S-2

(c) P-2, Q-3, R-4, S-1

**69. Group I**

Test

(P) Direct agglutination test

(Q) Passive agglutination

(R) Haemagglutination inhibition test

(S) Coomb's test

(b) P-4, Q-1, R-2, S-3

(d) P-2, Q-3, R-4, S-1

**Group II**

B.P Assay

(1) Titration of a solution in anhydrous formic acid and acetic anhydride with 0.1N perchloric acid

(2) Titration of a solution in dimethylformamide with 0.1M tetrabutyl ammonium hydroxide

(3) Treating with sodium hydroxide and zinc powder and then titration with 0.1N silver nitrate

(4) Titration with 0.1N sodium hydroxide using phenolphthalein indicator

(b) P-2, Q-4, R-1, S-3

(d) P-3, Q-1, R-2, S-4

**Group II**

Related equations

(1)  $i = 708 n C D^{1/2} m^{2/3} t^{1/6}$

(2)  $VR = tR Fc$

(3)  $E = E^0 - \frac{RT}{nF} \log[H^+]$

(4)  $A = ebc$

(b) P-3, Q-2, R-1, S-4

(d) P-2, Q-3, R-4, S-1

**Group II**

Principle

(1) Measures antibody titres after soluble antigens are attached to inert particles and incubated with antibodies.

(2) Detects blocking-type antibodies, globulins and complement that are attached to red cell antigens.

(3) RBCs coated with homologous antigens added to antibodies incubated with soluble antigens

(4) RBC antigen incubated with antibodies and

(a) P-2, Q-4, R-1, S-3

(c) P-1, Q-3, R-2, S-4

**70. Group I**
**Enzymes**

 (P) Na<sup>+</sup>-K<sup>+</sup> ATPase

(Q) Cytochrome c oxidase

(R) Malate dehydrogenase

(S) Tyrosine kinase

(a) P-3, Q-1, R-2, S-4

(c) P-2, Q-4, R-1, S-3

antibody titre visually examined

(b) P-4, Q-1, R-3, S-2

(d) P-3, Q-2, R-4, S-1

**Group II**
**Function**

(1) Electron transport

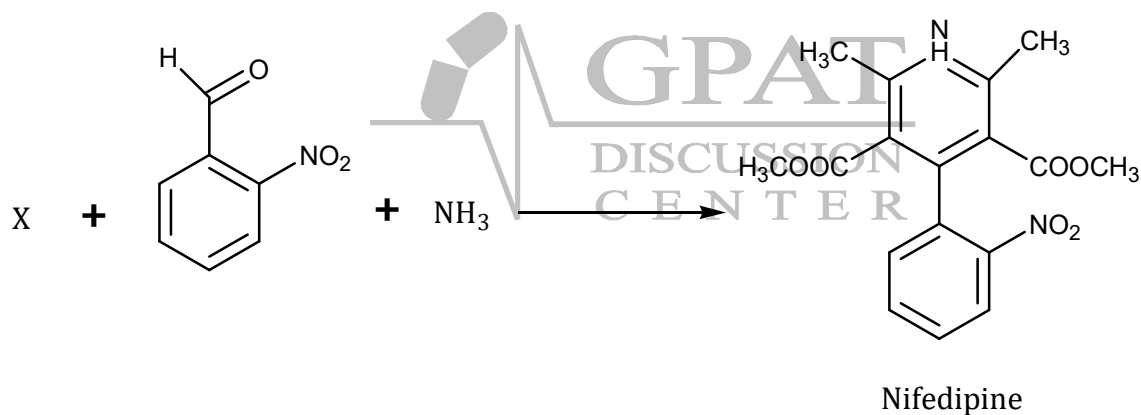
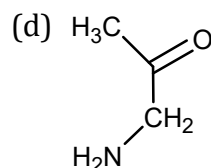
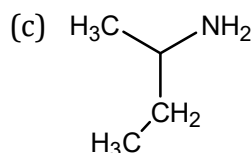
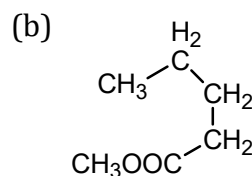
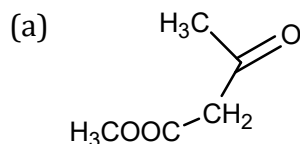
(2) Pathway converting pyruvate to oxaloacetate

 (3) Generation of electrochemical potential gradient  
 across membranes

(4) Signal transduction

(b) P-1, Q-3, R-4, S-2

(d) P-4, Q-2, R-3, S-1

**Common Data Question 71,72,73**

**71. Reagent X is**

**72. Nifedipine when exposed to day light is readily converted into derivative of**

(a) 4-phenyl pyridine

(b) Nitrosophenyl pyridine

(c) Diazophenyl pyridine

(d) Nitrobenzene

73. The B.P. assay of Nifedipine is by a titration of a

- (a) Solution in anhydrous acetic acid with 0.1 perchloric acid
- (b) Solution in previously neutralized acetone with 0.1N sodium hydroxide; end point by potentiometry
- (c) Solution is previously neutralized acetone against standard potassium dichromate solution
- (d) A solution in 2-methyl 2-propanol and perchloric acid with 0.1 M cerium sulphate using ferroin as indicator

**COMMON DATA FOR QUESTION 74 AND 75**

*Tenoposide is a natural product used for the management of certain diseases*

74. It is derived from

- (a) Flavonolignans from *Silybum marianum*
- (b) Lignans from *Podophyllum peltatum*
- (c) Lignans from *Schizandra chinesis*
- (d) Neolignans from *Piper futokadsura*

