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**B. Pharmacy (Semester - II) (CBCS) Examination:
October/November - 2025
Human Anatomy and Physiology - II (801201)**

Day & Date: Monday, 18-05-2026
Time: 10:30 AM To 01:30 PM

Max. Marks: 75

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Q.1 Multiple choice questions.

20

- 1) _____ neuroglial cell is responsible for producing the myelin sheath in the central nervous system.

a) Schwann cells	b) Microglia
c) Oligodendrocyte	d) Astrocytes

- 2) The junction between two neurons where a nerve impulse is transmitted is called _____.

a) Receptor	b) Synapse
c) Neuroglia	d) Axon

- 3) The process of converting food into simpler substances that can be absorbed by the body is known as _____.

a) Ingestion	b) Digestion
c) Absorption	d) Excretion

- 4) The finger-like projections in the small intestine that increase the surface area for absorption of nutrients are called as _____.

a) Rugae	b) Alveoli
c) Villi	d) Cilia

- 5) _____ part of the respiratory system is the site of gas exchange.

a) Bronchi	b) Trachea
c) Alveoli	d) Pharynx

- 6) The functional unit of the kidney, responsible for filtering blood and forming urine, is the _____.

a) Renal tubule	b) Glomerulus
c) Nephron	d) Renal medulla

- 7) The reflex responsible for urination is called _____ reflex.

a) Micturition	b) Patellar
c) Stretch	d) Withdrawal

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**B. Pharmacy (Semester - II) (CBCS) Examination:
October/November - 2025
Pharmaceutical Organic Chemistry - I (801203)**

Day & Date: Wednesday, 20-05-2026
Time: 10:30 AM To 01:30 PM

Max. Marks: 75

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Q.1 Multiple choice questions.**20**

- 1) The compound that does not react with Hinsberg's reagent is _____.
 - a) Methylamine
 - b) Dimethylamine
 - c) Trimethylamine
 - d) Ethylamine

- 2) Cyclic compounds which contain at least one hetero atom other than carbon are called _____ compounds.
 - a) Aliphatic
 - b) Aromatic
 - c) Heterocyclic
 - d) Alicyclic

- 3) Alkanes are also called as _____.
 - a) Olefins
 - b) Paraffins
 - c) Allenes
 - d) None of these

- 4) Select correct structure of 2-propanol _____.
 - a) $(\text{CH}_3)_3\text{C-OH}$
 - b) $(\text{CH}_3)_2\text{CH-OH}$
 - c) $\text{CH}_3\text{CH}_2\text{CH}_2\text{-OH}$
 - d) None of these

- 5) The order of stability of Free radicals is _____.
 - a) Tertiary > secondary > primary
 - b) Primary > secondary > tertiary
 - c) Secondary > primary > tertiary
 - d) None of these

- 6) Methyl magnesium bromide on hydrolysis with water gives _____.
 - a) Methane
 - b) Ethene
 - c) Propane
 - d) None of these

- 7) The carbon atom involved in the double bond of an alkene are _____.
 - a) SP hybridized
 - b) SP^2 hybridised
 - c) SP^3 hybridised
 - d) None of these

- 8) 1- Butyne on reduction with Pd/CaCO₃, quinoline (Lindlar's catalyst) gives _____.
 - a) 1-Butene
 - b) 2-Butene
 - c) 2-Methyl propene
 - d) 2-Butanol

- 9) 1,3-Butadiene react with HBr to at low temp. gives _____.
a) 3-bromo 1-butene b) 4-bromo 1-butene
c) 1-bromo 2-butene d) None of these
- 10) Which one of the following is not associated with SN2 mechanism _____.
a) Inversion Configuration
b) 2nd order kinetic
c) Tertiary alkyl halides
d) Change of hybridization from SP3 to SP2 in transition state
- 11) Aldol compound consist of _____.
a) Aldehyde group b) Hydroxyl group
c) Carboxylic group d) Both a & b
- 12) Ethyl alcohol can react with Conc. H2SO4 to give _____.
a) Ethylene b) Diethyl ether
c) Ethyl hydrogen sulphate d) All of these
- 13) Which of the following compound will not be easily oxidised?
a) 1^o Alcohol b) 2^o Alcohol
c) 3^o Alcohol d) Aldehyde
- 14) Which of the following don't give cannizzare reaction _____.
a) Formaldehyde b) Acetaldehyde
c) Benzaldehyde d) both a & b
- 15) Hell volhard zelinsky reaction is _____.
a) Formation of anhydrides b) Formation of esters
c) Reduction d) Halogenations
- 16) Which of the following is formed when an alkyl primary amine reacts with nitrous acid?
a) Alkyl nitrite b) Secondary amine
c) Nitroalkane d) Alcohol
- 17) Electron releasing alkyl group _____ the acidity.
a) Increase b) Decrease
c) remains same d) None
- 18) The reaction of ammonia with a large excess of CH3Cl will give mainly _____.
a) (CH3)3N b) (CH3)4N+Cl-
c) CH3NH2 d) (CH3)2NH
- 19) Which of the following substance can produce ketone _____.
a) Secondary alcohol b) Calcium acetate
c) Propene d) All of these
- 20) Which substance is used to convert alcohol to alkyl halide?
a) SOCl2 b) PCl3
c) HCl+ZnCl2 d) All of these

Q.2 Answer the following questions. (Any Seven)

35

- a) How will you prepare of alcohol?
- b) Write any five chemical reactions of 1, 3-butadiene.
- c) Write in detail anti -Markonikiff rule.
- d) Give the difference between E1 and E2 reaction.
- e) Explain the Acidity of carboxylic acid with special emphasis on effect of substituent on their acidity.
- f) How will you prepare primary amine?
- g) Write structure and uses of salicylic acid and Chloroform.
- h) Explain in detail Halogenation reaction with its mechanism.
- i) Write Chemical reactions of ketone.

Q.3 Answer the following questions. (Any Two)

20

- a) Explain in detail SN2 reaction. Write factors affecting on it.
- b) Explain in detail following reaction with its mechanism.
 - i) Aldol condensation
 - ii) Cannizzaro reaction
- c) Write any five synthetic and chemical reaction of alkane.

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**B. Pharmacy (Semester - II) (CBCS) Examination:
October/November - 2025
Biochemistry (801205)**

Day & Date: Friday, 22-05-2026
Time: 10:30 AM To 01:30 PM

Max. Marks: 75

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Q.1 Multiple choice questions.**20**

- 1) _____ is the intermediate produced in tyrosine metabolism.
 - a) Homogentisate
 - b) Phenylalanine
 - c) Glucose
 - d) Phenylketourea

- 2) _____ is a nonessential amino acid.
 - a) Cystein
 - b) Tyrosin
 - c) Serine
 - d) All of the above

- 3) Equation of relationship between the change in free energy, enthalpy & entropy is _____.
 - a) $\Delta G = \Delta H - T\Delta S$
 - b) $\Delta G = T\Delta S + \Delta H$
 - c) $\Delta G = T\Delta S - \Delta H$
 - d) $\Delta G = \Delta H + T\Delta F$

- 4) _____ Is a Non-protein, organic, low mole weight dialysable substance associated with enzyme function.
 - a) Cofactor
 - b) Apoenzyme
 - c) Isoenzyme
 - d) Co-enzyme

- 5) HMG CoA lyase cleaves HMG CoA to produce _____.
 - a) Acetoacetate
 - b) Acetone
 - c) Acetyl CoA
 - d) Both a & c

- 6) Which of the following are non reducing sugar?
 - a) Sucrose
 - b) Starch
 - c) Both a & b
 - d) Glucose

- 7) _____ is used to keep two strands of DNA separate & provide template for new DNA synthesis.
 - a) Helicases
 - b) DNA polymerase
 - c) SSB protein
 - d) RNA primer

- 8) Which of the following is the general qualitative test for carbohydrate is carried out?
 - a) Benedicts
 - b) Fehling's
 - c) Molisch
 - d) Tommer's

Q.2 Answer the following questions. (Any Seven)**35**

- a) Define and classify Carbohydrate. Draw the structures of Glucose & Fructose.
- b) Write a note on disorders of lipid metabolism.
- c) Write a note on enzyme inhibition. Discuss Michaelis-Menten Equation.
- d) Discuss Oxidative Phosphorylation with its mechanism.
- e) Write on types of bioenergetics reactions. Write on ATP with its structure.
- f) Define nucleic acids. Give its types. Write a note on nitrogen bases.
- g) What is RNA. Give its types. Differentiate between RNA & DNA.
- h) Write a note Ketoacidosis.
- i) Discuss on DNA double helical structure.

Q.3 Long Answers. (Any Two)**20**

- a) Elaborate on TCA cycle & Urea cycle.
- b) Discuss in detail on protein biosynthesis.
- c) Elaborate on metabolism of fatty acid by beta oxidation.

- 9) Which of the following bacteria can cause peptic ulcer?
a) *Pseudomonas aerogenosa* b) *Echrechia coli*
c) *Helicobacter pylori* d) *Salmonella pylori*
- 10) Which of the following type of Hepatitis is spread by faeco-oral route?
a) Hepatitis A b) Hepatitis B
c) Hepatitis C d) Hepatitis D
- 11) Rheumatoid factor (Anti-IgG antibody) in Rheumatoid arthritis is released by _____.
a) B-Cells b) T-Cells
c) Cartilage d) Endothelial cells
- 12) Spread of tumour to distant tissues by invasion is termed as _____.
a) Metaplasia b) Dysplasia
c) Metastasis d) Oncogenesis
- 13) The group protein on HIV responsible for selective tropism to CD4+ molecule is _____.
a) gp 41 b) gp 120
c) CCR d) RT
- 14) The causative organism for syphilis is _____.
a) *Salmonella typhi* b) *Vibrio cholera*
c) *Tropodema pallidum* d) *Clostridium tetani*
- 15) Condensation and clumping of nucleus is known as _____.
a) Pyknosis b) Karyorrhesis
c) Karyolysis d) Apoptosis
- 16) Which of the following is a cell derived mediator of inflammation?
a) TNF- α b) IL-1
c) Histamine d) All of the above
- 17) Which of the following is/are the compensatory mechanism(s) to maintain cardiac output?
a) Activation of Renin-Angiotensin- Aldosterone mechanism
b) Decreased Atrial natriuretic peptide secretion
c) Cardiac atrophy
d) All of the above
- 18) Extrinsic asthma is also known as _____.
a) Allergic asthma b) Idiosyncratic asthma
c) Non-atopic asthma d) None of the above
- 19) Which of the following is a sexually transmitted disease?
a) Typhoid b) Gonorrhoea
c) Diptheria d) Malaria

- 20) *S.typhi* is spread by _____.
- a) Air
 - b) Water
 - c) Mosquito
 - d) Sexual contact

Q.2 Answer the following questions. (Any Seven) 35

- a) Define Cell Injury. Enlist its etiological factors. Add a note on hypoxia and cell injury.
- b) Classify Osteoarthritis. Describe the gross anatomical changes during osteoarthritis.
- c) Distinguish between Hepatitis A and Hepatitis B.
- d) Describe the causes and clinical features of Acute Renal Failure.
- e) Classify anemia. Add a note on pernicious anemia.
- f) Distinguish between gastric and duodenal ulcers.
- g) Describe the symptoms and clinical manifestations of AIDS.
- h) Define Chronic bronchitis and Bronchial asthma. Write a note on types of bronchial asthma.
- i) Describe the mechanism of carcinogenesis.

Q.3 Answer the following questions. (Any Two) 20

- a) Classify Epilepsy. Write a detailed note etiopathogenesis of Epilepsy.
- b) What is Diabetes mellitus? Write a note on its types, symptoms and clinical complications.
- c) Define and classify hypertension. Describe its causes, clinical manifestations and complications.

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**B. Pharmacy (Semester - I) (CBCS) Examination: March/April – 2026
Human Anatomy and Physiology - I (801101)**

Day & Date: Monday, 04-05-2026
Time: 10:30 AM To 01:30 PM

Max. Marks: 75

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Q.1 Multiple choice questions.**20**

- 1) Which of the following cell organelle is called as suicidal sac?
 - a) Mitochondria
 - b) Lysozyme
 - c) Lysosome
 - d) Ribosome
- 2) Which of the following layer in skin contain stem cells capable of mitosis?
 - a) Stratum basale
 - b) Stratum corneum
 - c) Stratum granulosum
 - d) Stratum spinosum
- 3) The most abundant protein in plasma is _____.
 - a) Globulin
 - b) Fibrinogen
 - c) Albumin
 - d) Cysteine
- 4) Which of the following transport is a carrier mediated transport?
 - a) Passive diffusion
 - b) Facilitated diffusion
 - c) Ion pair transport
 - d) Phagocytosis
- 5) The human body consists of _____ bones.
 - a) 206
 - b) 216
 - c) 602
 - d) 620
- 6) Granulocytes are derived from _____.
 - a) Monoblast
 - b) Myelocytes
 - c) Myeloblast
 - d) Megakaryoblast
- 7) Which of the following provides smooth surfaces for joint movements and flexibility?
 - a) Hyaline cartilage
 - b) Elastic cartilage
 - c) Adipose tissues
 - d) Reticular connective tissues
- 8) A lubricating fluid that reduces friction between bones is _____.
 - a) Umbilical fluid
 - b) Synovial fluid
 - c) Peritoneal fluid
 - d) Cerebrospinal fluid
- 9) The largest lymphatic organ is _____.
 - a) Lymph node
 - b) Thymus gland
 - c) Spleen
 - d) Liver

Q.2 Answer the following questions. (Any Seven)**35**

- a)** Write a note on principles and types of cell communications.
- b)** Draw a neat labeled diagram of skin. Enlist its functions
- c)** Write a note on physiology of olfactory and gustatory sensation
- d)** Enlist basic life processes. Write a note on homeostasis.
- e)** Draw a neat labeled diagram of eye.
- f)** Give functions of lymphatic system. Describe the anatomy of lymph node.
- g)** Distinguish between principal actions of Sympathetic and Parasympathetic Nervous Systems.
- h)** Define:
 - i) Stroke Volume
 - ii) Heart Rate
 - iii) Cardiac Output
 - iv) Blood Pressure
 - v) Mean arterial Blood Pressure
- i)** With the help of neat, labeled diagrams, describe the anatomy of various types of epithelial tissues.

