# GPAT QUESTION PAPER 1989 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 the question from part A.*
3. *Answer Any 20 Question from part B.*

## PART - A

**N. B.**
1. *There are 2 sections in this part*
2. *Answer all the question in both sections – 1 and 2.*
3. *Answer should be given serial order in the answer book.*
4. *Do not skip question 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 carriers 1-Marks.*
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 part must be Witten in the first three pages only.*

### SECTION - I

## CHOOSE THE CORRECT ANSWER

***Model Question***

1. Repeated administration of Tyramine results in its decreasing effectiveness:
   (a) Gets detoxicated easily
   (b) Displaces nor-adrenaline from nerve ending binding site
   (c) Displaces adrenaline from nerve ending binding site
   (d) None of the above
2. Atropine on hydrolysis with Barium hydroxide gives:
   (a) Tropanol and Tropic acid
   (b) Scopine and Tropic acid
   (c) Ecgonine and Benzoic acid
   (d) Benzyl Ecgonine and Methanol
3. The concentration of sucrose in simple Syrup BP is:
   (a) 85% w/w
   (b) 60.70% w/w
   (c) 66.70% w/w
   (d) 40.74% w/w
4. Stratified cork and forked are the characteristic diagnostic features of:
   (a) Apocynaceae
   (b) Scrophulariaceae
   (c) Gentianaceae
   (d) Polygonaceae

5. Most accepted mechanism for developing bacterial resistance to sulphonamides is:
   (a) An increasing capacity to inactivate or destroy the drug
   (b) An alternative metabolic pathway for synthesis of an essential metabolite
   (c) An increasing product of drug antagonist
   (d) An alternation in enzyme that utilize PABA
6. C 17 α-β unsaturated lactone ring is a common feature in:
   (a) Digitalis and squill glycosides
   (b) Digitalis and strophantus glycosides
   (c) Digitalis and Senna glycosides
   (d) Digitalis and Amygdalin
7. For drying blood plasma the following techinique is used:
   (a) Spray drying
   (b) Freeze drying
   (c) Vacuum drying
   (d) Fluid bed drying
8. C3 O-glycoside digitoxin is used for:
   (a) Cardiac action
   (b) Hypotensive action
   (c) Precipitating steroids from solution
   (d) Precipitating Anthraquinone glycosides
9. Chemical name of amoxicillin is:
   (a) 6 - [D-(-) α – amino p-hydroxyacetamido] penicillanic acid
   (b) 4 - [D-(-) α – amino p-hydroxyacetamido] penicillanic acid
   (c) β - [Hydroxy analogue of Benzyl penicillin
   (d) α - Carboxy benzyl penicillin
10. The HLB value of sodium lauryl sulphate is:
   (a) 6.5 (b) 13.8 (c) 25.0 (d) 40.0
11. Claviceps purpurea yields after infecting ovaries of Graminaceous plants:
   (a) Digitoxin
   (b) Lysergic acid derivatives
   (c) Reserpine
   (d) Polypeptides
12. In the official bioassay of Erythromycin strain used is:
   (a) Bacillus subtilis
   (b) Micrococcus luteus
   (c) Salmonella typii
   (d) Escherichia coil
13. The disintegration time for sugar coated tablet is
   (a) 30 minutes (b) 45 minutes (c) 60 minutes (d) 75 minutes
14. Idioblasts of crystal layer of calcium oxalate is a diagnostic feature of
   (a) Hyoscyamus Niger leaves
   (b) Deadly nightshade leaves
   (c) Cinchona bark
   (d) Senna leaves
15. Antibiotic which interacts with calcium ion is:
   (a) Erythromycin (b) Streptomycin (c) Tetracycline (d) Ampicillin
16. Flow rate of granules from the hopper can be improved by adding;
   (a) Disintegrant (b) Glidant (c) Binder (d) Lubricant
17. Silicon carbide rod heated to a high temperature is used as a;
   (a) Detector in infra red spectroscope
   (b) Source of light in infra re spectroscope
   (c) Source of light fluorimetery
   (d) Detector in gas chromatography

