

0806

12223

3 Hours / 80 Marks

Seat No. 

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- Instructions* – (1) All Questions are *Compulsory*.  
(2) Answer each next main Question on a new page.  
(3) Illustrate your answer with neat sketches wherever necessary.  
(4) Figures to the right indicate full marks.  
(5) Assume suitable data, if necessary.  
(6) Use of Non-programmable Electronic Pocket Calculator is permissible.  
(7) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

**Marks**

1. **Attempt any EIGHT of the following:** **16**
- a) Write the effect of heat on Boric acid.
  - b) Write the reaction involved in the limit test of iron.
  - c) Enlist any four ideal properties of antioxidants.
  - d) Give any four ideal requirements of antacids.
  - e) State the uses and properties of Epsom salt.
  - f) Define the terms:
    - i) Achlorhydria
    - ii) Expectorants and emetics
  - g) Give uses of Titanium dioxide and Silicone Polymer.
  - h) Why Povidone Iodine is preferred to Iodine solution?

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- i) Write storage, labeling condition of Nitrous Oxide.
- j) List the Major Intracellular and Extracellular electrolytes.
- k) Enlist any four Official compounds of Iron.
- l) State the importance of Barium sulphate reagent in sulphate Limit test.

**2. Attempt any THREE of the following. 12**

- a) Define Buffers. Explain mechanism of buffer action with suitable example.
- b) Define Inhalants. Explain role of Oxygen (O<sub>2</sub>) in biological system. Give Medicinal uses of Carbon dioxide.
- c) Define the terms :-
  - i) Half Life
  - ii) Radioisotopes
  - iii) Radioactivity
  - iv) Antidotes.
- d) Write the significance of quality control in pharmaceutical industry.
- e) Describe Properties and uses of :-
  - i) Antimony Potassium Tartarate
  - ii) Sodium Metabisulphite.

**3. Attempt any THREE of the following: 12**

- a) Discuss mechanism of action of topical antimicrobials.
- b) Enlist various sources of Impurities.
- c) Explain principle and reaction involved in the limit test of Arsenic.
- d) Explain Combination Electrolytes Therapy. Give properties and official preparations of sodium chloride.
- e) Draw neat sketch, well labeled diagram of G. M. Counter. Explain its working.

- 4. Attempt any THREE of the following:** **12**
- a) Explain Lowry and Bronsted concept on acid base with examples and list limitations of Arrhenius theory.
  - b) Mention allotropic forms of sulphur. Describe properties and uses of Selenium sulphide
  - c) Explain the terms Anticaries and Desensitizing agents. Give properties and storage condition of Strontium chloride.
  - d) Classify antidotes with examples. Explain the role of sodium nitrite in cyanide poisoning.
  - e) Explain Physiological acid base balance. Mention electrolytes used in physiological acid base imbalance.
- 5. Attempt any THREE of the following:** **12**
- a) Define antioxidants. Explain their mechanism of action
  - b) Explain the term Saline cathartics. Give properties uses and storage of Sodium Potassium tartarate.
  - c) Explain the term ORS. Give composition of ORS recommended by WHO and UNICEF.
  - d) Explain Radio opaque contrast medium. Write properties, uses and storage condition of barium sulphate.
  - e) Give Properties of :-
    - i) Potassium permanganate
    - ii) Hydrogen peroxide
    - iii) Stannous fluoride
    - iv) Ammonium carbonate
- 6. Attempt any FOUR of the following:** **16**
- a) Classify G.I.T agents with examples.
  - b) Define mEq. Calculate mEq. of NaCl in one liter of 1.6% w/v of solution.
  - c) Define Astringents. Write uses of astringents. Give properties and uses of Alum.