Q.3 Answer the following questions. (Any Two)**20**

- a)** Describe anatomy of heart in details. Add a note on systemic and pulmonary circulation.
- b)** Explain the sliding filament theory of skeletal muscle contraction.
- c)** Write a note on blood grouping system. Add a note on erythroblastosis fetalis.

Q.2 Answer the following questions. (Any Seven)**35**

- a) Write in detail classification of error.
- b) Write the principle and application of Cerimetry and Dichrometry.
- c) Explain construction and working of Dropping Mercury electrode. Write application of polarography.
- d) Explain in detail any two potentiometer electrode.
- e) Write a note on strong acid and strong base neutralization curve.
- f) Write the type of complexometric titration with example.
- g) Write a note on Fajan's method and assay of sodium chloride.
- h) Write in detail limit test for Arsenic.
- i) Enlist of theories of acid base indicators and write Ostwalds's theory in detail.

Q.3 Answer the following questions. (Any Two)**20**

- a) Define pharmaceutical analysis, molality, precision, accuracy, error. Explain the different analytical techniques.
- b) Discuss the various sources of impurities in pharmaceutical substances.
- c) Enlist steps involved in gravimetry. Explain in detail steps involved in gravimetry.

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**B. Pharmacy (Semester - I) (CBCS) Examination: March/April – 2026
Pharmaceutics - I (801105)**

Day & Date: Friday, 08-05-2026
Time: 10:30 AM To 01:30 PM

Max. Marks: 75

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Q.1 Multiple choice questions.**20**

- 1) Paediatric doses are not calculated on the basis of _____.
 - a) Body surface area
 - b) Age
 - c) Solubility of drug
 - d) Body weight

- 2) _____ is the example of suspending agent.
 - a) Methyl cellulose
 - b) NaCl
 - c) Glucose
 - d) All of the above

- 3) _____ means transport of molecules across epithelial cellular membrane.
 - a) Trans-cellular
 - b) Para-cellular
 - c) Trans-follicular
 - d) None of the above

- 4) 160 fluid ounces is equal to _____ gallon.
 - a) 2
 - b) 3
 - c) 4
 - d) 1

- 5) How many grams of dextrose required to prepare 1000 ml of 5%w/v solution _____.
 - a) 50 gms
 - b) 20 gms
 - c) 25 gms
 - d) 30 grms

- 6) Which one of the following is example of physical incompatibility _____.
 - a) Insolubility
 - b) Immiscibility
 - c) Liquefaction
 - d) All of the above

- 7) Hard cake formation is a characteristic feature of _____ suspension.
 - a) Flocculated
 - b) Thixotropic
 - c) Structured
 - d) De-flocculated

- 8) _____ are added in suspensions to reduce interfacial tension between solid particles and dispersion liquid.
 - a) Wetting agents
 - b) Buffering Agent
 - c) Coloring Agent
 - d) Flavoring Agent

- 9) Which base should be selected when water washability is the key requirement?
 a) A hydrocarbon base b) An absorption base
 c) An oleaginous base d) A water-soluble base
- 10) How many milliliters are there in 1 litre?
 a) 10 b) 100
 c) 1000 d) 10000
- 11) Which is a commonly used preservative in liquid dosage forms?
 a) Sodium chloride b) Benzalkonium chloride
 c) Starch d) Sucrose
- 12) Cocoa butter is obtained from roasted seeds of _____.
 a) *Theobroma cocoa* b) *Butyrospermum parkii*
 c) *Adeps solidus* d) None of the above
- 13) Throat paints are _____ liquid preparations.
 a) Viscous b) Non viscous
 c) Solid d) Gas
- 14) The inscription part of a prescription contains: _____.
 a) Patient information
 b) Names and quantities of ingredients
 c) Instructions to the patient
 d) Signature of the physician
- 15) Which one of the following is not example of oleaginous base?
 a) Hard paraffin b) Liquid paraffin
 c) White soft paraffin d) Lanolin
- 16) Skin irritancy test is performed for _____.
 a) Solid dosage forms b) Liquid dosage forms
 c) Injections d) Semisolid dosage forms
- 17) _____ should not be applied to the broken skin.
 a) Liniments b) Lotions
 c) Solutions d) Injections
- 18) Suspension are _____ dosage forms.
 a) Monophasic b) Biphasic
 c) Semisolid d) None of the above
- 19) First edition of Indian Pharmacopoeia was published in _____.
 a) 1965 b) 1945
 c) 1955 d) 1985
- 20) Polyethelne glycols are also called as _____.
 a) Macrogols b) Lanolin
 c) Hydrous lanolin d) Beeswax

Q.2 Answer the following questions. (Any Seven)**35**

- a) Define dosage forms and give its classification.
- b) Define Ointment. Write the types and ideal properties of ointment bases.
- c) What are throat paints? Give the preparation of any one official throat paint.
- d) Write a note on Indian Pharmacopoeia.
- e) What are different errors in prescription?
- f) What is therapeutic incompatibility?
- g) Enumerate the factors affecting Posology.
- h) Define powders. Add a note on effervescent granules.
- i) Discuss about different excipients used in Liquid dosage forms.

Q.3 Answer the following questions. (Any Two)**20**

- a) Explain in detail about various solubility enhancement techniques.
- b) Define suspension. Discuss various components of suspension.
- c) Define suppositories. Discuss various types, advantages and disadvantages of it. Add a note on various types suppository bases.

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**B. Pharmacy (Semester - I) (CBCS) Examination: March/April – 2026
Pharmaceutical Inorganic Chemistry (801107)**

Day & Date: Monday, 11-05-2026
Time: 10:30 AM To 01:30 PM

Max. Marks: 75

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Q.1 Multiple choice questions.**20**

- 1) Which of the following is not a properties of acid?
 - a) Taste sour
 - b) Turn blue litmus red
 - c) React with base to form water
 - d) Fell slippery on the skin

- 2) Which buffer is used for maintain acid-base balance in the blood?
 - a) Carbonic acid- bicarbonate ion
 - b) Acetic acid sodium acetate
 - c) Ammonium hydroxide-ammonium chloride
 - d) Formic acid -sodium formate

- 3) Strong ammonium hydroxide is prepared by _____.

a) Solvay process	b) Haber's process
c) Merck process	d) Ammonia soda process

- 4) KCl is indicated in the treatment of _____.
 - a) Meniere's syndrome
 - b) Antidote in digitalis intoxication
 - c) Myasthenia gravis
 - d) All of above

- 5) The main function of chloride is _____.
 - a) Maintenance of proper hydration
 - b) Maintenance of osmotic pressure
 - c) Normal electrolyte balance
 - d) All of above

- 6) Dental carries is a medical term of _____.

a) cleaning action	b) Polishing action
c) Tooth decay	d) None of these

- 7) Sodium metaphosphate is also known as _____.

a) Precipitated chalk	b) Madrell's salt
c) both a and b	d) None of these

- 8) Example of desensitizer is _____.
a) Zinc chloride b) Sodium fluoride
c) Stannous fluoride d) Calcium carbonate
- 9) Phosphate is used as _____.
a) Cleaning agent b) Flossing agent
c) Removing strains d) None of these
- 10) In zinc eugenol cement, eugenol reacts with _____.
a) Zinc b) Metal
c) Chlorine d) Zinc oxide
- 11) Productive cough produces _____.
a) Mucus b) Vomiting
c) Amalgam d) None of these
- 12) Which inorganic compound is used as Emetic?
a) Ammonium chloride b) potassium antimony tartarate
c) potassium iodide d) potassium citrate
- 13) Which one of the following is an example of physiological Antidote?
a) Sodium nitrite b) Sodium thiocyanate
c) Activated charcoal d) Copper sulphate
- 14) Emetics act _____.
a) By stimulation of the chemoreceptor trigger zone
b) By increasing the amount of fluid
c) By decreasing the viscosity of the bronchial secretion
d) None of these
- 15) An important antidote in the treatment of cyanide poison is _____.
a) Ethanol b) Atropine
c) Desferrioxamine d) Sodium thiosulphate
- 16) Which kind of antidote reduces the poison across the intestinal wall?
a) Mechanical antidote b) Physiological antidote
c) Chemical antidote d) None of above
- 17) What is the chemical formula of Alum?
a) $KAl(SO_4)_2 \cdot 12H_2O$ b) $K_2SO_4 \cdot 12H_2O$
c) $KSO_4 \cdot 2H_2O$ d) $K(SO_4)_2 \cdot 12H_2O$
- 18) Zinc Sulphate is also known as _____.
a) White vitriol b) Red vitriol
c) Blue vitriol d) Yellow vitriol
- 19) Radioactivity was discovered firstly by _____.
a) Henry Becquerel b) Rutherford
c) J. J. Thomas d) Madame curie

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B. Pharmacy (Semester - III) (CBCS) Examination: March/April – 2026
Pharmaceutical Organic Chemistry – II (801301)

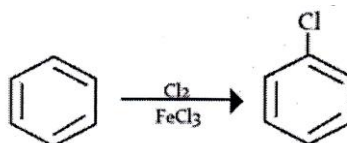
Day & Date: Tuesday, 05-05-2026
 Time: 10:30 AM To 01:30 PM

Max. Marks: 75

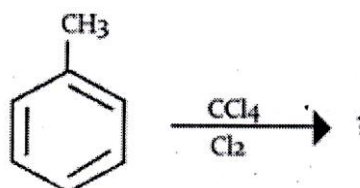
Instructions: 1) All questions are compulsory.
 2) Figures to the right indicate full marks.

Q.1 Multiple Choice Questions.**20**

- 1) Identify the incorrect statement regarding cycloalkanes _____.
 a) These have sp^3 hybridized carbons
 b) These have tetrahedral bond angles
 c) Stability of the cycloalkanes varies directly with their respective size
 d) These undergo nucleophilic substitution reactions
- 2) What will be the attacking electrophile in this reaction?



- a) Carbanion
 b) Halonium
 c) Radical
 d) Transition state
- 3) What will be the product in the given reaction?



- a) m-chlorotoluene
 b) o-chlorotoluene and p-chlorotoluene
 c) 1-chloro-3-methylbenzene
 d) no reaction
- 4) What is the reagent which will react with cumene to give phenol?
 a) Oxygen
 b) Hydrogen
 c) Nitrogen
 d) Ozone
- 5) The Hinsberg's method is used for which of the following?
 a) Preparation of primary amines
 b) Preparation of secondary amines
 c) Preparation of tertiary amines
 d) Separation of amine mixtures

- 6) Electrophilic substitution of aniline with bromine in presence of glacial acetic acid gives which of the following?
 a) 1, 4, 6-tribromo aniline b) 2, 4, 6-tribromo aniline
 c) 4-bromo aniline d) 3-bromo aniline
- 7) In _____ method cyclic ketone is converted into cycloalkanes in presence of Zn amalgam and Conc. HCl.
 a) Wolf-Kishner reaction b) Clemmensen reduction
 c) Diel- Alder reaction d) None of these
- 8) Which of the following gives benzoic acid on oxidation?
 a) Chlorophenol b) Chlorotoluene
 c) Chlorobenzene d) Benzyl chloride
- 9) Nitro group is meta-directing in electrophilic aromatic substitution reactions?
 a) increases electron density at meta-position
 b) increases electrons density at ortho and para-positions
 c) decreases electron density at meta-position
 d) decreases electron density at ortho and para-positions
- 10) Sulphonation of benzoic acid produces mainly which of the following?
 a) o-sulphobenzoic acid b) m-sulphobenzoic acid
 c) p-sulphobenzoic acid d) o- and p-sulphobenzoic acid
- 11) Which is the correct order of acidity?
 a) p-nitro phenol > phenol > p-methyl phenol
 b) Phenol > p-nitro phenol > p-methyl phenol
 c) p-methyl phenol > p-nitro phenol > phenol
 d) None of these
- 12) Identify the alicyclic hydrocarbon which is highly flammable _____.
 a) Cycloheptane b) Cyclopentane
 c) Cyclopropane d) Cyclooctane
- 13) Ozonolysis of benzene gives _____.
 a) glyoxal b) acetone
 c) glycol d) Formaldehyde
- 14) Glycerol is used in the manufacturing of _____.
 a) Dynamite b) Varnish
 c) Paints d) Soft drinks
- 15) Benzyl chloride undergoes friedel-craft reaction to form _____.
 a) Naphthalene b) phenol
 c) anthracene d) phthaldehyde
- 16) Give the correct stability order _____.
 a) chair < twist boat < boat < half chair
 b) chair < twist boat < half chair < boat
 c) chair > twist boat > Boat > half chair
 d) twist boat > chair > boat > half chair

- 17) _____ react with anthracene to form anthraquinone.
a) Bromine in CCl_4 b) nitric acid
c) sodium and ethyl alcohol d) sodium dichromate and H_2SO_4
- 18) Which of the following is drying oil?
a) Almond oil b) linseed oil
c) Olive oil d) Cotton seed oil
- 19) In anthracene all carbon atoms are _____ hybridized.
a) sp^2 hybridized b) sp^3 hybridized
c) sp hybridized d) none of these
- 20) Saccharine used as _____.
a) Artificial sweetener b) Fungicide
c) Pesticide d) Dye

Q.2 Solve the following. (Any Seven)**35**

- a) Discuss methods of synthesis of anthracene.
- b) Discuss structure and uses of DDT, Saccharine, Diphenylmethane, Resorcinol and Chloramine.
- c) Write reactions of anthracene.
- d) Write a note on basicity of amines.
- e) Explain Huckel rule and resonance in benzene.
- f) Write reactions of aromatic acid.
- g) Write saponification and Rancidity of oil.
- h) Elaborate on methods of preparations of aromatic amines.
- i) Write any three methods of preparation of phenols Discuss with suitable examples on acidity of phenols.

Q.3 Solve the following. (Any Two)**20**

- a) Discuss in detail electrophilic substitution reaction with any two examples.
- b) Write on methods of preparation & reactions of phenanthrene.
- c) Discuss synthesis & reactions of benzene.