18. Anomocytic type stomata are found in the leaves of:

(a) Fox glove
(b) Urginea maritime
(c) Cassia acutifolia
(d) Atropa belladonna

19. Liver microsomal enzymes are stimulated (enzymic induction) by:

(a) Cimetidine (b) Phenobarbitone (c) Procaine (d) Adrenaline

20. Enteric coating is achieved by using:

(a) Hydroxy propyl methyl cellulose
(b) Carboxy methyl cellulose
(c) Cellulose acetate Phthalate
(d) Povidone

21. Car price reaction is applied for the photometric evaluation of:

(a) Vitamin A
(b) Tocopherol
(c) Nandrolone Phenyl Propionate
(d) Benzodiazepine

22. Peroxide enzyme present in acacia is identified by:

(a) Borntragers test
(b) Molisch's test
(c) Oxidation and extraction in Benzene
(d) Oxidation and treatment with Benzididine

23. Prostaglandins are a group of related:

(a) Alcohols (b) Aldehydes (c) Fatty acid (d) Alkaloids

24. Licence to sell drug specified in schedule C and C1 is given from number

(a) -19 (b) -18 (c) -21 (d) -24

25. Liqiude paraffin exhibits:

(a) Plastic flow
(b) Newtonian flow
(c) Pseudoplastic flow
(d) Dilatant flow

26. Estrogenic and Progestrogenic combination mainly:

(a) Inhibits the ovulation
(b) Inhibits the implantation of the fertilized ovum
(c) Inhibits the fertilization of ovum
(d) Inhibits development of endometrium

27. More of earthy matter in a Rhizome is determine by:

(a) Total ash value
(b) The earthy material is separated and then weighed
(c) The Rhizome is washed in water and the in hydrochloric acid finally it is weighed
(d) Acid insoluble ash value

28. Lidocaine is synthesized from:

(a) 2 : 6-dimethyl-5-amino methyl benzene
(b) 2 : 6-dimethyl-5-nitro methyl benzene
(c) 2 : 6-xylidene
(d) 2-methyl-6-ethyl-5-amino methyl benzene

29. Sterilization temperature for aqueous solution in autoclave (Moist heat) is:

(a) 72°C (b) 121 °C (c) 147 °C (d) 160 °C

30. Following combination is suggested in the treatment of Leprosy:

(a) Dapsone + Ampicinllin + Clofazimine
(b) Dapsone + Clofazimine + Rifampin
(c) Dapsone + Erythromycin + Rifampin
(d) Dapsone + Teracycline + Streptomycine

31. The gummy nature Astragalus gummifer is depend on:

(a) More of Methoxly group of Bassorin (b) The carbohydrate content

(c) More of hydroxyl groups of the sugar moiety (d) More of protein contain of the drug

32. The vitamin administered with isoniazid to minimize its adverse reaction is

(a) Vitamin A (b) Pyridoxine (c) Biotin (d) Pantothenic acid

33. For the synthesis of Nitrofurantoin which one of the following combination of chemicals are used:

(a) 5-Nitro 2-furaldehyde and 2-amino hydantoin (b) 5-Nitro 2-furaldehyde and hydantoin

(c) 5-amino 2-furaldehyde and 2-amino hydantoin (d) 5-Nitro 2-furaldehyde and barbituric acid