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**Marks**

- d) Explain combination antacid therapy with examples Give properties and uses of Aluminum hydroxidegel.
  - e) Explain biological role of Iodine. Give uses and incompatibilities of Iodine.
  - f) Give two identification tests for the following ions/radicals (Any Two).
    - i) Acetate
    - ii) Chloride
    - iii) Calcium
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**Marks**

- 1. Attempt any EIGHT of the following:** **16**
- a) Define Pharmacognosy. Write contribution of seydlar in development of Pharmacognosy.
- b) Define. Tannins. Write gold bitter's skin test for Tannins.
- c) Define with example :-
- i) Carminative
- ii) Diuretics.
- d) Define crude drugs. Give two examples of crude drugs from mineral source.
- e) Mention four characters of Umbelliferous fruits.
- f) Which part of plant is used as a drug in case of :-
- i) Ergot
- ii) Nutmeg
- iii) Cinchona
- iv) Liquorice

P.T.O.

- g) Enlist the Indian traditional system of medicine.
- h) Define pharmaceutical aid with two examples.
- i) Mention synonyms of :-
  - i) Vinca
  - ii) Vasaka
  - iii) Aconite
  - iv) Black pepper.
- j) Name the drugs which contain –
  - i) Colchicine
  - ii) Emetin
  - iii) Vitamin C
  - iv) Pentosan.
- k) What are Balsam. Give two examples.
- l) Write any two uses of following crude drugs –
  - i) Gokhru
  - ii) Castor oil

**2. Attempt any FOUR of the following:**

**12**

- a) Give Morphological classification of natural drugs with merits and demerits.
- b) Explain Borntrager's test. Give the chemical constituents of Senna leaf.
- c) Give two examples each of crude drugs from following family–
  - i) Apocynaceae
  - ii) Liliaceae
  - iii) Euphorbiaceae
- d) Which Umbelliferous fruit contains a chemical compound D-Linalool. Write its morphological characters with diagram.
- e) What are glycosides. Explain how glycosides are isolated from plant.
- f) Write the biological source and chemical constituents of digitalis.

**3. Attempt any FOUR of the following:****12**

- a) Define Alkaloids. Write the chemical test for identification of Alkaloids by precipitation method.
- b) Name the drug used as Antihypertensive give its biological source and chemical constituents.
- c) Distinguishing between of Volatile oil and Fixed oil.
- d) Give biological source and uses of –
  - i) Lemon oil
  - ii) Yeast
- e) Define Diuretics. Write biological source and chemical constituents of Punernava.
- f) Explain significance of following in evaluation of crude drugs–
  - i) Moisture content
  - ii) Melting point.

**4. Attempt any FOUR of the following:****12**

- a) Define resins. Give classification of resin combination with examples.
- b) Name the drug passes following chemical test and explain it (any two) –
  - i) Vitali-Marin test
  - ii) Gambier fluorescin test
  - iii) Swelling factor test.
- c) Draw a well labelled diagram of T.S. of Datura.
- d) Explain life cycle of Ergot.
- e) Give biological source of cotton. Explain method of preparation of same for market.
- f) Define evaluation of crude drugs. Enlist various methods of microscopical evaluation and explain any one method.

**5. Attempt any FOUR of the following:****12**

- a) Differentiate between condensed tannins and hydrolysable tannins.
- b) Define Antirheumatics. Give chemical constituents and biological source of Guggul or Colchicum.
- c) Write the methods of collection of bark.
- d) Differentiate between Organised drugs and Unorganised drugs.
- e) Define antiseptic. Give biological source and chemical constituents of benzoin.
- f) Define sutures and ligatures. Write ideal requirements of sutures.

**6. Explain any FOUR chemical tests for following drugs:****16**

- a) Agar
  - b) Myrrh
  - c) Digitalis
  - d) Turmeric
  - e) Silk
  - f) Sharkliver oil.
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- Instructions :**
- (1) All Questions are *compulsory*.
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**Marks****1. Attempt any EIGHT of the following :****8 × 2 = 16**

- (a) Describe megaloblastic anaemia ? How it is treated ?
- (b) State the physiological functions of Cobalt and Iodine.
- (c) Describe any one color reaction of cholesterol.
- (d) Define unsaturated fatty acids with examples.
- (e) Write the structure and function of Biotine.
- (f) Enlist Normal Constituents of urine.
- (g) Identify test to differentiate between monosaccharide and disaccharides. Write its principle.
- (h) Explain peptide bond formation.
- (i) Write functions of endoplasmic reticulum.
- (j) State biological importance of Phospholipids.
- (k) Draw reaction involved in hemi-acetal formation of glucose.
- (l) Differentiate between prokaryotic and eukaryotic cell.



