

Duration: 3 Hrs

Total marks: 75

- N.B.: 1. All questions are compulsory
2. Figures to right indicate full marks

Q. I Choose appropriate option for the following multiple choice-based questions. 20

- 1 Good Manufacturing Practice is a part of ICH _____ guidelines.
 - a. Quality
 - b. Safety
 - c. Efficacy
 - d. Multidisciplinary
- 2 Air pressure differentials in a clean room should be checked _____.
 - a. Daily
 - b. Yearly
 - c. Biannually
 - d. Weekly
- 3 _____ used to help to determine whether there is a correlation between two factors.
 - a. Fishbone diagram
 - b. Control charts
 - c. Scatter graphs
 - d. Check sheets
- 4 The _____ is responsible for the conduct of a nonclinical laboratory study.
 - a. Laboratory Technician
 - b. Scientist
 - c. Study Director
 - d. Quality Assurance Unit
- 5 The dispensing of raw materials from Stores must follow the principle of _____.
 - a. First Out Then In
 - b. Fast Out Fast In
 - c. Fast In Fast Out
 - d. First In First Out
- 6 Prospective validation is performed on at least _____ successive batches.
 - a. Ten
 - b. Three
 - c. Five
 - d. Two

- 7 _____ is the key element responsible for the organizational growth and outcomes.
- Personnel
 - Equipment
 - Premises
 - Layout
- 8 Complaint investigation is the responsibility of _____.
- Quality Control department
 - Production department
 - Quality Assurance department
 - Marketing department
- 9 ISO 14001 is for _____ management.
- Quality
 - Environmental
 - Resource
 - Organization
- 10 Service bay is maintained at _____
- Class 1000
 - Class 20
 - Class 10
 - Class 50
- 11 Grammage is used to determine the physical dimensions of the _____ material.
- Thermosetting plastic
 - Metal
 - Glass
 - Paper and paperboard
- 12 A _____ container is closed by fusion of the material of the container.
- Sealed
 - Light- resistant
 - Hermetically sealed
 - Well closed
- 13 In _____ purchasing, different departments purchase their requirement separately.
- Closed
 - Centralized
 - Decentralized
 - Limited

- 14 Folding endurance is performed for _____
- Carton
 - Closure
 - Carton
 - Paperboard
- 15 Calibration of an equipment should be performed using _____.
- Test sample
 - Certified Standards
 - Inhouse standards
 - Reference sample
- 16 Which of the following is an example of secondary packaging?
- Bottles
 - Barrel
 - Blister
 - Cartons
- 17 In the test for volatile sulphides in rubber closure, _____ paper is used.
- Litmus paper
 - Lead acetate paper
 - Starch paper
 - Mercuric chloride
- 18 _____ is at the apex of Quality Management System.
- Quality Records
 - Quality procedures
 - Quality Manual
 - Working instructions
- 19 Cleaning of the equipment is a part of _____.
- Predictive maintenance
 - Corrective maintenance
 - Curative maintenance
 - Periodic maintenance
- 20 The vital link between all elements of TQM is _____
- Leadership
 - Communication
 - Training
 - Recognition

Q. II Answer any two questions. (Any 2) 20

- 1 Define QbD. Elaborate on tools of QbD. Give the difference between QC and QA. 10
- 2 Discuss quality control tests for plastic containers and rubber closure. 10
- 3 Enlist the types of documents maintained in pharmaceutical company. Write in brief about master formula record. 10

Q. III Answer any seven questions (Any Seven) 35

- 1 What is Quality management System? Give the role of Quality Control and Quality Assurance departments in a Pharmaceutical Industry 5
- 2 Write in brief about disqualification of testing facilities. 5
- 3 Define and differentiate between Quality audit and Quality Review. 5
- 4 Enlist the benefits of ISO and explain the process of ISO registration. 5
- 5 Discuss the training and personal records with reference to GMP in a pharmaceutical industry 5
- 6 Define calibration. Elaborate on the process for calibration of the pH meter. 5
- 7 Discuss the steps involved in handling of complaints in a pharmaceutical company. 5
- 8 Explain the process of equipment selection and maintenance in the pharmaceutical manufacturing unit. 5
- 9 State the importance of inventory management. Discuss the Good warehousing practices in detail. 5