34. To get the optimum optical density of the solution for 1 cm thick layer the concentration should be about:

(a) $10^{-4}$ mole/lit (b) $10^{-7}$ mole/lit (c) 0.1 gm/lit (d) 0.5 gm/lit

35. The sugar moiety of Digitails purpurea is:

(a) 2 : 6-deoxy allose (b) 2 : 6-dedoxy glucose

(c) 2 : 6-deoxy Rhamnose (d) 2 : 6-deoxy galactose

36. Additional of sodium chloride to sodium Oleate emulsion will:

(a) Stabilize emulsion (b) Destabilize emulsion

(c) Decrease the globule size of the emulsion (d) None of the above

37. Anti hypertensive drug inhibits the rennin angiotensin system is:

(a) Reserpine (b) Captopril (c) Methyl dopa (d) Propranalol

38. Acidity of Ascorbic acid is due to the presence of:

(a) Free carboxylic acid (b) A number of hydroxyl group

(c) Enolic groups (d) None of the above

39. Progesterone injection BP is a sterile solution in:

(a) Water (b) Ethyl oleate (c) Propylene glycol (d) Glycerol

40. Thiamine on treatment with sodium sulfite solution and sulfur dioxide yields:

(a) Pyrimidine and a thiazole derivative 

(b) Pyridine and thiazole derivative

(c) 2 : 3: 4-Thihydropyridine and Thiophene derivatives

(d) Pyrimidine and Thiophene derivatives.

## SECTION - II

## MATCH THE FOLLOWING

2.1. Identify the correct skeleton ring present in the following compounds from the ring system listed from A to E.

| | |
|---|---|
| 1. Riboflavin | (A) Perhydro cyclopentanophenanthrene |
| 2. Estrone | (B) 1 : 8 Naphthyridine |

3. Indomethacin
4. Nalidixic acid

(C) Indole
(D) Quinolin
(E) Iso alloxagine

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

2.2. Chosse the instrument or apparatus listed from A to E study the following:

1. Rheology of semi solids
2. Hardness of tablets
3. Particle size in suspension
4. Homogenization of emulsion

(A) Andreasen Pipette
(B) Monasanto tester
(C) Ultrasonifier
(D) Viscometer
(E) Zeta meter

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

2.3. Given below are some microscopical diagnostic of the drug listed in A to E. Chosse the appropriate one.

1. Unlignified septate fiber
2. Raphides of calcium oxalate embedded in mucilage
3. Anisocytic type of stomata
4. Star spots

(A) Rhubarb
(B) Solanaceous plant
(C) Ginger
(D) Squill
(E) Solanaceous plants

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

2.4. Chosse the most appropriate drug for the following

1. Potassium-sparing diuretic
2. Loop diuretic
3. Osmotic diuretic
4. Carbonic anhydrase inhibitor

(A) Spiranolactone
(B) Mannitol
(C) Furosemide
(D) Acetazolamide
(E) Aldosterone

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

2.5. Transmitted colour corresponds to various wave length ranges as listed under A to E. Choose the correct wave length for the colour.

1. Green
2. Orange
3. Yellow
4. Red

(A) 635-700
(B) 520-560
(C) 560-590
(D) 590-635
(E) 650-780

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

2.6. Given below equipment used in the manufacture of the following product A to E. Match them correctly.

1. Zanasi
2. HEPA Filter
3. Chilsonator
4. Accela cota

(A) Tablet granules
(B) Tablet coating
(C) Emulsion
(D) Injectable
(E) Capsules

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

2.7. Match the following with the schedules listed in A to E correctly.

1. Requirements of factory premises
2. Standards for disinfectant fluids
3. Life period of drugs
4. List of minimum equipment for the efficient running of Pharmacy

(A) P
(B) V
(C) N
(D) O
(E) M

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

2.8. Following are the reaction/tests observed in case of drugs listed in A to E. Match them correctly.

1. When fixed oil is exposed to U.V. rays, blue
2. On oxaidation with $KMnO_4$, Benzaldehyde
3. With ammoniacal Quaxom characteristic ballooned
4. Bark powder exhibits fluorescence with sulphuric acid

(A) Digoxin
(B) Benzoin
(C) Cinchona
(D) Palmolein
(E) Gossypium barbadance

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

2.9. Mechanism of Antitubercular action of the drug listed are indicate are in A to E. Choose the most appropriate one.

1. Ethambutol
2. P. A. S.
3. Cycloserine
4. Ethionamide

(A) Prevents the synthesis of protein and DNA and reduces R.N.A. synthesis.
(B) Interferes with several of protein synthesis
(C) Competitive inhibiton
(D) Inhibits peptide synthesis in Mycobacteria
(E) Inhibits DNA directed RNA Synthesis