Seat No.	
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Set **P**

**B. Pharmacy (Semester - III) (CBCS) Examination:
March/April – 2026
Physical Pharmaceutics - I (801302)**

Day & Date: Thursday, 07-05-2026
Time: 10:30 AM To 01:30 PM

Max. Marks: 75

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Q.1 Multiple choice questions.**20**

- 1) The solubility of a weakly acidic drug increases with: _____.
 - a) Decrease in pH
 - b) Increase in pH
 - c) Decrease in temperature
 - d) Addition of cosolvent

- 2) The term “cosolvency” refers to: _____.
 - a) Use of buffer
 - b) Use of surfactant
 - c) Use of water-miscible solvents to increase solubility
 - d) Use of heat

- 3) The effect of temperature on solubility is described by: _____.
 - a) Arrhenius equation
 - b) Van't Hoff equation
 - c) Fick's law
 - d) Debye-Hückel equation

- 4) The solubility of a nonpolar drug is higher in: _____.
 - a) Polar solvent
 - b) Nonpolar solvent
 - c) Acidic buffer
 - d) Basic buffer

- 5) Sublimation is the process of conversion of: _____.
 - a) Solid to liquid
 - b) Liquid to gas
 - c) Solid to gas
 - d) Gas to solid

- 6) Which law states that volume of gas is inversely proportional to pressure at constant temperature?
 - a) Charles' law
 - b) Gay-Lussac's law
 - c) Boyle's law
 - d) Henry's law

- 7) Triple point represents the condition where: _____.
 - a) Only liquid exists
 - b) Only gas exists
 - c) Solid, liquid, and gas coexist in equilibrium
 - d) Solid and liquid coexist only

- 20)** 0.9% w/v sodium chloride solution is: _____.
- a) Hypotonic
 - b) Hypertonic
 - c) Isotonic
 - d) Acidic

Q.2 Answer any seven of the following questions.

35

- a)** Explain Critical solution temperature and mention their applications.
- b)** Explain in detail spreading coefficient with relevant equations.
- c)** Enumerate different methods of analysis of complex. Explain solubility method of Analysis.
- d)** Write a note on HLB system and its applications.
- e)** Define protein binding and its mechanism.
- f)** Write a note on buffer action and buffer capacity.
- g)** Define dielectric constant Write a note on its application in Pharmacy.
- h)** Explain real solutions with examples.
- i)** Write the phenomena of wetting and detergency.

Q.3 Answer any two of the following questions.

20

- a)** Write the different methods for the determination of surface tension.
- b)** Define Complexation & Classify it. Write the application of complexation.
- c)** Explain in detail about the different factors affecting the solubility of drugs.

Seat No.	
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Set **P**

**B. Pharmacy (Semester - III) (CBCS) Examination: March/April - 2026
Pharmaceutical Microbiology (801303)**

Day & Date: Saturday, 09-05-2026
Time: 10:30 AM To 01:30 PM

Max. Marks: 75

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Q.1 Multiple choice questions.**20**

- 1) Which method would be most appropriate to evaluate the effectiveness of a new disinfectant in a hospital setting?
 - a) Gram staining
 - b) Zone of inhibition test
 - c) Serial dilution
 - d) viable count method

- 2) The principle of Gram staining is based on _____.
 - a) Size of the cell
 - b) Cell wall composition
 - c) Motility
 - d) Enzyme activity

- 3) A sudden drop in viable cell count in a bacterial culture most likely indicates _____.
 - a) Start of lag phase
 - b) End of log phase
 - c) Nutrient enrichment
 - d) Stationary phase

- 4) What is the most suitable reason for using selective media in pure culture isolation?
 - a) Enhancing bacterial motility
 - b) Inhibiting unwanted organisms
 - c) Promoting spore formation
 - d) Increasing colony size

- 5) After Gram staining, Gram-negative bacteria appear pink because _____.
 - a) Crystal violet is absorbed permanently
 - b) Safranin is absorbed after decolonization
 - c) The cell wall has teichoic acid
 - d) Alcohol acts as a mordant

- 6) Which sterilization method is best for prefilled syringes with heat-sensitive drugs?
 - a) Moist heat
 - b) Gamma radiation
 - c) Hot air oven
 - d) Filtration

- 7) Mycelium is a characteristic of _____.
 - a) Bacteria
 - b) Virus
 - c) Protozoa
 - d) Fungi

- 8) Which microorganism would serve as a better biological indicator for dry heat sterilization validation?
- a) *Bacillus subtilis*
 - b) *Geobacillus stearothermophilus*
 - c) *Mycobacterium tuberculosis*
 - d) *Pseudomonas aeruginosa*
- 9) Antiseptics are used on _____.
- a) Non-living objects
 - b) Instruments
 - c) Skin
 - d) Water
- 10) A formulation shows bacterial growth despite preservatives. What's the best next step?
- a) Reduce drug concentration
 - b) Add more water
 - c) Change preservative type
 - d) Lower storage temperature
- 11) Phenol coefficient compares a disinfectant's efficacy to _____.
- a) Formalin
 - b) Hydrogen peroxide
 - c) Ethanol
 - d) Phenol
- 12) Which of the following is not a characteristic of viruses?
- a) They contain either DNA or RNA
 - b) They are obligate intracellular parasites
 - c) They reproduce by binary fission
 - d) They lack cellular structure
- 13) _____ is organ of locomotion in bacteria.
- a) cell wall
 - b) spore
 - c) flagella
 - d) capsule
- 14) If the magnification of an eyepiece is 10x and the magnification of an objective is 45x then total magnification of microscope is _____.
- a) 100X
 - b) 4500X
 - c) 45X
 - d) 450X
- 15) The HEPA Filter stands for _____.
- a) High-Efficiency Particulate Air
 - b) High-Energy Particles in Air
 - c) High-Evaluation Protection
 - d) Hepatitis
- 16) Which of the following agents are used as a preservative in ophthalmic solutions?
- a) Chlorocresol
 - b) Benzalkonium chloride
 - c) Phenol
 - d) Dichlorobenzyl alcohol
- 17) A fully assembled infectious virus is called as _____.
- a) micron
 - b) prion
 - c) virion
 - d) bacterium

- 18) Who successfully produced a transgenic sheep named dolly from foetal fibroblast cell _____.
- a) Robert kotch and co-workers
 - b) Pasteur and co-workers
 - c) Wilmut and co-workers
 - d) Paul Ehrlich
- 19) The protein coat that surrounds the viral genome is called _____.
- a) Capsule
 - b) Capsid
 - c) Nucleoid
 - d) Envelope
- 20) When a sterile injectable product is tested using membrane filtration, which error would yield false positives?
- a) Pore size too large
 - b) Improper neutralizer
 - c) Incubation at low temperature
 - d) High nutrient media

Q.2 Answer any seven of the following questions.**35**

- a) Write contribution of Paul Ehrlich in field of microbiology.
- b) Discuss physical methods of sterilization.
- c) Explain Gram staining and its significance.
- d) Draw a well labeled diagram of flagella. What are the 'L', 'P', 'S' & 'M' rings of flagella?
- e) Define generation time. Explain bacterial growth curve in detail.
- f) What are Microbiological assay? How will you perform assay of antibiotic by Cup plate method.
- g) Define viruses. Explain the concept of viral symmetry and describe its main types with examples.
- h) Define sterilization. Explain in detail moist heat sterilization.
- i) Describe the structure and function of bacterial cell wall.

Q.3 Answer any two of the following questions.**20**

- a) Define and classify sterilization. Explain in detail dry and moist heat sterilization.
- b) Elaborate structure of bacterial cell wall. Write difference between Gram positive cell wall and Gram negative cell wall. Write two examples of each.
- c) Define and classify microscope. Explain in detail TEM & SEM.

- e) Explain theories of filtration.
- f) Define corrosion. What are the types of corrosion.
- g) Explain the principle, construction and working of double cone blender.
- h) Explain in detail Cyclone separator.
- i) Define drying. And classify the dryers with suitable examples.

Q.3 Answer Any Two.

20

- a) Give principle, construction and working of steam jacket evaporator with neat labelled diagram.
- b) Explain in detail Bernoulli's theorem.
- c) Explain the construction and working of rotary drum filter with neat labeled diagram.

Seat
No.Set **P**

**B. Pharmacy (Semester - V) (CBCS) Examination: March/April – 2026
Medicinal Chemistry–II (801501)**

Day & Date: Tuesday, 05-05-2026
Time: 02:30 PM To 05:30 PM

Max. Marks: 75

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Q.1 Multiple choice questions.**20**

- 1) Select the H₁ antagonist agent from the following _____.
 - a) Propranolol
 - b) Meclizine
 - c) Cimetidine
 - d) Mestranol
- 2) Which antibodies are secreted after contact with allergens?
 - a) IGE
 - b) IGT
 - c) IGG
 - d) IGA
- 3) Antihistamines inhibit which receptor?
 - a) H₂
 - b) H₃
 - c) H₁
 - d) H₄
- 4) Select the MOA of cyclophosphamide.
 - a) Alkylation of DNA
 - b) DNA cut
 - c) DNA fragmentation
 - d) DNA coiling
- 5) Which drug is referred to as mitotic arrest?
 - a) Cinchona
 - b) Vinblastine
 - c) Daunomycin
 - d) Rubicinol
- 6) Nitro vasodilators start muscle relaxation within _____.
 - a) 10 hrs
 - b) 2-20 mins
 - c) 15 hrs
 - d) 2 hrs
- 7) _____ is formulated as chewable tablets for the treatment of acute angina pain.
 - a) Nitroglycerin
 - b) Isosorbide dinitrate
 - c) Meclizine
 - d) Disopyramide
- 8) Nifedipine consists of _____ nucleus in its structure.
 - a) 1, 4-dihydropyrimidines
 - b) 4-aminoquinoline
 - c) Iso-quinoline
 - d) Imidazole
- 9) Diuretics increases _____ of urine.
 - a) Flow and Quantity
 - b) Flow
 - c) Acidic nature
 - d) Alkaline nature

- 10)** Tolbutamide is generally synthesized by using _____ as a starting material.
- | | |
|-----------------|------------|
| a) Toluene | b) Aniline |
| c) Tri-glycerin | d) Acetone |
- 11)** Warfarin shows action by _____.
- | | |
|-----------------------------------|-------------------------------------|
| a) Inhibition of Vit. K reductase | b) Inhibition of Vit. E reductase |
| c) Inhibition of Vit. C reductase | d) Inhibition of Vit. B12 reductase |
- 12)** Select an antiarrhythmic drug; that generally belongs to the epileptic category.
- | | |
|------------|--------------|
| a) Ouabain | b) Lidocaine |
| c) Digoxin | d) Phenytoin |
- 13)** Digitalis elicit anti-arrhythmic activity by inhibition of _____ pump.
- | | |
|-----------|--|
| a) Na | b) Cl |
| c) Opioid | d) Na ⁺ , K ⁺ ATPase |
- 14)** Select the drug which is used as anti- hyperlipidemics.
- | | |
|---------------|------------------|
| a) Diclofenac | b) Folic acid |
| c) Lovastatin | d) Triamcinolone |
- 15)** Levonorgestrel used for _____ purpose.
- | | |
|------------------------|-------------------|
| a) Birth control | b) Antibacterial |
| c) Protection of liver | d) Kidney failure |
- 16)** Steroids consists _____ ring in their structure.
- | | |
|-----------------|-----------|
| a) phenanthrene | b) indole |
| c) imidazole | d) Azol |
- 17)** _____ is H₂ antagonistic agent.
- | | |
|--------------------|------------------|
| a) Diphenhydramine | b) Phenothiazine |
| c) Famotidine | d) Thiopental |
- 18)** Phenothiazine is used as starting material in the synthesis of _____.
- | | |
|-----------------|--------------|
| a) promethazine | b) verapamil |
| c) cetirizine | d) hexane |
- 19)** Identify the local anesthetic from the following list _____.
- | | |
|--------------|---------------|
| a) Acarbose | b) Prednisone |
| c) Metformin | d) Benzocaine |
- 20)** _____ referred as natural glucocorticoids.
- | | |
|-------------------|---------------|
| a) Prednisolone | b) Cortisone |
| c) Hydrocortisone | d) Prednisone |

Q.2 Solve the following. (Any Seven) 35

- a) Outline SAR and MOA of H₁ antagonists.
- b) Explain role of anticoagulants in angina pectoris management.
- c) Discuss the drug used in congestive heart failure.
- d) Explain SAR and MOA of local anesthetics.
- e) Explain the role of mineralocorticoids.
- f) Define hypertension and write how you will manage it by using drugs?
- g) Explain thyroid hormones with structures and uses
- h) Outline synthesis of nitroglycerin and diphenhydramine hydrochloride
- i) Give account of calcium channel blockers.

Q.3 Answer the following questions. (Any Two) 20

- a) Classify antineoplastic agents. Summarize scope of alkylating agent in the treatment of cancer.
- b) Give stereochemistry and numbering of steroids. Explain female sex hormones.
- c) What is Angina? Explain in detail the scope of various classes in the treatment of it.