Time: 3 Hrs

Marks: 75

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Q. 1 MCQ

20 M

- 1) Vector is required in rDNA technology to
 - a) amplify the foreign gene
 - b) transfer a gene from animal to another
 - c) isolate the foreign gene
 - d) join the foreign gene
- 2) Salk polio vaccine is type of
 - a) Inactivated vaccine
 - b) Live attenuated vaccine
 - c) Recombinant DNA vaccine
 - d) Toxoid vaccine
- 3) Which of the following hypersensitivity occurs via IgE antibody?
 - a) Type I
 - b) Type II
 - c) Type III
 - d) Type IV
- 4) Restriction enzymes are used for
 - a) Cutting DNA
 - b) Joining genes
 - c) Isolation of proteins
 - d) Isolation of enzymes
- 5) Which of the following role is performed by a bacteriophage in transduction?
 - a) vector
 - b) donor
 - c) recipient
 - d) Eepisome
- 6) Enzyme immobilization is done
 - a) to reduce the activity of the enzyme
 - b) to protect the enzyme
 - c) to degrade the enzyme at a faster rate
 - d) to deactivate the enzyme
- 7) The extension temperature in the PCR is
 - a) 25⁰c
 - b) 44⁰c
 - c) 65⁰c
 - d) 72⁰c
- 8) In a Biosensor the bioreceptor cannot be _____
 - a) enzyme
 - b) cell
 - c) antigen
 - d) a non biochemical substance
- 9) Air-lift is a _____ type of fermentor.
 - a) Mechanically stirred
 - b) Forced convection
 - c) Pneumatic
 - d) Tray
- 10) Which of the following is not correct sentence about protein engineering
 - a) It is the study of structure of proteins
 - b) It is the study of amino acid sequence
 - c) It is the study of nucleotide sequence
 - d) It is the study of function of proteins
- 11) Function of MHC molecule is
 - a) to kill the antigen.
 - b) to produce antibodies against antigen.
 - c) to present the antigenic determinant peptide to immunological cells.
 - d) to neutralize the antigenic material

- 12) Active immunity is induced by
- a) Infection
 - b) Placental transfer of antibodies
 - c) injection of antibodies
 - d) Injection of gamma- globulins
- 13) Sera are _____ types of Immunity
- a) Naturally acquired active
 - b) Naturally acquired passive
 - c) Artificially acquired active
 - d) Artificially stimulated passive
- 14) Applications of southern blotting include
- a) RFLP and DNA Fingerprinting
 - b) Identification of proteins
 - c) Separation of amino-acids
 - d) Isolation of proteins
- 15) _____ mutants show a change in the surface structure and composition of the microbial cell.
- a) Metabolic mutants
 - b) Antigenic mutants
 - c) Regulatory mutant
 - d) Cryptic mutant
- 16) While naming the RE the first letter use of _____ name
- a) strain
 - b) Genus
 - c) Species
 - d) Scientist
- 17) Shelf life of Whole human blood is _____
- a) 3 days
 - b) 5 years
 - c) 3 months
 - d) 21 days
- 18) Microorganism used for the production of Vitamin B12 by fermentation method is
- a) Penicillium chrysogenum
 - b) Aspergillus niger
 - c) Pseudomonas denitrificans
 - d) Saccharomyces cerevisiae
- 19) _____ is used as a monitoring device in the fermenter to measure agitator speed.
- a) Flow meter
 - b) Rota meter
 - c) Pressure gauze
 - d) Tachometer
- 20) _____ prevents vortex formation in fermenter
- a) Baffles
 - b) Impellers
 - c) Propeller
 - d) Shaft

Q.2 Answer any two of the following

(10X2 =20 M)

- 1) Enlist and explain methods of Enzyme immobilization with suitable diagrams and examples.
- 2) Explain the detail process of insulin production by recombinant DNA technology
- 3) Define fermentation, draw a neat labeled diagram of the ideal fermentor and write a short note on Penicillin production by fermentation.