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

2.10. Given below are the receptor and their antagonist (A to E). Match them correctly.

| | |
|---|---|
| 1. Histamine $H_2$ Receptor | (A) Atropine |
| 2. Muscarinic Receptor | (B) Ranitidine |
| 3. Adrenaline α receptor | (C) Pentolamine |
| 4. Adrenaline α recptor | (D) Metaraminol |
| | (E) Metoprolol |

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

2.11. Match the following regions in GIT with the pH levels indicated from A to E.

| | |
|---|---|
| 1. Mouth | (A) = 5.0 – 6.0 |
| 2. Stomach | (B) = 6.8 – 7.5 |
| 3. Deodenum | (C) = 6.8 – 7.0 |
| 4. Large intestine | (D) = 3.0 – 5.0 |
| | (E) = 1.5 – 3.0 |

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

2.12. Listed in A to E are some of the analytical constants. Match them correctly with the drugs given below.

| | |
|---|---|
| 1. A Leafy drug | (A) Total ash value |
| 2. A Bark | (B) Cineole content |
| 3. Eucalyptus oil | (C) Fibre length |
| 4. A fixed oil having more of unsaturated fatty acid glycerides | (D) Iodine value |
| | (E) Stomatal index |

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

2.13. Match the ingredients listed A to E with the purpose for which they are used in the formulations.

| | |
|---|---|
| 1. Film coating | (A) Sodium benzoate |
| 2. Syrups | (B) Ethyl cellulose |
| 3. Emulsification | (C) Eudragit |
| 4. Enteric coating | (D) Sucrose |
| | (E) Sodium oleate |

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

2.14. Match the biological listed under A to E for the following compounds:

| | |
|---|---|
| 1. 1 : 3-Propanediol, 2-methyl 2-propyl Carbamate | (A) Antimalarial |
| 2. 2 Chloro-10[3-(dimethylamino) propyl] Phenothiazine | (B) Bactericidal to anaerobic and Microerophilic organisms |
| 3. 5 Nitro-2-furaldeyde semicarbazone | (C) Antibacterial |
| 4. 2 Methyl-5-Nitro Imidazole –ethanol | (D) Relief of anxiety and tension |
| | (E) Tranquilizer |

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

2.15.Given below are the drug A to E and the ailments for which they are recommended. Match them correctly.

1. Parkinsonism
2. Hypertension
3. Nasal congestion
4. Myasthenia gravis

(A) Methyl dopa
(B) Levodopa with decarboxylase inhibitor
(C) Neostigmine
(D) Phenyl Propanolmine
(E) Ibuprofen

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

2.16.Given below are some of the drugs and their mode action in A to E. Match them correctly.

1. Hydralazine
2. Phenothiazine
3. Methylsergide
4. Tolazmide

(A) Vasodilator by direct action
(B) Inhibits the Vasoconstrictor and presor effect of 5 HT
(C) Antagonist D2 receptor of Dopamine
(D) Stimulate the islet tissue to secrete insulin
(E) Inhibiting the enzyme carbonic anhydrase

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

2.17.Given below in A to E are the names of drugs,. Appropriate tests are given below for drugs. Match them correctly.

1. Alcoholic solution of $\alpha$-naphthol and sulphuric acid E
2. Murexide test
3. Para-dimethylamino Benzaldehyde
4. Ninhydrine

(A) Atropine
(B) Resepine
(C) Caffeine
(D) Gelatin
(E) Triticum sativum powder

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

2.18.Given below in A to E are the names of instruments used for the determination of the following. Match them correctly

1. Particle volume
2. Presence of Foreign particle
3. Surface tension
4. Presence of polymorph

(A) Clarity apparatus
(B) Du Nouy ring
(C) Coulter counter
(D) Compactor
(E) Differential thermal calorimeter

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

2.19. Chosse the correct starting material listed from A to E for the synthesis of the following drugs.

| | |
|---|---|
| 1. Cortisone | (A) Diosgenin |
| 2. Progesterone | (B) β-ionone |
| 3. Testosterone | (C) Spirostanol |
| 4. Vitamin A | (D) Sarmentogenin |
| | (E) Anthracin |