Seat
No.Set **P**

**B. Pharmacy (Semester - V) (CBCS) Examination:
March/April – 2026
Industrial Pharmacy - I (801502)**

Day & Date: Thursday, 07-05-2026
Time: 02:30 PM To 05:30 PM

Max. Marks: 75

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Q.1 Multiple choice questions.**20**

- 1) Which of the following is not added to chewable tablet?
 - a) Glidant
 - b) Lubricant
 - c) Disintegrating agent
 - d) Antiadherent
- 2) Name of the equipment's used to measure hardness of tablet _____.
 - a) Pfizer tester
 - b) Strong Cobb tester
 - c) Erweka tester
 - d) All of the above
- 3) Durability of tablets to combined effect of shock and abrasion is evaluated by _____.
 - a) Hardness tester
 - b) Friabilator
 - c) Disintegration test
 - d) Screw gauge
- 4) Emulsion is _____ type of dosage form.
 - a) Monophasic
 - b) Biphasic
 - c) Triphasic
 - d) None of the above
- 5) Angle of repose is directly proportional to _____.
 - a) Horizontal plane
 - b) Bulk density
 - c) Coefficient of friction
 - d) Weight of powder
- 6) It is the stage of product development where scientist characterize physicochemical property of the drug substance is known as _____.
 - a) Formulation
 - b) Pre-formulation
 - c) Production
 - d) None of the above
- 7) If the car's index of powder is 10% then the type of powder flow is _____.
 - a) Poor
 - b) Excellent
 - c) Very poor
 - d) Good
- 8) Determination of particle size is done by _____.
 - a) Microscopic method
 - b) Seiving method
 - c) Coulter- Counter method
 - d) All of the above

- 9) What is the % deviation allowed (as per I.P.) for capsule weighing less than 300 mg?
a) 5
b) 7.5
c) 10
d) 15
- 10) Ophthalmic preparations should be _____ with lachrymal secretions.
a) Paratonic
b) Isotonic
c) Compatible
d) None of these
- 11) Hypotonic solution may induce _____.
a) Shrinking of blood cells
b) Haemolysis
c) Fever
d) All of the above
- 12) The rate and extent of absorbed drug available at the site of action is referred as _____.
a) Bioequivalence
b) Bioavailability
c) Absorption
d) None of the above
- 13) Which one of the following is used as isotonicity adjuster _____.
a) Dextrose
b) Boric acid
c) NaCl
d) All of the these
- 14) Lamination in tablets is _____.
a) Separation of tablet into two or more distinct layers
b) Partial and complete separation of the top and bottom crowns of a tablet
c) Process of sub coating of tablets
d) None of the above
- 15) Filling of aerosols with liquefied propellants is done by _____.
a) Cold fill process
b) Pressure fill process
c) Both a and b
d) None of the above
- 16) Soft gelatin capsule is _____ piece capsule shell.
a) One
b) Two
c) Three
d) Four
- 17) _____ fitted with a device or mechanism that reveals irreversibly whether the container has been opened.
a) Tightly-closed container
b) Tamper -evident container
c) Well-closed container
d) None of these
- 18) The rate of creaming is determined by _____.
a) Stoke's law
b) Dalton's law
c) Hallsher's law
d) Raoult's law
- 19) Disposable syringes are made up of _____.
a) Polypropylene
b) Transparent polystyrene
c) Glass
d) Poly tetrachloro ethylene

- 20) Aerosols may be tested for _____.
- a) Spray pattern
 - b) Weight variation
 - c) Reproducibility of the dosage form
 - d) All of the above

Q.2 Answer the following questions. (Any Seven)

35

- a) Discuss different identification test for emulsion.
- b) Give difference between flocculated and deflocculated suspension.
- c) Define Parenterals and give advantages as well as disadvantages of parenterals.
- d) What is pre-formulation? Write the physicochemical parameters of pre-formulation.
- e) What is sugar coating? Explain the steps involved in sugar coating.
- f) Highlight how weight variation test is carried out as per IP for uncoated tablet.
- g) Discuss the importance of isotonicity in parenterals.
- h) Give the principle and procedure involved in preparation of vanishing cream.
- i) What are aerosols? Classify propellants with suitable examples.

Q.3 Answer the following questions. (Any Two)

20

- a) Explain quality control tests for hard gelatine capsules.
- b) Explain various quality control tests of parenterals.
- c) Describe wet granulation and dry granulation technique.

Seat No.	
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Set **P**

**B. Pharmacy (Semester - V) (CBCS) Examination: March/April - 2026
Pharmacology – II (801503)**

Day & Date: Saturday, 09-05-2026
Time: 02:30 PM To 05:30 PM

Max. Marks: 75

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Q.1 Multiple Choice Questions.**20**

- 1) The cellular action of calcium channel blockers is _____.
 - a) They inhibit Na⁺ - Ca²⁺ exchanger in cardiac and smooth muscles
 - b) They interact with the L-type voltage-gated channel
 - c) Their interaction with the sodium pump results in the inhibition of calcium transport
 - d) Their interaction with the membrane phospholipids results in a nonselective decrease in ion transport

- 2) _____ drug is a K⁺ channel opener.
 - a) Amiodarone
 - b) Nicorandil
 - c) Nifedipine
 - d) Captopril

- 3) Nicotinic acid is _____.
 - a) Lipid modifying agent
 - b) Thrombolytic
 - c) Anticoagulant
 - d) Antiplatelet agent

- 4) The symptoms related to the toxicity of loop diuretics is _____.
 - a) Allergic reaction
 - b) Deafness
 - c) Hypomagnesemia
 - d) Hyperuricemia

- 5) _____ is a synthetic prodrug of vasopressin.
 - a) Lypressin
 - b) Terlipressin
 - c) Desmopressin
 - d) None of the above

- 6) _____ the class of drug prescribed for acute management of deep vein thrombosis.
 - a) Anticoagulants, eg. Warfarin
 - b) Thrombolytics, eg. tPA
 - c) Antiplatelets, eg. Aspirin
 - d) All of the above

- 7) Low concentration of nitrates cause dilation of _____.
 - a) Large arteries
 - b) Veins
 - c) Precapillary sphincters
 - d) Arterioles

- 8) _____ is second-generation thrombolytic drugs.
 - a) Urokinase
 - b) Alteplase
 - c) Retavase
 - d) Tenecteplase

- 9) Abciximab is a _____.
a) Fibrin cleaving enzyme
b) Chimeric monoclonal antibodies
c) Small Molecular Inhibitor
d) None of the above
- 10) Osmotic diuretics are contraindicated in _____.
a) Increased intracranial tension
b) Increased intraocular tension
c) Established acute renal failure
d) Poisonings
- 11) Long-term use of loop diuretics causes _____.
a) Cirrhosis of liver
b) Deafness
c) Distal nephron hypertrophy
d) Renal insufficiency
- 12) Warfarin should not be given to the thrombotic patients with coexisting _____.
a) Hepatic Dysfunction
b) Pregnancy
c) Both a & b
d) Other than C
- 13) The _____ drug inhibits platelet aggregation by inhibiting the enzyme cyclooxygenase and formation of thromboxane A₂.
a) Aspirin
b) Abciximab
c) Clopidogrel
d) Warfarin
- 14) _____ serotonergic receptors is an autoreceptor.
a) 5HT_{1A}
b) 5HT_{2A}
c) 5HT₃
d) 5HT₄
- 15) _____ is NOT a clinical use of antihistamines.
a) Motion sickness
b) Peptic ulcer
c) Common cold
d) Allergic rhinitis
- 16) _____ drug is commonly used to treat growth hormone deficiency.
a) Prednisolone
b) Somatropin
c) Bromocriptine
d) Methimazole
- 17) Levothyroxine is used for _____ thyroid disorder.
a) Hyperthyroidism
b) Hypothyroidism
c) Thyroid cancer
d) Goiter
- 18) _____ drug is a selective estrogen receptor modulator.
a) Tamoxifen
b) Levothyroxine
c) Hydrocortisone
d) Bromocriptine
- 19) _____ effect on glucose metabolism is exerted by Metformin.
a) Reduction in hepatic glucose output
b) Promotes insulin secretion
c) Increases hepatic glucose uptake
d) All of the above

- 20)** Bioassays that involve comparing the response of a test drug to a standard drug response curve to determine the potency of the test drug are known as _____ assays.
- a) Quantal
 - b) Bracketing
 - c) Graded response
 - d) Direct end point

Q.2 Answer any seven of the following questions.

35

- a) What is hemodynamic? Explain action potential in hemodynamics.
- b) Explain the role of angiotensin converting enzyme inhibitors in congestive cardiac failure.
- c) Write a note on warfarin sodium as an oral anticoagulant.
- d) What are autocoids? Write synthesis, Pharmacological action and pathophysiological role of histamine.
- e) Write in brief combination therapy to treat hypertension.
- f) Give mechanism of action, uses and adverse effects of organic nitrates.
- g) Write a note on antihyperlipidemic.
- h) Describe in brief prostaglandin biosynthesis.
- i) Classify diuretics with examples.

Q.3 Answer any two of the following questions.

20

- a) What is bioassay. Describe principles, types, and applications of bioassay. Add a note on bioassay of d-tubocurarine.
- b) Classify anti arrhythmic agents with examples. Discuss the mechanism of action, uses and adverse effects of quinidine.
- c) Describe insulin. Write a note on different insulin preparations.

Seat
No.Set **P**

**B. Pharmacy (Semester - V) (CBCS) Examination: March/April – 2026
Pharmacognosy and Phytochemistry - II (801504)**

Day & Date: Tuesday, 12-05-2026

Max. Marks: 75

Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Q.1 Multiple choice questions.**20**

- 1) Cinnamon contains NLT _____ % of volatile oil.
 - a) 0.1
 - b) 1
 - c) 1.5
 - d) None

- 2) Which of the following statement for alkaloid is correct _____.
 - a) Physiologically active
 - b) Heterocyclic ring with at least one nitrogen
 - c) Basic in nature
 - d) All above

- 3) Volatile oil also called as _____.
 - a) Fixed oil
 - b) Fatty oils
 - c) wax
 - d) Ethereal oil

- 4) Which of the following is secondary metabolite?
 - a) Reserpine
 - b) lipids
 - c) Proteins
 - d) Carbohydrate

- 5) Which of the following is type of chromatography?
 - a) NMR
 - b) UV
 - c) IR
 - d) none

- 6) Color of tea is because of _____.
 - a) Tannic acid
 - b) Gallatonic acid
 - c) 1,3,7- trimethylxanthine
 - d) Xanthine

- 7) What is source of Anithol?
 - a) Bitter almond
 - b) fennel
 - c) Coriander
 - d) Clove

- 8) Which of the following is purgative drug?
 - a) Rauwolfia
 - b) Senna
 - c) Aloe
 - d) none

- 9) Senna contains NLT _____% sennoside B.
 - a) 12
 - b) 2
 - c) 20
 - d) 1.5

- 10) Synonym of *Cathranthus roseus* is _____.
a) Racta Chandan b) Kumari
c) Periwinkle d) All
- 11) Cinnamon contains NLT _____ % of volatile oil.
a) 0.1 b) 1
c) 1.5 d) None
- 12) Fennel contains NLT _____% volatile oil.
a) 12 b) 1.4
c) 20 d) 1.5
- 13) Gas chromatography is based on the principle of _____.
a) Partition b) Adsorption
c) Size exclusion d) Ion exchange
- 14) What is family of Aloe?
a) Apocynaceae b) Liliaceae
c) Papaveraceae d) Umbelliferae
- 15) Following are the extraction methods except _____.
a) Purification b) Decoction
c) Percolation d) Soxhlet
- 16) Protons of unknown compound is determined by _____.
a) UV b) NMR
c) IR d) DSC
- 17) The term maceration is derived from latin word _____.
a) Menstrum b) Marc
c) Macerate d) None
- 18) Identify the process used for the extraction.
a) SCF b) Microwave
c) Digestion d) All
- 19) Which of the following isotopes is not a radioisotope?
a) Carbon-14 b) Carbon-13
c) Tritium d) Hydrogen-2
- 20) What is family of fennel fruit?
a) Zingiberaceae b) Leguminosae
c) Pinaceae d) Umbelliferae

Q.2 Answer the following questions. (Any Seven)

35

- a) What is the role of radioactive isotopes in biogenetic studies? Give an example.
- b) Explain the principle and application of electrophoresis in phytochemistry.
- c) Describe isoprenoid pathway.
- d) Write the therapeutic uses and commercial importance of Rauwolfia alkaloids.
- e) Write basic principle and procedure involved in the isolation of caffeine.
- f) Explain in detail super critical fluid extraction.
- g) Write source, chemical constituents and uses of crude belongs to Phenolic Ether Volatile oil.
- h) Give a brief account of the isolation and analysis of curcumin.
- i) Industrial production, estimation and utilization of the following phytoconstituents:
 - i) Atropine
 - ii) Reserpine

Q.3 Answer the following questions. (Any Two)

20

- a) Define extraction, explain Modern methods of extractions.
- b) Explain the chemistry, biosources, therapeutic uses, and commercial applications of the following classes of secondary metabolites:
 - i) Senna
 - ii) Asafoetida
 - iii) Fennel
 - iv) Asafoetida
 - v) Catechu
- c) Explain the industrial production, estimation, and uses of forskolin and sennoside.

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**B. Pharmacy (Semester - V) (CBCS) Examination: March/April – 2026
Pharmaceutical Jurisprudence (801505)**

Day & Date: Thursday, 14-05-2026
Time: 02:30 PM To 05:30 PM

Max. Marks: 75

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Q.1 Multiple choice questions.