Q.3) Answer any seven out of nine of the following

(7X5=35 M)

- 1) Explain the method of production of Monoclonal antibodies and write its applications.
- 2) Explain in detail any one method of DNA sequencing
- 3) Write a note on transgenic plants
- 4) Draw and explain structure of MHC class-I and Class-II molecules.
- 5) What do you mean by Plasma Substitutes? enlist their properties.
- 6) Enlist the types of mutation and explain any one in detail.
- 7) Explain the process of production of Sera.
- 8) Differentiate between Humoral and Cellular immunity.
- 9) Define Biotransformation and Explain types of microbial biotransformation with suitable examples.

Time:3Hours

Marks:75

- N.B:**
1. All questions are compulsory
 2. Figures to right indicate full marks
 3. Draw structure where ever necessary

Q1. Answer the Following

20X1=20 M

1. Crop planning ensures
 - a. Regular supply to industry
 - b. Regular Pricing
 - c. Organic crop
 - d. Standardised crop
2. A method of agricultural production which avoids the use of synthetic products is called
 - a. Mass farming
 - b. Biological farming
 - c. Organic farming
 - d. Agro farming
3. Which of the following physician developed Homeopathy
 - a. Hippocrates
 - b. Galen
 - c. Dhanvantari
 - d. Samuel Hanneman
4. The wild growth of optunia is checked with Cochineal insect is _____ type of pest control
 - a. Physical
 - b. Chemical
 - c. Biological
 - d. Genetic
5. Which of the following is not true for Bhasma
 - a. It is obtained completely by drug incineration
 - b. it is amorphous smooth powder
 - c. it can be standardised
 - d. Bhasmas are Homeopathic preparations.
6. *Trigonella foenum graceum* and *Momordica charantia* are recommended as nutraceuticals for
 - a. Cardio vascular diseases
 - b. Irritable bowel syndrome
 - c. Diabetes
 - d. Hepatoprotective
7. Hypericum reacts with warfarin & produces
 - a. Decrease in anticoagulant effect
 - b. Increase in anticoagulant effect
 - c. Increase in RBC
 - d. Decrease of Platelets
8. Which of these is not commonly used as Nutraceutical?
 - a. Aloe
 - b. Vinca
 - c. Liquorice
 - d. Alfalfa

9. Stevia is an example of
a. Natural Colour
b. Natural Sweetner
c. Natural binder
d. viscosity building agent
10. Which of the following enzyme inhibitor is responsible for fairness activity of skin?
a. Tyrosinase
b. Amylase
c. Lipase
d. Protease
11. Abrasive effect of meswak is due to presence of
a. Silica
b. Tannins
c. Saponins
d. Resins
12. A natural surfactant which is also used as a skin softener is
a. Coco Betaine
b. Lawsone
c. Kava Kava
d. Amla
13. Which of the following is a Novel drug dosage form
a. Herbal sprinkles
b. Herbal Syrups
c. Phytosomes
d. Herbal Lozenges
14. The microbial toxin evaluation as per WHO guidelines includes
a. Mycotoxins
b. Endotoxins
c. Mycotoxins & Endotoxins
d. Microbial bioburden
15. Accelerated Stability testing is done to determine
a. Stability of the Herbal product
b. Stability of Active constituent in the product
c. The stress degradation pathway
d. Amount of excipients added to product
16. Biopiracy means
a. Unethical exploitation of Natural resources
b. Ethical exploitation of Natural resources
c. Experimentation
d. Innovation & discovery
17. Oranges from Nagpur represent ----- type of IPR
a. Geographical Indication
b. Trade mark
c. Patent
d. Copyright
18. Schedule I refers to
a. List of reference books
b. Poisonous plants
c. Labelling conditions
d. Expiry date
19. Sq ft area is required for Quality control of Herbal product manufacturing
a. 600
b. 1000
c. 500
d. 150
20. GMP for Indian system of Medicine is mentioned in
a. Schedule Z
b. Schedule T
c. Schedule A
d. Schedule M