**2. Attempt any FOUR of the following :****4 × 3 = 12**

- (a) Name the coenzymes of vitamins belonging to B-complex.
- (b) Define :
  - (i) Saponification number
  - (ii) Richert-missel number
  - (iii) Acetyl value
- (c) Write major functions and deficiencies of potassium.
- (d) Differentiate between reducing sugar and non-reducing sugar.
- (e) Explain secondary structure of proteins.
- (f) Explain following reactions :
  - (i) Ninhydrine reaction
  - (ii) Xanthoproteic reaction

**3. Attempt any FOUR of the following :****4 × 3 = 12**

- (a) Define “Anomer” and “Epimer” with suitable examples and structures.
- (b) Describe thrombocytopenia and thrombocythemia.
- (c) State the biological importance of minerals in biological system.
- (d) Describe biochemical role and enlist deficiency of folic acid.
- (e) Draw well labelled diagram of animal cell. Write functions of Nucleus.
- (f) Describe mechanism of enzyme action.

**4. Attempt any FOUR of the following :****4 × 3 = 12**

- (a) What is dehydration ? Explain causes and effects of dehydration.
- (b) Draw Structure, give physiological role of Niacin.
- (c) Explain term leucocyte. Classify different leucocytes.
- (d) Define and classify polysaccharides with examples. Draw structure of Amylopectin.
- (e) Describe isoelectric pH of amino acids with examples.
- (f) Discuss any two kinds of enzyme specificities with examples.

**5. Attempt any FOUR of the following :****4 × 3 = 12**

- (a) Explain following terms with examples :
  - (i) Transamination
  - (ii) Deamination
- (b) Describe various diseases caused due to abnormal lipid metabolism.
- (c) Define following :
  - (i) Holoenzyme
  - (ii) Zymogens
  - (iii) Coenzymes
- (d) Explain Rhodopsin cycle of vision.
- (e) Describe following :
  - (i) Rothera's test
  - (ii) Pharmacological importance of enzymes
- (f) Describe in brief classification proteins based on composition with suitable examples.

6. Attempt any FOUR of the following :

4 × 4 = 16

- (a) Explain Urea cycle.
  - (b) Describe  $\beta$ -oxidation of fatty acids with energetic.
  - (c) Mention various factors which affects enzyme activity. Discuss effect of substrate concentration in detail.
  - (d) Enlist inborn errors of protein metabolism, describe any two.
  - (e) Draw Kreb's cycle.
  - (f) Define and classify lipids with examples from each class.
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Seat No.

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- Instructions :**
- (1) All Questions are *compulsory*.
  - (2) Answer each next main Question on a new page.
  - (3) Illustrate your answers with neat sketches wherever necessary.
  - (4) Figures to the right indicate full marks.
  - (5) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

**Marks****1. Answer any EIGHT of the following :****8 × 2 = 16**

- (a) Classify nervous tissue.
- (b) List four strata of epidermis of skin.
- (c) Write the functions of Cerebrospinal fluid.
- (d) Mention the name of tissue by which the organ is made up of :
  - (i) Heart
  - (ii) the Pons
- (e) Draw flow chart of physiology of Neuromuscular Junction.
- (f) List the organs of urinary system and write the normal urine output per day.
- (g) Draw a well-labelled diagram of a lymph node.
- (h) Enumerate hormones released by the pituitary gland.





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4. Answer any FOUR of the following :

4 × 3 = 12

- (a) Explain terms :
  - (i) Hematology
  - (ii) Anatomy
  - (iii) Hemolysis
- (b) Describe three functions of lymphatic system.
- (c) Write the physiology of respiration.
- (d) List the functions of kidneys. Explain any one.
- (e) Explain the anatomy of Sympathetic Nervous System.
- (f) Write anatomy and physiology of ovary.