20

- 1) Biologicals are tested at which of the following centre?
 - a) Mumbai
 - b) Hyderabad
 - c) Delhi
 - d) Kasauli

- 2) _____ are established to advise government on technical matters arising out of administration of act.
 - a) DTAB
 - b) DCC
 - c) CDL
 - d) None of the Above

- 3) As per D and C act schedule T stated about _____.
 - a) Requirements of factors premises for the manufacture of Medical device
 - b) Requirements of factory premises for the manufacturer of Homeopathy drugs
 - c) Requirements of factory premises for the manufacturer of Ayurveda, Sidhha and Unani drugs
 - d) Requirements of factory premises for the manufacturer of Allopathy drugs

- 4) As per D&C act schedule _____ standards for disinfectant fluids.
 - a) Schedule D
 - b) Schedule X
 - c) Schedule P
 - d) Schedule O

- 5) Copyrights are granted for _____.
 - a) Pharmaceutical product
 - b) Logo
 - c) Music and Literature
 - d) Radio isotopes

- 6) If it is so coloured, coated, powdered or polished that damage is concealed or if it is made to appear of better or greater therapeutic value than it really is _____.
 - a) Spurious drug
 - b) Adulterated drug
 - c) Misbranded drug
 - d) None of the above

- 7) _____ Drug means a drug imported under a name which belongs to another drug.
 - a) Adulterated
 - b) Spurious
 - c) Misbranded
 - d) None

- 8) Charas as per the Narcotic drugs and Psychotropic Substances Act means _____.
a) Flowering and fruiting tops of *Cannabis sativa*
b) Flowering and fruiting tops, leaves and seeds of *Cannabis sativa*
c) Resin substance of *Cannabis sativa*
d) All of the above
- 9) The particular to be shown in manufacturing raw materials and analytical records of drugs are deal under _____.
a) Schedule M
b) Schedule U
c) Schedule V
d) Schedule W
- 10) Duty shall not levied on ayurvedic preparation containing self-generated alcohol in which the alcoholic content is less than _____ percent proof spirit.
a) 5 Percent
b) 8 Percent
c) 2 Percent
d) 3 Percent
- 11) As per D & C Act "Schedule F (II)" is related with _____.
a) Standards for antisera and diagnostic antigens
b) Standards for cosmetics
c) Standards for Ophthalmic preparation
d) Standards for surgical dressings
- 12) As per pharmacy act. The First register was prepared by _____.
a) Central government
b) Stale government
c) None of the above
d) Both a) & b)
- 13) Right to information act 2005 has been made by legislation of parliament of India on _____.
a) 15 June 2005
b) 16 June 2005
c) 21 august 2005
d) 12 October 2005
- 14) Registered medicinal practitioner may terminate the pregnancy of women who is _____ yr's age or more with her written consent
a) 14
b) 16
c) 21
d) 18
- 15) Drug inspector appointed under section _____ of D & C act 1940.
a) Section 20
b) Section 21 A
c) Section 21
d) Section 33-D
- 16) Who was the first chairman of Drugs Enquiry Committee _____.
a) Col. R. N. Chopra
b) S. S. Bhatiya
c) Joseph Bhore
d) R. D. Dalal
- 17) Committee for the purpose of control and supervision of experiment on animal (CPCSEA) head office is situated in _____.
a) New Delhi
b) Mumbai
c) Chennai
d) Kolkata

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**B. Pharmacy (Semester - VI) (CBCS) Examination:
March/April – 2026
Medicinal Chemistry - III (801601)**

Day & Date: Monday, 04-05-2026
Time: 10:30 AM To 01:30 PM

Max. Marks: 75

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Q.1 Multiple choice questions.**20**

- 1) _____ aminoglycoside used in treatment of tuberculosis.
 - a) Ethambutol
 - b) Steptomycin
 - c) Isoniazid
 - d) Pyrazinamide
- 2) Which of the following is recognized as an antimalarial drug from alkaloid category?
 - a) Quinine
 - b) Quercetin
 - c) Buclizine
 - d) Methionine
- 3) Chloramphenicol is used for the treatment of _____.
 - a) Brain fever
 - b) Typhoid fever
 - c) Pneumonia
 - d) Hay fever
- 4) One of the following drug is B-lactam antibiotic.
 - a) Lincomycin
 - b) Demeclocycline
 - c) Doxycycline
 - d) Cloxaciline
- 5) _____ are major symptoms of TB.
 - a) Headache
 - b) Fever
 - c) Night sweats
 - d) All of these
- 6) Pyrimidine analogue of antiviral drug is _____.
 - a) Idoxuridine
 - b) Methisazone
 - c) Amantidine
 - d) Chloramphenicol
- 7) Nalidixic acid acts as bactericidal by in inhibition of _____.
 - a) Xanthine oxidase
 - b) Folatesynthatase
 - c) ACE
 - d) DNA gyrase
- 8) Amphotericine- B comes under which class of drug.
 - a) Anti-TB
 - b) Antiviral
 - c) Antifungal agent
 - d) Anthelmintic
- 9) The basic ring structure for all sulphonamide _____.
 - a) Sulphanilamide
 - b) Purine
 - c) Benzoic acid
 - d) Pteridine

- f) Write structure, SAR and MOA of Norfloxacin
- g) Classify anthelmintic agents. Explain any two drugs of it.
- h) Write a note on azole derivatives.
- i) Write structure, chemical name, uses of Gatifloxacin, sparfloxacin and Ofloxacin.

Q.3 Answer the following questions. (Any Two)**20**

- a) Discuss in details of life cycle of malaria. Classify anti-malarial with example.
- b) Discuss physicochemical parameter used in the QSAR
- c) Write MOA, SAR & degradation of Penicilline.

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**B. Pharmacy (Semester - VI) (CBCS) Examination:
March/April – 2026
Pharmacology - III (801602)**

Day & Date: Wednesday, 06-05-2026
Time: 10:30 AM To 01:30 PM

Max. Marks: 75

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Q.1 Multiple choice questions.

20

- 1) Cotrimoxazole is fixed dose combination of _____.
 - a) Trimethoprim + Sulfamethoxazole
 - b) Sulfadiazine + Sulfamethoxazole
 - c) Trimethoprim + Sulfasalazine
 - d) Trimethoprim + Sulfacetamide

- 2) _____ is the D2 blockers used to prevent vomiting.
 - a) Promethazine
 - b) Chlorpromazine
 - c) Benzodiazepines
 - d) Doxylamine

- 3) Which of following is not an Anti-Ulcer drug _____.
 - a) Ondansetron
 - b) Pantoprazole
 - c) Propantheline
 - d) Ranitidine

- 4) All are Macrolide except _____.
 - a) Streptomycin
 - b) Clarithromycin
 - c) Roxithromycin
 - d) Azithromycin

- 5) _____ is the study of how the effects of drugs vary with biological timing and endogenous periodicities.
 - a) Chronopharmacology
 - b) Clinical Pharmacology
 - c) Toxicology
 - d) None of above

- 6) The antitussive act by _____.
 - a) Liquefying bronchial secretion
 - b) Raising threshold of cough centre
 - c) Reducing cough inducing impulses from lungs
 - d) Both b) and c) correct

- 7) The antiviral action of amantadine is exerted through _____.
 - a) Interaction with the viral M2 protein
 - b) Interaction with a virus directed thymidine kinase
 - c) Inhibition of a viral protease enzyme
 - d) Inhibition of viral RNA mediated DNA synthesis

- 8) What is the primary use of immunosuppressants?
 a) To treat infections
 b) To prevent rejection in organ transplantation
 c) To treat autoimmune diseases
 d) Both b) and c)
- 9) Symptoms of STD _____.
 a) White and fishy discharge from genital parts
 b) Pain during sexual relationship
 c) Pain in lower abdominal parts
 d) All of above
- 10) Select the antimicrobial drug which is used orally only for urinary tract infection for bacterial diarrhoeas _____.
 a) Pefloxacin
 b) Bacampicillin
 c) Azithromycin
 d) Nalidixic acid
- 11) The following anti-asthma drug is not a bronchodilator _____.
 a) Ipratropium bromide
 b) Theophylline
 c) Formoterol
 d) Sodium chromoglycate
- 12) The antimalarial drug belonging to pyrimidine derivatives _____.
 a) Mefloquine
 b) Quinidine
 c) Chloroquine
 d) Pyrimethamine
- 13) Which of the following is Immunostimulating agent?
 a) Pyridoxine
 b) Cyclosporin
 c) Both a) and b)
 d) Levamisole
- 14) Match the pair
 1) Cefalexin
 2) Cefaclor
 3) Cefixime
 4) Cefepime
 a) 4th Generation
 b) 3th Generation
 c) 2th Generation
 d) 1th Generation
 a) 1)-a),2)-b),3)-c),4)-d)
 b) 1)-b),2)-c),3)-d),4)-a)
 c) 1)-d),2)-c),3)-a),4)-b)
 d) 1)-d),2)-c),3)-b),4)-a)
- 15) Sodium chromoglycate act by _____.
 a) Mast cell degranulation
 b) IgE antagonist
 c) Both a) & b)
 d) Mast cell stabilizer
- 16) Clavulanic acid is combined with amoxicillin because _____.
 a) It kills bacteria that are not killed by amoxicillin
 b) It retards renal excretion of amoxicillin
 c) It counteracts the adverse effects of amoxicillin
 d) It inhibits beta lactamases that destroy amoxicillin
- 17) Which fluoroquinolone has shown efficacy in leprosy treatment?
 a) Ciprofloxacin
 b) Norfloxacin
 c) Ofloxacin
 d) Levofloxacin

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Set **P**

**B. Pharmacy (Semester - VI) (CBCS) Examination:
March/April – 2026
Herbal Drug Technology (801603)**

Day & Date: Friday, 08-05-2026
Time: 10:30 AM To 01:30 PM

Max. Marks: 75

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Q.1 Multiple choice questions.**20**

- 1) Herbs like Rita are used in cosmetic preparations as _____.
 - a) Antiseptic
 - b) Preservative
 - c) Tonic
 - d) Natural Hair cleanser

- 2) Ayurvedic preparation Asava and Arista have advantages like _____.
 - a) Detoxify certain Phytoconstituents
 - b) Exhibit rapid therapeutic effect in small dose
 - c) Degrade certain Phytoconstituents
 - d) Both a & b

- 3) Ideal quality of hair dye should possess following parameters _____.
 - a) Color Uniformity
 - b) Wash ability of Color
 - c) Color Stability
 - d) All of these

- 4) Disintegration time and weight variation are important quality control tests used for _____ products.
 - a) Gutika
 - b) Taila
 - c) Bhasma
 - d) Lavana

- 5) Ephedra does not show any interaction with _____.
 - a) Amphetamine
 - b) Anti depressant
 - c) Asprin
 - d) Estrogen

- 6) Fresh infusion are normally prepared from medicinal plant material is used for _____ remedy.
 - a) instant
 - b) Prolonged
 - c) Chronic
 - d) None of these

- 7) Ayurvedic formulations obtained by calcinations of metals, mineral or animal product is _____.
 - a) Lepa
 - b) Netrabindu
 - c) Bhasma
 - d) Taila

- 19) Schedule -T is referred to infrastructural requirements of pharma industry is as per _____ guidelines.
- a) GMP
 - b) GLP
 - c) GACP
 - d) None of the above
- 20) Patenting of product helps in _____.
- a) Financial support
 - b) Future research
 - c) Protect innovation
 - d) All of the above

Q.2 Answer the following questions. (Any Seven)**35**

- a) Write evaluation of Ayurvedic product Churna.
- b) Write in brief future scenario of Herbal Medicine.
- c) Write a note on Herbal material preparation.
- d) Define quality and list the various methods to determine quality assessment in herbal drugs.
- e) Write method of preparation and quality control parameters for herbal shampoo.
- f) Brief the Herbal - Drug interaction with suitable examples.
- g) Write a short note on
 - i) Herbal skin cosmetics
 - ii) Pest management
- h) Explain Herbal regulations in India like ASU,DTAB.DCC.
- i) Write about the Herbal syrups.

Q.3 Answer the following questions. (Any Two)**20**

- a) What are Nutraceuticals. Write their role and benefits in Health with three examples.
- b) Classify excipients write significance of various class of excipients.
- c) Write present scope and future prospects of Herbal Industry. write a note on Schedule T.

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Set **P**

**B. Pharmacy (Semester - VI) (CBCS) Examination: March/April – 2026
Biopharmaceutics and Pharmacokinetics (801604)**

Day & Date: Monday, 11-05-2026

Max. Marks: 75

Time: 10:30 AM To 01:30 PM

- Instructions:** 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Q.1 Multiple choice questions.**20**

- 1) According to pH partition theory, a weak acidic drug will most likely be absorbed from the stomach because the drug which exists primarily in the _____.
 - a) Unionized, more lipid soluble form
 - b) Ionized, more water soluble form
 - c) Form of weak acid and more soluble in acid media
 - d) Ionic form of the drug, which facilitates diffusion

- 2) Which of the following process drug moves from site of administration to systemic circulation?

a) excretion	b) absorption
c) distribution	d) metabolism

- 3) Which of the following is used in molecular encapsulation of drugs for enhancing bioavailability?
 - a) Highly water-soluble compound
 - b) Cyclodextrin
 - c) Inorganic clays like bentonite
 - d) Creating metastable polymorphs

- 4) Which of the following processes proceeds in the II phase of biotransformation?

a) Acetylation	b) Reduction
c) Oxidation	d) Hydrolysis

- 5) All of the following displace imipramine from protein binding site except _____.

a) Aspirin	b) Phenytoin
c) Ethosuximide	d) Phenylbutazone

- 6) What should be the disadvantage of cross over study on volunteers?
 - a) Minimize The intersubject variability in plasma drug levels
 - b) Minimize the carry-over effect
 - c) Minimizes variations due to time effect
 - d) Takes a lot of time to get the result of the study

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**B. Pharmacy (Semester - VI) (CBCS) Examination: March/April – 2026
Pharmaceutical Biotechnology (801605)**

Day & Date: Wednesday, 13-05-2026
Time: 10:30 AM To 01:30 PM

Max. Marks: 75

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Q.1 Multiple choice questions.**20**

- 1) Enzyme can be immobilized using any of the following material except _____.
 - a) Calcium alginate
 - b) Chitin
 - c) Agar
 - d) Water
- 2) Interferons are released by _____.
 - a) Viruses
 - b) Bacteria
 - c) Virus infected host cell
 - d) All of the above
- 3) Which of the following is physical method of immobilization?
 - a) Adsorption
 - b) Entrapment
 - c) Microencapsulation
 - d) All of these
- 4) In pBR₃₂₂, pBR stands for _____.
 - a) Plasmid bacterial recombination
 - b) Plasmid bacterial replication
 - c) Plasmid Baltimore and Rodguize
 - d) Plasmid Boliver and Rodriguez
- 5) Restriction enzymes are isolated from _____.
 - a) Virus
 - b) Fungai
 - c) Bacteria
 - d) All of these
- 6) Which one of the following properties of enzymes can be enhanced by enzyme immobilization technique?
 - a) Protienous nature
 - b) Specificity
 - c) Thermal stability
 - d) Catalytic ability
- 7) Cells involved in innate immunity are _____.
 - a) Phagocytes
 - b) Macrophages
 - c) Natural killer cells
 - d) All of the above
- 8) Which of the following is a property of carrier matrices?
 - a) Inert
 - b) Stability of the material
 - c) Physical strength
 - d) All of these
- 9) The process of binding of primer to denatured strand is called as _____.
 - a) Denaturation
 - b) Annealing
 - c) Renaturation
 - d) None of these

Q.2 Answer Any Seven of the following questions.**35**

- a) Demonstrate the procedure for production of bacterial vaccine.
- b) Explain in brief fermentation monitoring.
- c) Explain in detail humoral immunity.
- d) Write a note on restriction endonuclease as major tool in genetic engineering.
- e) Explain the working of biosensors with its applications.
- f) Define immobilization of enzyme. Explain methods used for immobilization of enzyme.
- g) Define Vector. Write its ideal characteristics.
- h) Enlist different types of mutation. Explain any one method with merits and demerits.
- i) Explain Hypersensitivity reactions in short.