Q.II Answer any Two of the following:

2X10=20M

1. Discuss different Colourants & Viscosity builders as raw materials used in herbal cosmetics.
2. Classify Nutraceuticals with suitable examples.
3. Explain Pest Management in Medicinal Plants.

Q.III Answer any seven of the Following

7X5=35M

1. What is Good agricultural Practices. How is Herb drug authentication achieved?
2. Explain preparation of Bhasma & Churna with suitable example.
3. Write a note on any two drugs used as nutraceuticals for Cancer.
4. Explain possible herbal-drug and herb food interaction with suitable example.
5. Write a short note on Ephedra & Ginseng.
6. Give sources & use of fixed oils & antioxidants in herbal cosmetics.
7. Define phytosome. Write a note on preparation and evaluation of phytosome .
8. Outline the different infrastructure requirements for Herbal drug manufacturing.
9. Write a note on geographical indications and Discuss the Patent case study of Curcuma.

Duration: 3hrs

Total Marks: 75

Note: All Questions are Compulsory.
Figures to the right indicate full marks.
Draw diagrams wherever required.
Use of Scientific calculator is permitted

- Q. 1 Choose the appropriate option for following multiple choice based questions. 20**
- 1 The use of pharmacokinetic principles in optimising the drug dosage to suit individual patient needs and achieving maximum therapeutic utility is called as _____ 1
- a clinical pharmacokinetics.
 - b dosage regimen
 - c individualization
 - d population pharmacokinetics
- 2 Select a passive absorption process 1
- a pore transport
 - b active transport
 - c pinocytosis
 - d phagocytosis
- 3 poorly developed BBB is observed in 1
- a infants
 - b adults of age more than 20 years
 - c elderly
 - d children at puberty
- 4 Unit of perfusion rate is 1
- a min/ml/ml
 - b ml/lit
 - c ml/min/ml
 - d mg.hr/lit
- 5 Carrier mediated absorption process can be described by 1
- a Fick's first law of diffusion
 - b Michaelis-Menten equation
 - c Noyes Whitney's equation
 - d Nernst and Bruner equation

- 6 Probenecid act as uricosuric agent as it 1
a inhibits glomerular filtration of uric acid
b competitively inhibit active secretion of uric acid
c has structural similarity with uric acid
d competitively inhibit active reabsorption of uric acid
- 7 Hepatic clearance is said to be perfusion rate limited, if 1
a it undergoes high metabolism
b it escapes metabolism
c it is metabolized to poor extent
d it shows intermediate metabolism rate
- 8 Select the dissolution apparatus working on sink condition 1
a paddle type
b basket type
c flow through cell
d paddle over disk
- 9 BCS class III drugs have 1
a high solubility, high permeability
b high solubility, low permeability
c low solubility, high permeability
d low solubility, low permeability
- 10 _____ form of drug will be comparatively more soluble. 1
a crystalline
b amorphous
c hydrate
d solvate
- 11 Select the Pharmacodynamic method of studying bioavailability 1
a acute pharmacologic response
b plasma-level time studies
c urinary excretion studies
d stool excretion studies
- 12 What is the equation of bioavailable fraction 1
a bioavailable dose/Administered dose
b 1/Administered dose
c 1/Bioavailable dose
d administered dose/Bioavailable dose