5. Answer any FOUR of the following :

4 × 3 = 12

- (a) Draw a well-labelled diagram of cell.
- (b) Explain Differential Leukocyte Count with its significance.
- (c) Explain following terms :
  - (i) Cardiac output
  - (ii) Atherosclerosis
  - (iii) Thrombocytopenia
- (d) List any six functions of liver.
- (e) Describe metabolic role of Thyroid hormones.
- (f) Write the composition and functions of intestinal juice.

6. Answer any FOUR of the following :

4 × 4 = 16

- (a) Explain following terms with their normal values :
  - (i) Inspiratory Reserve Volume
  - (ii) Vital capacity
  - (iii) Tidal volume
  - (iv) Lung capacity

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- (b) Explain portal circulation with its significance.
  - (c) Describe the functions of medulla oblongata.
  - (d) Explain macroscopic and microscopic anatomy of kidneys.
  - (e) Describe the electric conduction system of the heart.
  - (f) Explain the process of digestion of carbohydrates in the food.
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3 Hours / 80 Marks

Seat No.

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- Instructions :**
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- |   | <b>Marks</b>      |
|---|-------------------|
| <b>1. Answer any EIGHT of the following :</b>                         | <b>8 × 2 = 16</b> |
| (a) Define the terms :  |                   |
| (i) First aid   | <b>1</b>          |
| (ii) Microbiology   | <b>1</b>          |
| (b) Name the disease due to following causative agent :               |                   |
| (i) Varicella Zoster  | <b>1</b>          |
| (ii) Yersinia Pestis  | <b>1</b>          |
| (c) Name the disease occurring due to deficiency of followings :      |                   |
| (i) Folic acid  | <b>1</b>          |
| (ii) Vitamin K  | <b>1</b>          |
| (d) Give any two comparisons between Gram + ve and Gram –ve bacteria. |                   |



- (e) Give long forms of the followings :
- (i) RTI 1
  - (ii) UTI 1
- (f) What do you mean by Isolation of Patients ?
- (g) Define the terms :
- (i) Epidemiology 1
  - (ii) Family planning 1
- (h) What do you mean by Pandemic disease ? Mention any two examples of it.
- (i) Enlist different types of Fracture.
- (j) What is CPR ? Enlist the different methods of artificial respiration techniques.
- (k) Discuss disinfection procedure for Linen.
- (l) Define “Incubation Period”.

**2. Answer any FOUR of the following :**

**3 × 4 = 12**

- (a) Define and classify ‘Disease Agents’.
- (b) Give an account on different staining techniques of Micro-organism.
- (c) What is Fertility ? What are the factors on which fertility depends ?
- (d) What first aid should be given to a snake bite case ?
- (e) Mention the sources of water supply & describe any one method for purification of water.
- (f) Explain “Natural history of diseases”.

**3. Answer any FOUR of the following :****3 × 4 = 12**

- (a) Define “Demography”. State the different stages of population growth.
- (b) What are different methods of contraception ? Classify them with examples.
- (c) Define “Health”. State & explain aspects of Health.
- (d) What is Cancer ? What are it’s causes ?
- (e) Explain the role of Vit. C and Vit. D in the human body.
- (f) Give causes, prevention & control of Diabetes.

**4. Answer any FOUR of the following :****3 × 4 = 12**

- (a) Define “Immunity”. Discuss its type.
- (b) What do you mean by “Nosocomial Infection” ? How it can be prevented ?
- (c) What is “Balanced Diet” ? Give its composition.
- (d) What is Noise ? Give effects of it on human beings & its control measures.
- (e) Explain “Kwashiorkor” & “Marasmus”.
- (f) What is Hypertension ? Give causes, prevention & treatment of hypertension.