Q.3 Answer Any Two of the following questions.**20**

- a) Discuss the principle and steps involved in PCR with its applications.
- b) Define blotting. Enlist different blotting techniques. Explain in detail ELISA.
- c) Write the production of penicillin by fermentation technology.

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Set **P**

**B. Pharmacy (Semester - VI) (CBCS) Examination: March/April – 2026
Quality Assurance (801606)**

Day & Date: Friday, 15-05-2026
Time: 10:30 AM To 01:30 PM

Max. Marks: 75

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Q.1 Multiple choice questions.**20**

- 1) P-D-C-A stands for _____.
 - a) Proceed-Do-check-Act
 - b) Plan-Do-correct-Act
 - c) Plan-Do-check-Act
 - d) Proceed-Do-correct-Act

- 2) In Quality by Design process CMA and CPP stands for _____.
 - a) Critical Material Attributes and Critical Process Parameters
 - b) Critical Manufacturing Attributes and Critical Packaging Parameters
 - c) Critical Material Attributes and Critical Process Performance
 - d) Critical Matching Attributes and Critical Planning Parameters

- 3) The lowest amount of analyte in a sample which can be detected and quantified is called as?
 - a) Limit of Detection
 - b) Accuracy
 - c) Limit of Quantitation
 - d) Specificity

- 4) NABL accreditation will be valid for _____ year.
 - a) 1
 - b) 2
 - c) 3
 - d) 5

- 5) What does NABL stand for?
 - a) National Accreditation Board Limited
 - b) National Accreditation Board for Laboratories
 - c) National Accreditation Board for Testing and Calibration Laboratories
 - d) National Accreditation Board for Law

- 6) _____ is the building block of TQM.
 - a) Training
 - b) Teamwork
 - c) Leadership
 - d) All

- 7) Which of the following is for Environmental Management?
 - a) ISO 9000
 - b) ISO 1400
 - c) ISO 26000
 - d) ISO 31000

- 8) _____ is also called as premarket Validation.
a) Retrospective Validation b) Prospective validation
c) Concurrent Validation d) Revalidation
- 9) Treated soda lime glass is _____.
a) Type 1 b) Type 2
c) Type 3 d) Type 4
- 10) Physical dimension of equipment and accessories- comes under which qualification?
a) Design qualification (DQ)
b) Installation qualification (IQ)
c) Operational qualification (OQ)
d) Performance qualification (PQ)
- 11) QTPP stands for _____.
a) Quality Target Product Profile
b) Quality Testing Product Packaging
c) Quality Target Planning Product
d) None of the above
- 12) The degree of agreement amongst individual results is termed as?
a) Specificity b) Precision
c) Accuracy d) Sensitivity
- 13) When setting up packaging operations, particular attention should be given to the following _____.
a) Risk of Cross contamination b) Mix-Ups
c) Substitutions d) All of these
- 14) Premises should be of suitable sizes and construction to facilitate _____.
a) Cleaning b) Storage
c) Maintenance d) All
- 15) The objective of ISO-9000 family of Quality management is _____.
a) Environmental issues b) Employee satisfaction
c) Skill enhancement d) Customer satisfaction
- 16) ICH Q3 Guideline is for _____.
a) Impurities b) Raw materials
c) API d) Product Development
- 17) The guidelines that describe the stability testing of drug substances and drug products are?
a) ICH Q2 b) ICH Q1
c) ICH Q8 d) ICH Q9
- 18) A common saying in GMP that “if it is not documented it never _____.”
a) Happened b) Reported
c) Analyzed d) Taught

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No.Set **P**

B. Pharmacy (Semester - VII) (CBCS) Examination: March/April – 2026
Instrumental Methods of Analysis (801701)

Day & Date: Monday, 04-05-2026
 Time: 02:30 PM To 05:30 PM

Max. Marks: 75

Instructions: 1) All questions are compulsory.
 2) Figures to the right indicate full marks.

Q.1 Multiple choice questions.**20**

- 1) Nerst glow source consists of _____.
 - a) Zirconium
 - b) Tungsten
 - c) Nichrome
 - d) Silicon carbide
- 2) Nephelometry is concerned with measurement of _____ light by suspended particles in solution.
 - a) Transmitted
 - b) Absorbed
 - c) Scattered
 - d) both a and c
- 3) The number of wavelengths per unit distance is called as _____.
 - a) Wavelength
 - b) Frequency
 - c) Velocity
 - d) Wave number
- 4) hetero compounds show which electronic transition?
 - a) $n \rightarrow \sigma^*$
 - b) $\sigma \rightarrow \sigma^*$
 - c) $n \rightarrow \pi^*$
 - d) $\pi \rightarrow \pi^*$
- 5) Carbon dioxide has _____ modes of vibration.
 - a) 4
 - b) 2
 - c) 3
 - d) 1
- 6) Blue shift occurs due to _____.
 - a) Introduction of conjugation
 - b) Removal of conjugation
 - c) Removal of auxochrome
 - d) Both b and c
- 7) The most commonly used UV radiation source in most spectrophotometer is _____.
 - a) Deuterium Lamp
 - b) Tungsten Filament Lamp
 - c) Mercury arc Lamp
 - d) All of the above
- 8) _____ technique where separation of sample mixture was carried out by continuous addition of mixture sample.
 - a) Elution analysis
 - b) Displacement analysis
 - c) Frontal analysis
 - d) All of the above

- 19) Which of the following gas is suitable for use as a GC carrier gas?
- a) Hydrogen
 - b) Helium
 - c) Oxygen
 - d) All of the above
- 20) The speed of migration of ions in electric field depends upon ____.
- a) Shape and size of molecule
 - b) Magnitude of charge and shape of molecule
 - c) Magnitude of charge, shape and mass of molecule
 - d) Magnitude of charge and mass of molecule

Q.2 Answer the following questions. (Any Seven)

35

- a) Give principle and applications of Nephelometry.
- b) Describe requirements for IR radiation absorption.
- c) Write a note on any two pumps used in HPLC.
- d) Give principle and applications of Gel permeation Chromatography.
- e) Discuss practical requirements and methodology of Ion Exchange Chromatography.
- f) Explain in detail interferences in atomic emission spectroscopy.
- g) Give principle and applications of Affinity Chromatography.
- h) What is the significance of pre-column and post-column derivatization in GC?
- i) Explain methods of preparation of TLC plate

Q.3 Answer the following questions. (Any Two)

20

- a) Write construction, working of two radiation sources and two detectors used in UV visible absorption spectroscopy.
- b) Enlist and explain in detail factors affecting fluorescence intensity with relevant example.
- c) Explain in detail development techniques, detection and visualization methods used in Paper Chromatography.

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**B. Pharmacy (Semester - VII) (CBCS) Examination: March/April – 2026
Industrial Pharmacy - II (801702)**

Day & Date: Wednesday, 06-05-2026

Max. Marks: 75

Time: 02:30 PM To 05:30 PM

- Instructions:** 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Q.1 Multiple choice questions.**20**

- 1) _____ gives guidelines for T.T.

a) Who	b) FDA
c) Govt	d) all of these

- 2) What is SUPAC?

a) scale-up and Post approval changes
b) scale-up and Post approval chances
c) scale-up and Pre approval changes
d) scale-up and Production approval changes

- 3) The NRDC was established in India in _____.

a) 1952	b) 1953
c) 1954	d) 1853

- 4) Following are the general considerations in scale up techniques except _____.

a) money	b) space
c) personnel	d) raw material

- 5) Pharmacy Act comes in existence in year of _____.

a) 1945	b) 1948
c) 1940	d) 1954

- 6) Format for COPP is recommended by _____.

a) ICH	b) WHO
c) CDSCO	d) US-FDA

- 7) Head office of CDSCO is located in which city?

a) New Delhi	b) Mumbai
c) Pune	d) Bangalore

- 8) Research phase of technology transfer involve _____.

a) Design of procedure	b) Selection of excipients
c) Identification of Excipients	d) All of above

Q.2 Answer any seven of the following questions. 35

- a) Write about general consideration of pilot plant.
- b) Describe organization and functions of State licensing authority.
- c) What is SUPAC?
- d) What is change control? Write note on OOS.
- e) Explain TT from R and D to production.
- f) Write a note on Investigation Brochure.
- g) Write a note on COPP.
- h) Write the procedure for NABL accreditation.
- i) Elaborate Six sigma concept.

Q.3 Answer any two of the following questions. 20

- a) What is TT? Explain different agencies for TT.
- b) Elaborate roles and responsibilities of RA professionals.
- c) Discuss general considerations of Investigational new drug application.

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**B. Pharmacy (Semester - VII) (CBCS) Examination: March/April – 2026
Pharmacy Practice (801703)**

Day & Date: Friday, 08-05-2026
Time: 02:30 PM To 05:30 PM

Max. Marks: 75

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Q.1 Multiple choice questions.**20**

- 1) The Hospital formulary consists of list of _____ in hospital.
 - a) Instruments
 - b) Drugs
 - c) Staff
 - d) Patients
- 2) DIS stands for _____.
 - a) Drug information services
 - b) Drug implementation services
 - c) Drug including syndromes
 - d) Drug incorporation services
- 3) _____ plays a vital role in the drug safety in Hospitals.
 - a) PTC
 - b) GMP
 - c) ADR
 - d) SOP
- 4) Government hospitals typically offers _____ services.
 - a) Specialized
 - b) General
 - c) Specific
 - d) All
- 5) _____ refers to the relative margin of safety of a drug.
 - a) TDM
 - b) Therapeutic Index
 - c) ADR
 - d) Toxicity
- 6) _____ is an ADR due to sudden withdrawal of drug.
 - a) Idiosyncrasy
 - b) Allergic ADR
 - c) Anaphylaxis
 - d) Rebound Response
- 7) Apollo Pharmacies Ltd. Is an example of _____.
 - a) Independent Pharmacy
 - b) Chain Pharmacies
 - c) Super Market
 - d) Online Pharmacy
- 8) Individual prescription order system is used by _____ hospitals.
 - a) Small & Private
 - b) Government
 - c) Corporation Hospitals
 - d) Civil Hospitals
- 9) _____ is a faithful adherence by patient to prescribed interactions.
 - a) Loyalty
 - b) Patient Compliance
 - c) Trust
 - d) Belief

Q.2 Answer any seven of the following questions. 35

- a) Write a note on Medication chart review.
- b) Explain the organizational structure of the community pharmacy.
- c) What is patient counseling? Explain the steps involved in patient counseling.
- d) Write a detailed note on the Hospital formulary.
- e) Define ADR and explain ADR reporting.
- f) Write a note on blood chemistry with its significance.
- g) Write a detailed note on Drug Information Services.
- h) Write about an educational training program in a hospital and the role pharmacist in the training program.
- i) Write a detailed note on the preparation & implementation of the budget.

Q.3 Answer any two of the following questions. 20

- a) Define hospital pharmacy. Explain the functions and responsibilities of a hospital pharmacist in detail.
- b) Explain various drug distribution methods used for inpatients.
- c) Define clinical pharmacy. What are the roles and responsibilities of a clinical Pharmacist.

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Set **P**

**B. Pharmacy (Semester - VII) (CBCS) Examination: March/April – 2026
Novel Drug Delivery System (801704)**

Day & Date: Monday, 11-05-2026
Time: 02:30 PM To 05:30 PM

Max. Marks: 75

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Q.1 Multiple choice questions. 20

- 1) A limitation of novel drug delivery system is _____.
 - a) Burst effect
 - b) Use of conventional routes
 - c) Target specificity
 - d) Low dose

- 2) Select a suitable approach for gastro retention _____.
 - a) Floating
 - b) Emulsification
 - c) Nanonization
 - d) Direct compression

- 3) Monoclonal antibodies are _____.
 - a) Antibodies with multiple antigen binding sites
 - b) Antibodies found in new born
 - c) Antibodies produced by single type of immune cell
 - d) Antibodies derived from multiple individuals

- 4) Atomization of feed into a stream of hot air is associated with _____.
 - a) Spray congealing
 - b) Centrifugal extrusion
 - c) Spray drying
 - d) Multiorifice centrifugal technique

- 5) Pan coating and Air suspension method are used to encapsulate _____.
 - a) Only solid
 - b) Only liquid
 - c) Semi-solid
 - d) All of the above

- 6) In _____ thousands of microscopic drug spheres dispersed in a polymer.
 - a) Reservoir type of TDDS
 - b) Matrix type of TDDS
 - c) Microreservoir type of TDDS
 - d) Drug in adhesive type of TDDS

- 7) Characteristics of mucoadhesive systems _____.
 - a) Use of high or low density pellets
 - b) Use of soluble polymers
 - c) Usage of bio adhesive polymer
 - d) Use of porous structures