- 13 Elimination half-life is time taken for half of the amount of drug to get eliminated from 1
a body
b liver
c kidney
d organ
- 14 Name the model in which compartments are joined in series 1
a mammillary model
b distributed parameter model
c physiologic model
d catenary model
- 15 In case of multiple IV injections, the ratio of steady state concentration to initial concentration is called as 1
a absorption factor
b maxima
c minima
d accumulation factor
- 16 Select the cause for nonlinearity in drug distribution 1
a saturation of binding sites on plasma proteins
b when a presystemic gut wall or hepatic metabolism attains saturation
c when absorption involves carrier-mediated transport systems
d when absorption is solubility or dissolution rate-limited
- 17 Induction of drug metabolism leads to _____ in half-life of drug 1
a unpredictable
b increase
c decrease
d remain constant
- 18 While designing dosage regimen for narrow therapeutic index drug, the preferred method is 1
a administered twice a day
b small doses administered at frequent intervals
c larger doses administered at relatively longer intervals
d small doses administered at longer interval

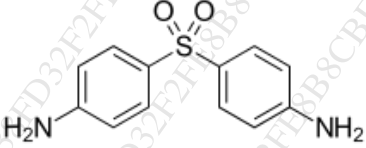
- 19 The word “open” in the one compartment open model means 1
- a the input and output are unidirectional
 - b not applicable for administration of a single dose of a drug
 - c drug concentration in plasma is equal to that in other body tissues
 - d easy absorption
- 20 Mechanism of drug absorption in rectal route is 1
- a passive diffusion
 - b pore transport
 - c endocytosis
 - d carrier mediated transport
- Q.II a Attempt any 2 2x10**
- 1 A drug following one compartment kinetics, after IV bolus administration of 250mg gave instantaneous plasma concentration of 34 mg/L. If half life of drug is 3.5 hrs, calculate, 2
- i) Elimination rate constant and apparent volume of distribution 2
 - ii) Total systemic clearance and AUC (Zero to infinity) 2
 - iii) Plasma concentration after 1.5 hrs of administration. 2
 - iv) Time required to eliminate 45% of dose 2
 - v) What would be the new C_0 achieved if dose is changed to 400mg 2
- 2 Write a note on the concept of loading dose and maintenance dose. 10
- 3 Explain Carrier mediated absorption mechanism. 10
- Q.II b Attempt any 7 7x5**
- 1 Write a note on gastric emptying. 5
 - 2 Write assumptions of one compartment open model. 5
 - 3 Explain the effect of active tubular reabsorption on the excretion of drugs with a suitable example. 5
 - 4 Explain effect of compression force and method of granulation on drug absorption. 5
 - 5 Discuss displacement interaction with any one suitable example. 5
 - 6 Enlist various methods of measurement of bioavailability, discuss any one in detail. 5
 - 7 Explain enzyme inhibition. 5
 - 8 Explain how different parameters affect dissolution with the help of Noyes Whitney’s equation. 5
 - 9 Explain absorption and metabolism related causes for nonlinearity in pharmacokinetics. 5

Time: 3 Hrs

Marks: 75

Q.I Answer the following Multiple Choice Questions. Select the most appropriate option for each statement. 20M

Sr No	Questions	Options
1	What crucial feature of a penicillin is involved in its mechanism of action?	a Carboxylic acid
		b β -lactam ring
		c Acyl side chain
		d Thiazolidine ring
2	Which of the following is not the degradation product of penicillin?	a Penillic acid
		b Penicilloic acid
		c Penicillin V
3	Identify the target for clavulanic acid?	a The transpeptidase enzyme
		b L-ala racemase
		c β -lactamase
4	In tetracycline, the pka value of conjugated triene system is in the range of	a 7.2-7.8
		b 9.1-9.7
		c 2.8-3.3
		d 6.4-6.8
5	To which class does the following drug belong	a Cephalosporins
		b Aminoglycoside
		c Tetracycline
		d Monobactams
6	Endoperoxide 1, 2, 4-trioxane ring is responsible for the antimalarial action of	a Artemether
		b Primaquine
		c Pyrimethamine
		d Quinacrine
7	Identify the following structure	a Ciprofloxacin
		b Nalidixic Acid
		c Lomefloxacin
		d Ofloxacin
8	Two pharmacologically active agents coupled together are called as	a Mutual prodrug
		b Bioprecursor