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

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

2.20. Given below are the types of ointment bases. Match them with the correct ointments in A to E.

| | |
|---|---|
| 1. Absorption base | (A) Emulsifying ointmen |
| 2. Oleogenous base | (B) Hydrophilic ointment |
| 3. Emulsion base | (C) Oily cream |
| 4. Water soluble base | (D) Kaolin poultice |
| | (E) Simple ointment |

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

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

## PART - B

**N.B. :** ***Answer any twenty questions***

***If more than 20 questions are attempted only the first 20 will be considered.***

***Answer should not exceed 15 lines***

***All Question carry equal marks.***

3. Write the structure of the following indicating to what pharmacological category they belong
   (a) [1-dimethylamino-3-(4-Chlorophenyl 3.2-Pyridyl) Propane]
   (b) 2. Hydroxy methylene-17 β hydroxy -17-methyl 5 α-androstan 3-one
   (c) 2, 4-diamino-5-(3, 4, 5-trimethoxy phenyl) methyl pyridine.
4. (a) What is a barrier-layer cell ?
   (b) What are the different ways by which a molecule can absorb energy
5. Explain briefly the improved artificial method for producing Sclerotium.
6. Give the characteristics of the ideal preservative for Pharmaceutical preparation.
7. Give the principal of official assay of INH. Given Equations for the reactions involved.
8. Give the exact mode action of the following drugs:
   (a) Dicoumarol
   (b) Vinblastin
   (c) Valprolic acid

9. Give the mode of action of the following anti arrhythmic drugs:
   (a) Procainamide
   (b) Propranolol
   (c) Verapamil

10. Mention the various factors governing transdernal absorption of drugs.

11. (a) What is Hoffmann's exhaustive Methylaation ?
   (b) Show the complete step of reactions when Isoquinoline is subjected to Hoffmann's exhaustive Methylaation.

12. How the solid samples are prepared for the measurement of IR Absorption spectra? Why such a process is adopted

13. Name the various Insulin injections which are official in IP. Mention time onset and duration of action.

14. Give the names of the drugs, their source. And one chemical test for identification of any one important constituent in each of the following.
   (a) Drug obtained as latex after incisions on capsule.
   (b) Dried juice obtained from the leaves of plant belonging to Liliaceaefamily.
   (c) A seed having action on heart.

15. Enumerate the problems associated with use of plastic as a material for packaging Pharmaceuticals.

16. With the help of IR absorption readings how you can distinguish the following pairs of compounds. Predict the bands and interpret 

17. Define the following:
   (a) Liposome (b) Polymorphism (c) Prodrug

18. Name the various methods in the preparation of micro capsules and give only the process involved in the Cocaervation phase separation technique.

19. Give the mode of action of following antibiotics:
   (a) Ampicillin
   (b) Tetracycline
   (c) Erythromycin

20. What are the possible adulterants of fox glove leaves? How are they detected?

21. List the physic chemical factors affecting drug absorption.

22. Write the equation for the following synthesis:
   O-Chloro benzoic acid is condensed with 2, 3 Xylidine with the aid of Potassium carbonate and the resulting Potassium salt is treats with mineral acid.

23. Give the possible Drug/Drug interaction of the following combination:
    (a) Penicillin with probenecid
    (b) Lithium carbonate with Chlorthiazide
    (c) Levodopa with pyridoxine

24. (a) What concentration of Dextrose willbe used for the preparation of 100ml of Dextrose solution isotonic with blood serum. Molecular weight of Dextrose = 180
    (b) In what proportion 80% and 30% alcohol mixed to obtain 50% alcohol.

25. Give the structure and specification relationship in the following compounds:
    (a) Phenobarbital
    (b) Amobarbital
    (c) Cyclobarbital
    (d) Pentobarbital

26. (a) An alkaloid gave $E^{1}_{1}$ at 310 nm = 180. The Extinction of 0.003% solution in water at 310 nm was found 0.500 (1 cm cell). Calculate the percentage of alkaloid.
    (b) Find the HLB value of a center which has Saponificatio number 40.5 and acid number of the fatty acid 260.0

27. Name the endogenous neurohormones and give their structure.

***End of paper***