- 8) A backing material for unidirectional release of a buccal formulation is _____.
a) PEG 400
b) Hydroxy propyl methyl cellulose
c) Ethyl cellulose
d) Sodium carboxy methyl celluloidse
- 9) Major disadvantage of implants is _____.
a) Retrieval of therapy is not possible
b) Acute toxicity
c) Subchronic
d) Toxicity profiling
- 10) Which of the following characteristics is suitable for transdermal drug?
a) Drugs with large dose
b) Drugs with small molecular size
c) Metabolized through the skin
d) Large molecular size
- 11) Most commonly used pH dependent polymers are derivatives of _____.
a) Acrylic acid and cellulose b) Tartaric acid and cellulose
c) Acrylic acid and shellac d) Salicylic acid and cellulose
- 12) Glass Transition Temperature of polymers indicates _____.
a) Rubber to glassy state b) Solid to liquid state
c) Glassy to rubbery state d) All of the above
- 13) Criteria for selection of GRDDS is _____.
a) Drugs that degrade in colon
b) Narrow absorption window in intestine
c) Locally active in the stomach
d) All of the above
- 14) Which of the following is the most noticeable disadvantage of gastroretentive floating drug delivery system?
a) Delayed release
b) High level of acid in the stomach
c) Vigorous intestinal movements
d) Intestinal environment
- 15) The main anatomical barrier for ophthalmic drug absorption is the _____.
a) Retina b) Iris
c) Cornea d) Lens
- 16) Ideal characteristics of polymer are _____.
a) Inexpensive b) Good mechanical strength
c) Acceptable shelf life d) All

- 17) The ideal viscosity-enhancing agent for ophthalmic gels is _____.
a) Talc
b) Carbomer or HPMC
c) Tween 80
d) Petroleum
- 18) Microencapsulation means _____.
a) A process of mixing two substances
b) A process of surrounding one substance with another on a small scale
c) A method of separating substances
d) A technique for increasing particle size
- 19) Liposomes consist bilayers of _____.
a) Hydrophobic region
b) Hydrophilic region
c) Both a and b
d) Proteins
- 20) Formation of 3 immiscible phase (core material, coating material & Liquid vehicle) take place in which microencapsulation technique?
a) Multiple Orifice Centrifugation
b) Solvent Evaporation
c) Pan Coating
d) Phase separation-coacervation

Q.2 Answer any Seven of the following questions.**35**

- a) What is Ocular Drug Delivery System? Elaborate on different barriers of Ocular Drug Delivery System.
- b) Explain IUDs. Give its advantages and disadvantages.
- c) Write a note on Monoclonal antibodies and their applications in Targeted Drug Delivery System.
- d) Distinguish between Metered Dose Inhalers and Dry Powder Inhalers.
- e) Discuss Osmotic Pump as an implantable drug delivery system.
- f) Define Mucoadhesive Drug Delivery System. Give formulation considerations for Buccal Delivery Systems.
- g) Define Polymers. Give classification and its properties.
- h) Enlist advantages and disadvantages of controlled drug delivery systems.
- i) Define Microencapsulation. Discuss phase separation-coacervation technique.

Q.3 Answer any two of the following questions.**20**

- a) Discuss various approaches to design controlled release formulations.
- b) Explain various components of TDDS and permeation enhancers.
- c) Give a detailed note on formulation approaches for GRDDS.

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Set **P**

**B. Pharmacy (Semester - VIII) (CBCS) Examination: March/April - 2026
Biostatistics and Research Methodology (801801)**

Day & Date: Tuesday, 05-05-2026
Time: 10:30 AM To 01:30 PM

Max. Marks: 75

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Q.1 Multiple choice questions.**20**

- 1) Which of the following divides a group of data into four subgroups?
 - a) Quartiles
 - b) Standard Deviation
 - c) Percentiles
 - d) Median

- 2) The branch of statistics concerned with the procedure and methodology for obtaining valid conclusion is called as _____.
 - a) Sample Statistics
 - b) Inferential statistics
 - c) Descriptive statistics
 - d) Deductive Statistics

- 3) Mean Deviation, Variance and Standard Deviation of the values 4, 4, 4, 4, 4 is _____.
 - a) 4
 - b) 6
 - c) 24
 - d) 0

- 4) Which one of the following variables is not categorical?
 - a) Age of a person
 - b) Choice on a test item
 - c) Gender of a person
 - d) Marital status of a person

- 5) Statistics results are _____.
 - a) True on Average
 - b) Not True
 - c) Absolutely Correct
 - d) Universally True

- 6) The branch of biostatistics that deals with hypothesis testing and making predictions based on data collected is known as _____.
 - a) Descriptive biostatistics
 - b) Inferential biostatistics
 - c) Comparative biostatistics
 - d) Both a and b

- 7) Likert scale is a _____.
 - a) Ordinal scale
 - b) Nominal scale
 - c) Variance scale
 - d) Categorical scale

- 8) The extreme values in positively skewed distribution lie in the _____.
 - a) Middle
 - b) Right tail
 - c) Left Tail
 - d) Whole curve

- 9) In a psychiatric hospital, all patients are arranged chronologically according to height. Then every 4th patient is taken into study. The type of sampling In this case is _____.
a) simple random sampling b) stratified random sampling
c) systematic random sampling d) All of these
- 10) What does the correlation coefficient of 0.5 indicate?
a) The confidence interval of 95%
b) Weak association
c) Good association
d) No statistical association
- 11) Data classified by attributes are called as _____.
a) Ungrouped Data b) Geographical Data
c) Qualitative Data d) Quantitative Data
- 12) Power of study is the ability of a test to _____.
a) decrease beta error b) increase alpha error
c) increase beta error d) decrease alpha error
- 13) Graphical representation of the frequency distribution curve can be done by _____.
a) Pie chart b) Histogram
c) Pictogram d) Bar diagram
- 14) Which of the following measure of averages is not based on all the values given in the data set?
a) Arithmetic Mean b) Geometric Mean
c) Median d) Harmonic Mean
- 15) As the sample size increases, standard deviation _____.
a) Decreases b) Remains the same
c) Increases d) May increase or decrease
- 16) Height of students in a class is a _____.
a) discrete variable b) absolute variables
c) quantitative variables d) continuous variables
- 17) A constant variable can take _____ values.
a) Fixed b) Zero
c) Not fixed d) Nothing
- 18) Which of the following is/are essential for communicating a research work?
a) Procedure followed b) Command over language
c) Conclusions drawn d) All of the above
- 19) 2nd Quartile = 50th Percentile =?
a) Mode b) Median
c) Mean d) Geometric Mean

- 20) 'P' value stands for _____.
- a) The probability to achieve an incorrect result
 - b) The probability to achieve a correct result
 - c) Probability of concluding that a difference exists while in reality, such a difference does not exist
 - d) Probability of concluding that a difference does not exist while in reality, such a difference does exist

Q.2 Answer the following questions. (Any Seven)

35

- a) Define type-I and type-II errors, level of significance and p-value.
- b) What are types of graphs? By giving relevant examples write their applications.
- c) Classify and explain different types of data used in biostatistics.
- d) Explain the types of factorial design in formulation development. Give its advantages.
- e) Describe the role of software in data analysis during clinical trials.
- f) Explain the types of correlation and give its examples. Define correlation coefficient.
- g) What is linear regression? Explain its usefulness in pharmaceutical sciences by giving example.
- h) Discuss the methods of sampling in research study.
- i) Explain the hypothesis testing using one way of ANOVA.

Q.3 Answer the following questions. (Any Two)

20

- a) Describe the various types of measures of dispersion and give their significance.
- b) Classify and explain the tests used for hypothesis testing of non-parametric data.
- c) Describe descriptive and inferential statistics and explain their scope.

Q.2 Answer any seven of the following questions. 35

- a) Discuss causative agent and preventive measures of Chikungunya.
- b) Define health. Explain concept of health.
- c) Explain symptoms and management of SARS.
- d) Write a note on the national program for control of blindness.
- e) Explain the role of WHO Indian National Health Program.
- f) Write a note on improvement in rural sanitation.
- g) Explain the national health intervention programme for mother and child.
- h) Elaborate the concept of disease prevention.
- i) Discuss functions of PHC.

Q.3 Answer any two of the following questions. 20

- a) Explain transmission, prevention and control and Chemoprophylaxis of Cholera.
- b) Describe objectives strategies and activities of the National Leprosy Control Program.
- c) Explain urban healthcare delivery model.

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Set **P**

**B. Pharmacy (Semester - VIII) (CBCS) Examination:
March/April – 2026
Pharmacovigilance (801806)**

Day & Date: Tuesday, 12-05-2026
Time: 10:30 AM To 01:30 PM

Max. Marks: 75

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Q.1 Multiple Choice Questions.**20**

- 1) Which of the following database is maintained by UMC on behalf of World Health Organization?
 - a) Eudra Vigilance
 - b) Motherisk
 - c) Vigibase
 - d) General Practice Research Database (GPRD)

- 2) Expedited reporting comes under which series of ICH guidelines of pharmacovigilance _____.

a) E2B	b) E2C
c) E2A	d) E2D

- 3) What is WHO-ART?
 - a) WHO Advance Rate Terms
 - b) WHO Adverse Rate Terms
 - c) WHO Adverse Reaction Terminologies
 - d) WHO Advance Reaction Terminologies

- 4) After approval of the drug, for the initial two years. PSURs should be submitted _____.

a) Every Year	b) Every six months
c) Both a & b	d) None

- 5) The composition of CIOMS Consist of _____ members.

a) Five	b) Ten
c) Eight	d) Six

- 6) Which of following refers to the restarting of the same drug after having stopped it _____.

a) Dechallenge	b) Rechallenge
c) Prechallenge	d) All of above

- 7) The minimum information to be provided for the assessment of ADR is _____.
a) Patient information and description of reaction
b) Information about drug
c) Information about reporter and how it managed
d) All of above
- 8) The functions of UMC are _____.
a) Analyze data
b) Development of adverse reaction signals
c) Exchange information
d) Collecting, assessing and communicating information from member countries
- 9) Type E adverse drug reaction is _____.
a) An unexpected failure of therapy reaction
b) A dose-related reaction
c) An expected failure of therapy reaction
d) withdrawal reaction
- 10) What is AEFI?
a) Its medical event that takes place after immunization
b) Its medical event that takes place before immunization
c) Both a & b
d) None of above
- 11) Pharmacovigilance Continue Throughout _____.
a) Pre and post marketing surveillance
b) Post marketing surveillance
c) Pre marketing surveillance
d) None of the above
- 12) Signal Detection is _____.
a) The act of looking for and/or identifying signals using data from any source
b) To identify information regarding drug
c) To identify information about any vaccine
d) Detection of bioavailability of drug
- 13) CDSCO Headquarter is located in _____.
a) New Delhi
b) Kolkata
c) Chennai
d) Mumbai
- 14) Sentinel meaning _____.
a) Adverse drug event
b) Sponsor reporting
c) Adverse drug reaction
d) To keep watch for an event
- 15) Which of following is method of casualty assessment?
a) Naranjo Scale
b) WHO probability Scale
c) Jones Scale
d) All are correct

- 16) Schedule Y stands for _____.
 a) Manufacturing of drug b) Reporting of ADR
 c) Conduct of clinical trials d) Marketing of Drug
- 17) Volume 9A Presented in how many parts?
 a) Six b) Seven
 c) Four d) Ten
- 18) MedDRA is used for _____.
 a) Coding of drug b) Coding of events
 c) Both a & b d) None
- 19) Yellow card scheme is Establish in UK _____.
 a) 1968 b) 1964
 c) 1962 d) 1960
- 20) The Eudra vigilance is pharmacovigilance database of which of following country?
 a) USA b) European Union
 c) UK d) India

Q.2 Answer Any Seven of the following questions.

35

- a) Write a note on WHO international drug monitoring programme.
- b) Define and classify ADRs.
- c) Give ATC classification of drugs.
- d) Write note on MedDRA.
- e) Explain in detail adverse events following immunization.
- f) Outline the content of pharmacovigilance programme of India.
- g) Compare and contrast Pharmacovigilance regulations of India. UK. & USA.
- h) What is a CIOMS form? Explain in detail CIOMS working groups.
- i) Write note on drug safety evaluation in Pediatrics.

Q.3 Answer Any Two of the following questions.

20

- a) What is Vaccine safety surveillance? Explain in detail different types of pharmacovigilance methods used for passive and active surveillance.
- b) Describe organization, history and objectives of ICH. Add note on PSUR & ICSR.
- c) What is CDSCO? Give the governance & role of CDSCO in pharmacovigilance. Add note on Schedule Y.

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No.Set **P**

**B. Pharmacy (Semester - VIII) (CBCS) Examination: March/April –2026
Quality Control & Standardization of Herbals (801807)**

Day & Date: Tuesday, 12-05-2026

Max. Marks: 75

Time: 10:30 AM To 01:30 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Q.1 Multiple choice questions.**20**

- 1) Amikacin sulphate has melting point _____?
a) 204 Degree Celsius b) 304 Degree Celsius
c) 404 Degree Celsius d) 504 Degree Celsius
- 2) Ketamine Hydrochloride is a _____ crystalline powder.
a) Brown b) White
c) Cream d) None of these
- 3) Magnesium sulfate is a _____ crystals.
a) Pale brown b) Light green
c) Cream d) Colorless
- 4) Vinblastin Sulfate is a crystalline powder which is _____.
a) Hygroscopic b) White to slightly yellow
c) all d) Toxic
- 5) Paracetamol suppositories have _____ melting point?
a) 114 Degree Celsius b) 124 Degree Celsius
c) 134 Degree Celsius d) 144 Degree Celsius
- 6) Ferric chloride test is used to detect _____?
a) Glycoside b) Alkaloids
c) Phenol compounds tannin d) all
- 7) Ruthenium red test is used to detect _____?
a) Tannin b) Resins
c) Gums & mucilage d) Fixed oil & Fats
- 8) Leaf length of Alexandrian senna is _____?
a) 20-40 mm b) 25-50mm
c) 5-15mm d) 7-20mm
- 9) Calcium Gluconate Injection is a sterile solution containing _____ of calcium gluconate?
a) 200mg b) 150mg
c) 120mg d) 100mg

Q.2 Answer Any Seven of the following questions. 35

- a) Define and explain quality assurance.
- b) Write a short note on evaluation of commercial crude drugs.
- c) Define the following terminologies, - Herbs, Herbal Medicines, Quality assurance and quality control.
- d) Explain the good agriculture practices in the cultivation of medicinal CO2 Understand plants with their objective and components.
- e) Write down the Significances of European Union guidelines on quality control of herbals.
- f) Explain in detail about list of registration documents required for exporting herbals.
- g) Explain application of various chromatographic techniques in standardization of herbals.
- h) Enlist the provisions of Drugs and cosmetics for herbal medicines.
- i) Discuss the role of various herbal pharmacopoeias.