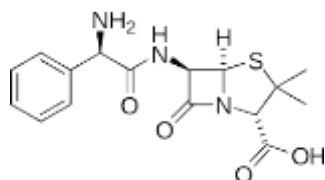
		c	Polymeric prodrug
		d	Biotransformation
9	Identify the enantiomer of ethambutol which shows selective & powerful antitubercular activity	a	S, R (+) enantiomer
		b	R, S (+) enantiomer
		c	S, S (+) enantiomer
		d	R, R (-) enantiomer
10	N-acetyl isoniazid is the major metabolite of isoniazid produced by acetylation by	a	Amidase
		b	N-acetyl transferase
		c	Esterase
		d	Hydrolysis
11antibiotic was obtained by fermentation from cultures of <i>Streptomyces mediterranei</i>	a	Rifabutin
		b	Cycloserine
		c	Isoniazid
		d	Rifampicin
12	Which one of the following antiviral agent exhibits the greatest selective toxicity for the invading virus?	a	Amantadine
		b	Acyclovir
		c	Rimantadine
		d	Zidovudine
13	Identify an inhibitor of viral protease	a	Saquinavir
		b	Acyclovir
		c	Zalcitabine
		d	Lamivudine
14	Identify antifungal antibiotic with heterocyclic benzofuran moiety	a	Amphotericin-B
		b	Nystatin
		c	Natamycin
		d	Griseofulvin
15	Drug of choice for the treatment of filariasis is	a	Diethyl carbamazine(DEC)
		b	Praziquantel
		c	Niclosamide
		d	Mebendazole
16	Identify the given drug	a	Dapsone
		b	Sulfanilamide
		c	Sulfamethoxazole
		d	sulfone
17	Sulfonamide used for burn therapy	a	Sulfamethoxazole
		b	Sulfacetamide
		c	Silver sulfadiazine
		d	Sulfasalazine

18	The term used for drug discovered by accident or conventional approach	a	Drug discovery by serendipity
		b	Rational drug design
		c	HTS
		d	CADD
19	Lipinki's rule of 5 is used for	a	Docking
		b	Drug likeness
		c	Dynamic simulation
		d	Similarity search
20	Identify the QSAR parameter, which is a measure of electron withdrawing or electron donating ability of a substituent.	a	Hammett constant
		b	Taft constant
		c	Molar refractivity
		d	Partition coefficient

Q.II Attempt ANY TWO of the following. Draw structures wherever required. 20M

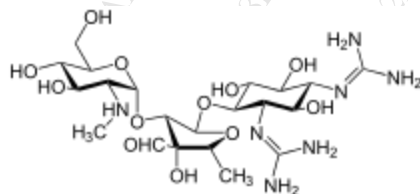
Q1. a. Identify following drug and explain acid stability in detail of the same.

4M



b. Identify the class of following antibiotic and write three structural features for the same.

4M



c. Explain two structural features of macrolide antibiotic and write names of two antibiotics from this class.

2M

Q2.

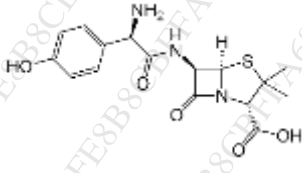
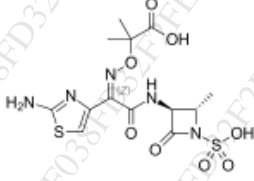
a. Discuss classification of cephalosporins with examples for each. Write appropriate structures wherever needed.

4M

b. Match the following pairs

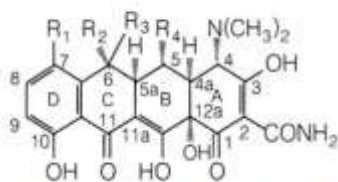
4M

Sr No.	Name	Structure	Mechanism of action
1	a. Aztreonam		x. Inhibition of mucopeptide synthesis
		i.	