75. This drug is used in the management of

- (a) Candidiasis
- (b) Trypanosomiasis
- (c) Cardiac arrhythmia
- (d) Acute leukemia in children

**Linked Answer Question: Q.76 to Q.85 carry two marks each.**

**Statement for Linked Answers Question 76.& 77.**

Extract of chondrodendron tomentosum, family manispermaceae contains several alkaloids

76. One of the important alkaloid is

- (a) (-) Phyllandrene
- (b) (+) Hollarhenine
- (c) (+) Tubocurarine
- (d) ( $\pm$ ) Colchicine

77. This alkaloid has

- (a) Bis benzyl tetrahydro isoquinoline ring
- (b) Quinoline ring
- (c) Phenenthrene ring
- (d) Pyrido pyrimidine ring

**Statement for Linked Answers Question 78.&79.**

Several drugs are used for migraine

78. Acute migraine is treated with

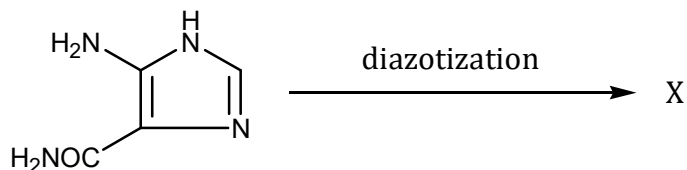
- (a) Prazosin
- (b) Formeterol
- (c) Sumatriptan
- (d) Dopamine

79. The drug chosen is the agonist of

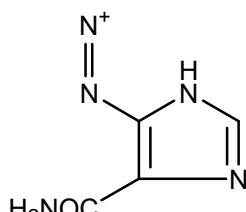
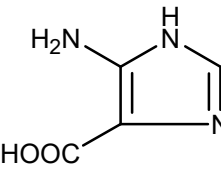
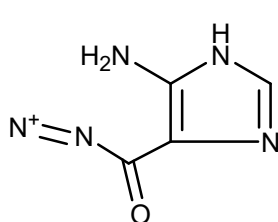
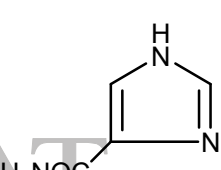
- (a)  $\alpha_1$  adrenociptoe
- (b)  $\alpha_2$  adrenoceptor
- (c)  $M_2$  receptor
- (d) 5-HT<sub>1D</sub> receptor

**Statement for Linked Answer Question 80 & 81**

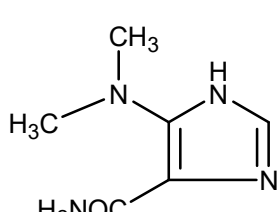
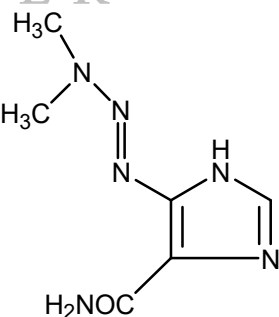
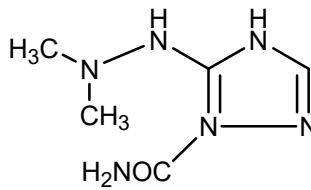
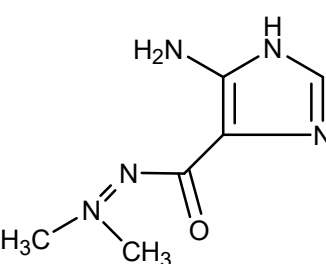
A drug which is used for malignant melanoma is obtained as follows:



80. X is

- (a) 
- (b) 
- (c) 
- (d) 

81. X on treatment with dimethylamine gives the drug

- (a) 
- (b) 
- (c) 
- (d) 



**Statement for Linked Answer Question 82.& 83.**

A 250 mg dose of a drug was administered to a patient by rapid IV injections. The initial plasma concentration was 2.50 mg/mL. After 4 hours the plasma concentration was 1.89 mg/mL. Assuming that the drug was eliminated by a pseudo first order process and the body behaves as one compartment model.

82.  $K_{el}$  is

- (a)  $0.0699h^{-1}$                       (b)  $0.0349h^{-1}$                       (c)  $1.623h^{-1}$                       (d)  $0.699h^{-1}$

83. Biological half life is

- (a) 4.95 hours                      (b) 19.82 hours                      (c) 99.1 hours                      (d) 9.91 hours

**Statement for Linked Answers Question 84.&85.**

As per the Woodward-Fieser rule, the absorption maxima of the compound shown is calculated from the base value and the ring residue values

84. Base value is

- (a) 215nm                      (b) 233nm                      (c) 240nm                      (d) 217nm

85. Absorption maxima is

- (a) 273nm                      (b) 258nm                      (c) 265nm                      (d) 237nm



**End of paper**

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**ANSWER KEY GATE 2008**

1-b	2-b	3-d	4-d	5-a	6-d
7-b	8-b	9-d	10-b	11-a	12-d
13-b	14-a	15-b	16-b	17-b	18-d
19-d	20-b	21-b	22-d	23-b	24-d
25-a	26-b	27-c	28-d	29-d	30-a
31-a	32-a	33-d	34-c	35-a	36-b
37-c	38-c	39-a	40-d	41-c	42-d
43-a	44-a	45-b	46-a	47-c	48-a
49-d	50-c	51-b	52-d	53-b	54-c
55-a	56-c	57-b	58-b	59-c	60-c
61-d	62-a	63-b	64-d	65-c	66-b
67-b	68-d	69-b	70-a	71-a	72-b
73-d	74-b	75-d	76-c	77-a	78-c
79-d	80-a	81-b	82-a	83-d	84-b
85-a					



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