Q.3 Answer Any Two of the following questions. 20

- a) Write the regulatory requirements for herbals.
- b) What the research guidelines for evaluating safety & efficacy of herbals?
- c) Write ICH guidelines for stability testing of herbals.

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Set **P**

**B. Pharmacy (Semester - VIII) (CBCS) Examination:
March/April – 2026
Cosmetic Science (801810)**

Day & Date: Thursday, 14-05-2026
Time: 10:30 AM To 01:30 PM

Max. Marks: 75

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Q.1 Multiple choice questions.**20**

- 1) Merkel and Langerhan cells are present in ____ layer of skin.
 - a) Dermis
 - b) Epidermis
 - c) Hypodermis
 - d) None
- 2) Sunscreen works by _____.
 - a) Absorbing the rays
 - b) Reflecting the rays
 - c) Both a) and b)
 - d) None of these
- 3) Bromhidrosis is _____.
 - a) Body odour
 - b) Sebum
 - c) Skin discoloration
 - d) None of above
- 4) _____ technique is used to treat hyperhidrosis condition using microwave energy.
 - a) Botox
 - b) MiraDry
 - c) Iontophoresis
 - d) Surgery
- 5) Which of the following bacteria associated with dental cavities?
 - a) *Streptococcus mutans*
 - b) *Lactobacilli*
 - c) *Streptococcus sobrinus*
 - d) All
- 6) Which one of the following is not a stage of hair growth cycle?
 - a) Anagen
 - b) Catagen
 - c) Telogen
 - d) Pigmentation phase
- 7) _____ formulation does not contain parabens because they are self-preserving property.
 - a) Cold cream
 - b) Antiperspirant and deodorant
 - c) Anti- dandruff shampoo
 - d) All of above
- 8) Vitamin C of Amla produces _____ protein which stimulating hair growth, volume and length.
 - a) Collagen
 - b) Casein
 - c) Keratin
 - d) None

- 19) Straight to Wavy hairs are shown by _____ hairs.
- a) Asian
 - b) Caucasian
 - c) Afro ethnic
 - d) None
- 20) Vanishing cream is a _____ emulsion.
- a) W/O
 - b) O/W
 - c) Both a) & b)
 - d) None of these

Q.2 Solve. (Any Seven)**35**

- a) Write principle and application behind Sebumeter.
- b) Explain mechanism involved in sunscreen and write role SPF in sunscreen formulation.
- c) Explain the formulation aspects for Mouth wash.
- d) Discuss actives used in formulation of Antiperspirant and Deodorant.
- e) Classify and summarize cosmeceutical with suitable examples.
- f) Define Cosmetics as per Indian and EU regulations.
- g) Write role of herbs in cosmetics
 - i) Turmeric as skin care
 - ii) Amla as Hair care
- h) Write in detail about evolution of cosmeceuticals from cosmetics.
- i) Explain following cosmetic excipients
 - i) Surfactant
 - ii) Emollient

Q.3 Solve (Any Two)**20**

- a) Write detail note on Measurement of skin color and Hair tensile strength.
- b) Elaborate common problems associated with teeth and gums.
- c) Describe chemistry and formulation of Para-phenylene diamine (PPD) based hair dye.

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**B. Pharmacy (Semester - VIII) (CBCS) Examination:
March/April – 2026
Computer Aided Drug Design (801808)**

Day & Date: Thursday, 14-05-2026
Time: 10:30 AM To 01:30 PM

Max. Marks: 75

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Q.1 Multiple choice questions.**20**

- 1) Which of the following order is correct in drug development process?
 - a) Target-Hit-Drug-Lead
 - b) Hit-Lead-Drug-Target
 - c) Target-Hit-Lead-Drug
 - d) Lead-Drug-Hit-Target

- 2) Lead optimization step involves improving the _____.
 - a) Potency
 - b) Target selectivity
 - c) ADME properties
 - d) All the above

- 3) Chemical compounds that essentially have similar biological effects are called as _____.
 - a) Bioisosters
 - b) non-bioisoster
 - c) Equivalentents
 - d) non-equivalentents

- 4) Which, among the following drugs is an example of serendipitous discovery?
 - a) Captopril
 - b) Penicillin
 - c) Norgesterol
 - d) Sulindac

- 5) vHTS is an abbreviation for _____.
 - a) Virtual high throughput solution
 - b) Visual high throughput screening
 - c) Visual high throughput system
 - d) Virtual high throughput screening

- 6) Which of the below research groups established the relationship between the narcotic effects of organic compounds with their partition coefficients?
 - a) Brown & Fraser
 - b) Mayer & Overton
 - c) Hammett et al
 - d) Hansch et al

- 7) Which, among the below, is not an electronic parameter?
 - a) Verloop parameter
 - b) pKa
 - c) Dipole moment
 - d) Molecular orbitals

- 8) In the Hansch QSAR equation, " π " is known as _____.
 - a) Biological activity
 - b) Hydrophobic constant
 - c) Electronic constant
 - d) Steric constant

- 9) Which of the below method is an example of 2D QSAR analysis?
a) Hansch analysis b) Free-Wilson analysis
c) None of the above d) Both a) & b)
- 10) COMFA technique is used in _____.
a) 1D QSAR b) 2D QSAR
c) 3D QSAR d) 4D QSAR
- 11) A scoring function that predicts the binding affinity between a ligand and a receptor is known as _____.
a) Docking b) Aligning
c) Sequencing d) Super positioning
- 12) The 3D coordinates of crystal structures of proteins can be downloaded from _____.
a) uniprot.com b) rcbs.org
c) uniprot.org d) rcbs.com
- 13) A 3D representation of essential steric and electronic features of a class of molecules is known as _____.
a) A chromophore b) An electrophore
c) A pharmacophore d) Auxophore
- 14) A computational approach used to tailor new molecules that bind specifically to a target is known as _____.
a) Screening b) *De novo* designing
c) Docking d) Overlapping
- 15) The format of single line representation of chemical structures is known as _____.
a) Mol2 b) SDF
c) Algorithm d) SMILES
- 16) The bioinformatics field relies on essential tools like _____.
a) Databases b) Command-lines
c) Data retrieval software d) All of them
- 17) The absorption across intestinal cells is studied by using _____.
a) Caco-2 cell lines b) Hepatocytes
c) PAMPA d) p-glycoprotein
- 18) The ball and spring model of molecules is assumed in _____.
a) Quantum mechanics b) Molecular mechanics
c) Neither a) nor b) d) Field mechanics
- 19) The principle of quantum mechanics is based on _____.
a) Wave-particle duality b) Uncertainty principle
c) Both a) & b) d) Neither a) nor b)
- 20) Newton-Raphson method is used for _____.
a) Molecular searching b) Energy minimization
c) Regression analysis d) Docking

Q.2 Answer the following questions. (Any Seven) 35

- a) Define the terms Hit, lead, and drug. Write a short note on lead optimization.
- b) Write a detailed note on the history of QSAR.
- c) What is pharmacophore? Write a note on pharmacophore-based screening.
- d) Write a note on ADME databases
- e) What is energy minimization? Why is it important in molecular modeling?
- f) Write a short note on structure-based drug designing approach.
- g) Write a brief note on CoMFA.
- h) Write a note on bioisosterism and its role in drug designing.
- i) What is partition coefficient? How it is determined experimentally?

Q.3 Answer the following questions. (Any Two) 20

- a) What is 2D QSAR? Write a detailed note of Hansch and Free-Wilson analysis.
- b) What is molecular docking? What are the steps involved in it? How does it help in minimizing the efforts in drug discovery process?
- c) Explain in detail the stages involved in drug discovery and development.

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**B. Pharmacy (Semester - VIII) (CBCS) Examination:
March/April – 2026
Pharmaceutical Marketing Management (801804)**

Day & Date: Saturday, 16-05-2026
Time: 10:30 AM To 01:30 PM

Max. Marks: 75

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Q.1 Multiple choice questions.

20

- 1) What is the primary objective of pharmaceutical marketing _____.
 - a) To increase sales of pharmaceutical product
 - b) To regulate drug prices
 - c) To maximize production efficiency
 - d) To conduct medical research

- 2) The term 'Market has been derived from Latin word _____.
 - a) Marks
 - b) Marcatus
 - c) Marquee
 - d) None

- 3) _____ risks are caused by changes in governments and its policies.
 - a) Political
 - b) Economical
 - c) Human
 - d) Natural

- 4) Following which is the example of type of data collection in quantitative market research _____.
 - a) Mail
 - b) Face -to -face
 - c) telephone
 - d) All

- 5) Which model is available to explain organizational buying behaviour?
 - a) Webster and Wind Model
 - b) Sheth Model
 - c) Both a & b
 - d) None of the above

- 6) _____ is a competitive tool in the hands of marketer.
 - a) Product policy decision
 - b) Product attribute
 - c) Product positioning decision
 - d) Decline stage

- 7) Product mix _____ refer to the number of versions each product offers.
 - a) Depth
 - b) Short
 - c) Different
 - d) Policy decision

- 8) Following one is not marketing environment _____.
 - a) Internal environment
 - b) External environment
 - c) Micro environment
 - d) Macro environment

- 9) The market for the product in _____, started to show negative rate of growth and corroding cash flows.
- a) Depth
 - b) Growth stage
 - c) Decline stage
 - d) All of above
- 10) The company may decide to launch a newer version of the same drug category at a higher price, which will be termed as _____.
- a) Upward line stretching
 - b) Downward line stretching
 - c) Policy decision
 - d) None
- 11) _____ is type of communication between the byer and the seller.
- a) Advertising
 - b) Consumer
 - c) Promotion
 - d) Sale
- 12) Pharmaceutical companies can create emotional relationships with their _____.
- a) Consumer
 - b) Logo
 - c) Promotion
 - d) None
- 13) Price control order is applicable to _____.
- a) Generic drug
 - b) Branded drug
 - c) Both a & b
 - d) None
- 14) To promote new products and services is to announce and share this on _____.
- a) Promotion
 - b) Social media
 - c) Journals
 - d) Sale
- 15) _____ has no intermediary (middleman) levels.
- a) Direct marketing channel
 - b) Indirect marketing channel
 - c) None
 - d) All
- 16) Product can be classified on the basis of _____.
- a) Durability
 - b) Users
 - c) Visibility
 - d) All of above
- 17) Following which is the major determinant of price of a product _____.
- a) Cost production
 - b) Consumers buying capacity
 - c) Governments policy of price control
 - d) All
- 18) Information is used to identify and define marketing opportunities and problems; to generate, refine, and evaluate _____ actions.
- a) Sales
 - b) Marketing
 - c) Computer
 - d) Database
- 19) Parents buy toys for their children act as _____ in the buying process.
- a) Decider
 - b) Buyer
 - c) Maintainer
 - d) All of the above

- 20) Following which is a part of vertical marketing system.
- a) Corporate
 - b) Contractual
 - c) Administered
 - d) All

Q.2 Answer Any Seven of the following questions.

35

- a) Write note on industrial buying behavior.
- b) Explain strategic importance of physical distribution management.
- c) Explain terms-
 - i) Direct Mail
 - ii) Journal
- d) Define and classify product.
- e) Explain different factors affecting the promotional mix.
- f) Discuss in brief pricing of scheduled and non-scheduled formulation.
- g) Write function and work done by NPPA.
- h) Write a detail note on conflict in channels.
- i) Write on global marketing strategy.

Q.3 Answer Any Two of the following questions.

20

- a) Explain in detail on product branding and product management in pharmaceutical industry.
- b) Write a note motivation and prescribing habits of the physician.
- c) What is emerging concepts in marketing? Explain in detail on rural marketing.

Seat No.	
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Set **P**

**B. Pharmacy (Semester - VIII) (CBCS) Examination:
March/April – 2026
Pharmaceutical Regulatory Science (801805)**

Day & Date: Saturday, 16-05-2026
Time: 10:30 AM To 01:30 PM

Max. Marks: 75

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Q.1 Multiple choice questions.**20**

- 1) Part II of ACTD consists of _____.
 - a) Clinical
 - b) Non-clinical
 - c) Quality
 - d) Administrative data
- 2) Type II of DMF in USA includes _____.
 - a) Manufacturing facility
 - b) Information on colorants
 - c) Information on drug molecule
 - d) Material for packaging
- 3) Marketing Authorization approval (MAA) is a type of application submitted to _____ regulatory agency.
 - a) USFDA
 - b) WHO
 - c) TGA
 - d) EMA
- 4) Biological Products are licensed exclusivity rights for the period of _____ Years.
 - a) 12
 - b) 13
 - c) 14
 - d) 15
- 5) List of approved drugs and their associated IPR is available in _____.
 - a) Pink book
 - b) Orange book
 - c) Red book
 - d) Black book
- 6) Import of new drug application to CDSCO made through form _____.
 - a) 24
 - b) 44
 - c) 46
 - d) 40
- 7) Ministry of Health, Labor & Welfare (MHLW) is the regulatory body of _____.
 - a) Japan
 - b) Brazil
 - c) Canada
 - d) Australia
- 8) The AT Code in orange book is for _____.
 - a) Topical Products
 - b) Injectable aqueous solution
 - c) Injectable oil solutions
 - d) Solution

Q.2 Answer the following questions. (Any Seven) 35

- a) Give organizational structure of US FDA. Enlist types of applications submitted to US FDA.
- b) What is DMF? Elaborate parts of DMF.
- c) Explain in detail requirement for registration of Indian drug in overseas market.
- d) Discuss CFR in Pharmaceuticals.
- e) What is orange book? Add a note on contents of orange book.
- f) Discuss in brief about regulatory approval process for generic drug.
- g) Explain in detail phases of clinical trial.
- h) Discuss about Institutional Review Board.
- i) Discuss safety monitoring in clinical trials.

Q.3 Answer the following questions. (Any Two) 20

- a) Discuss in detail stages of drug discovery and development process.
- b) What is CTD? Explain in detail modules of CTD.
- c) Explain in detail New Drug Application (NDA).