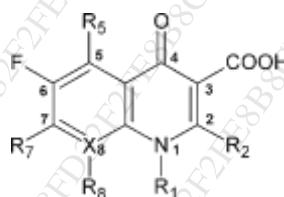
2	b. Sulbactam	<p>ii.</p> 	y. Inhibition of β -lactamase
		<p>iii.</p> 	z. Inhibition of transpeptidase

c. Explain any one DHFR inhibitor with structure and mechanism of action. **2M**

Q. 3. a. Write degradation reaction and products for following scaffold in acidic as well as basic medium **4M**



b. With reference to the following scaffold, answer the following questions: **4M**



By substituting appropriate groups at positions R7 and R1 explain effects on antibacterial activity in detail along with respective structure. **(One for each.)**

c. Explain importance of Prodrugs in biological activity of the drugs. Write example of carrier linked prodrug with it's use. **2M**

Q III Answer Any 7 of the following questions: (35 M)

Q1. Match the following. (5M)

Generic name	Chemical class	Mechanism of action
Ethionamide	an aminoglycoside antibiotic	blocking the ability of 30S ribosomal subunits to make proteins
PAS	An antibiotic	Competitive inhibitor of PABA
Pyrazinamide	Salicylic acid derivative	D-alanyl- ligase inhibitor
Streptomycin	Thioamide analogue of isoniazid	Mycolic acid synthesis inhibitor
Cycloserine	Pyrazine derivative	FASI (Fatty acid synthase inhibitor)

Q2.A. Give the synthetic scheme for synthesis of Ciprofloxacin. (4M)

B. Write name and structure of fluoroquinolone that reduces phototoxicity. (1M)

Q3.A. Give the synthetic scheme for acyclovir mentioning reagents & reaction conditions. (4M)

B. Write MOA of Ribavirin. (1M)

Q4. Classify antifungal agents given below based on chemistry, explain MOA in brief with structure(any two): Griseofulvin, Clotrimazole, Tolnaftate (5M)

Q5.A. Give the synthetic scheme for Dapsone mentioning reagents & reaction conditions. (3M)

B. Name the target for sulphonamides drugs. Write the structure of sulphonamides used for ulcerative colitis. (2M)

Q6. Write class, Structure, and mechanism for the following.(Any Two) (5M)

- i. Sulphamethoxazole
- ii. Diloxanide
- iii. Mebendazole

Q7. A. Indicate to which mechanistic & therapeutic class the following drugs belongs to (Structures to be written) (5M)

- a) Chloramphenicol
- b) Diethyl carbamazine citrate

Q8. Enlist Physicochemical parameters used in QSAR? Explain application of any two parameters. (5M)

Q9. Define combinatorial chemistry & write its applications.Explain solution phase synthesis. (5M)

Time: 3 Hours

Total Marks: (75)

Q I. Choose the ONE best answer and write it down

20 Marks

1. Montelukast inhibits _____ receptors.

- A. Histamine
- B. Leukotriene
- C. PAF
- D. Bradykinin

2. The first choice drug for nonsteroidal antiinflammatory drug-induced gastric ulcer is:

- A. Ranitidine
- B. Omeprazole
- C. Sucralfate
- D. Misoprostol

3. Which of the following is an example of Osmotic Purgative?

- A. Psyllium
- B. Phenolphthalein
- C. Lactulose
- D. Ispaghula

4. The following 5HT₃ antagonist is used as anti-emetic?

- A. Hyoscine
- B. Ondansetron
- C. Haloperidol
- D. Chlorpromazine

5 Cotrimoxazole is a combination of:

- A. Sulphadoxine + Trimethoprim
- B. Sulphamethoxazole + Pyrimethamine
- C. Sulphamethoxazole + Trimethoprim
- D. Sulphamethoxazole + Ictaprim

6. Which of the following antibiotic may cause tooth discoloration as a side effect?

- A. Tetracycline
- B. Penicillin
- C. Sulphonamides
- D. Macrolides

7. Which of the following drugs is penicillinase resistant:

- A. Oxacillin
- B. Amoxicillin
- C. Bicillin-5
- D. Penicillin G

- 8. Cephalosporins are drugs of choice for treatment of:**
- A. Gram-positive microorganism infections
 - B. Gram-negative microorganism infections
 - C. Gram-negative and gram-positive microorganism infections, if penicillins have no effect
 - D. Only bacteroides infections
- 9. The anthelmintic drug piperazine:**
- A. Inhibits tubulin polymerization
 - B. Acts as a GABA agonist to paralyze the worms
 - C. Inhibits glucose uptake
 - D. Uncouples oxidative phosphorylation
- 10. A side effect of ethambutol is**
- A. Neurotoxicity
 - B. Nausea, vomiting and diarrhea
 - C. Hypersensitivity and urticarial
 - D. Loss of color vision due to optic neuritis
- 11. Which of the following is Phenazine derivative used for the treatment of leprosy?:**
- A. Clofazimine
 - B. Dapsone
 - C. Ethionamide
 - D. Rifamycin
- 12. Nevirapine belongs to _____:**
- A. Non-Nucleoside reverse transcriptase inhibitor
 - B. Nucleoside reverse transcriptase inhibitor
 - C. Protease Inhibitor
 - D. Non-selective antiviral drug
- 13. The antineoplastic agent that is classified as an alkylating agent is:**
- A. Vincristine
 - B. Tamoxifen
 - C. Bleomycin
 - D. Busulfan
- 14. Sirolimus is inhibitor of _____:**
- A. Calcineurin
 - B. Choline Esterase
 - C. m-TOR
 - D. Protease
- 15. Which of the following antineoplastic drug is a mitotic inhibitor and causes metaphase arrest?**
- A. Busulfan
 - B. Vincristine
 - C. Cytarabine
 - D. Procarbazine

16. The BCG vaccine contains:

- A. Attenuated culture of *Mycobacterium tuberculosis*
- B. Live culture of *Mycobacterium leprae*
- C. Attenuated culture of *Mycobacterium bovis*
- D. Killed culture of *Mycobacterium tuberculosis*

17. A drug used for the treatment of organophosphorus poisoning is:

- A. Parathion
- B. Malathion
- C. Pralidoxime
- D. Phenytoin

18. Melatonin plays a role in:

- A. Sleep cycle
- B. Hunger
- C. Digestion
- D. Growth

19. Which of the following toxicity can occur due to single exposure?

- A. Acute toxicity
- B. Sub-acute toxicity
- C. Sub-Chronic toxicity
- D. Chronic toxicity

20. A selective antidote for organophosphate poisoning is

- A. Fentanyl
- B. Pralidoxime
- C. Codeine
- D. Methadone

Q.II Answer ANY TWO of the following

20 M

1. Classify anti-ulcer drugs with examples. Explain the detailed pharmacology of proton pump inhibitors.
2. Classify penicillins with examples. Explain the mechanism of action of beta lactam antibiotics and add a short note on resistance development against beta lactam antibiotics.
3. Write a short note on treatment of amoebiasis.

Q.III Answer ANY SEVEN of the following

35 M

1. Explain any two classes of drugs used in the treatment of inflammatory bowel disease
2. Write a short note on bulk laxatives.
3. Write a short note on the mechanism of action and adverse effects of sulphonamides.
4. Write a note on the mechanism of action, adverse effects and uses of 4-aminoquinoline drugs.
5. Write a note on the mechanism of action, adverse effects and uses of rifampin.
6. Classify anticancer agents with two examples of each class.
7. Write a note on Calcineurin inhibitors.
8. Write a short note on genotoxicity.
9. Describe the symptoms and management of lead poisoning.