**5. Answer any FOUR of the following :****3 × 4 = 12**

- (a) Give recommended disinfection procedure for faeces & urine.
- (b) Classify Vitamins. Write sources of Vit. A & Vit. E.
- (c) Name the indicators used for assessment of Health. Explain any one indicator.
- (d) Draw a neat and well-labelled diagram of bacterial cell and explain its composition.
- (e) Describe “National Immunisation Schedule”.
- (f) What is AIDS ? Explain in brief.

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6. Write causative agent, mode of transmission, symptoms & control of the following :

(Any Four)

4 × 4 = 16

- (a) Tuberculosis
  - (b) Malaria
  - (c) Leprosy
  - (d) Tetanus
  - (e) Cholera
  - (f) Measles
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**21222**

**3 Hours / 80 Marks**

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15 minutes extra for each hour

- Instructions* – (1) All Questions are *Compulsory*.
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**Marks**

1. Answer any TEN of the following : **20**
- a) Enlist the method of size reduction of powder.
- b) State the ideal properties of menstruum used for extraction.
- c) Name the different types of closures used.
- d) Give application of Freeze drying.
- e) Why injectables are not to be stored in soda lime glass container?
- f) What are unit packing? Give two examples.
- g) Define.
- i) Suspension
- ii) Syrup
- h) What are main objective of mixing?
- i) Define Pharmacopoeia. When II<sup>nd</sup> edition of pharmacopoeia was published?

P.T.O.

- j) Give merits of liquid dosage form.
- k) Define the term menstruum and marc.
- l) Give advantages of Evaporating still.
- m) Define term sieve number. Enlist equipments used for size separation.

**2. Answer any FOUR of the following: 12**

- a) Why there is need for formulation of different dosage forms?
- b) Draw a well labelled diagram of cyclone separator and describe its working.
- c) Explain the official grades of powder.
- d) Discuss construction of Hammer mill with neat diagram.
- e) Differentiate between maceration of organized drug and unorganized drugs.
- f) Define Aerosol packaging. Enumerate its advantages and disadvantages.

**3. Answer any FOUR of the following: 12**

- a) Explain factors affecting rate of filtration by Darcy's law.
- b) Define the term 'Filer aids'. Write the four qualities of an ideal aids.
- c) Explain the double maceration process for extraction of drugs.
- d) What are salient features of Third edition of I.P.?
- e) How many parts of 85%, 65%, 45% and 25% of alcohol should be mixed, to get 55% of alcohol, 500 ml.
- f) Explain construction of Vacuum Dryer with neat diagram.

- 4. Answer any FOUR of the following:** **12**
- a) Explain various stages of sugar coating of tablet.
  - b) Explain the principle of steam distillation and give its application in pharmacy.
  - c) Give construction and working of Silverson's Mixer Homogeniser.
  - d) What do you mean by Glidant, antiadherent and lubricants? Explain their role with example.
  - e) Give the construction and working of fluid energy mill.
  - f) Draw a well labelled diagram of soxhlet apparatus.
- 5. Answer any FOUR of the following:** **12**
- a) Give difference between Active Immunity and Passive Immunity.
  - b) Explain working of Hand operated capsule filling machine.
  - c) Describe the various factors which affect rate of evaporation.
  - d) Give the principle, method and application of sterilization by Autoclaving.
  - e) Define Drying. Give application of drying in Pharmacy.
  - f) Why tablets are coated? and give the types of coatings.
- 6. Answer any FOUR of the following:** **12**
- a) Discuss in brief the disintegration test for uncoated tablets.
  - b) Explain method of preparation of small pox vaccine using Egg.
  - c) What are advantages of Novel Drug delivery system? What are liposomes.
  - d) State manufacturing defects in tablets. Write note on capping.
  - e) Define capsule and differentiate between Hard gelatin capsules and soft gelatin capsules.
  - f) Explain construction of Fluidized Bed dryer.
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15 minutes extra for each hour

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**Marks**

- 1. Attempt any FIVE of the following: **20****
- a) Define Arrhenius acids and bases with examples and discuss the limitations of this theory.
  - b) Explain the mechanism of action of antioxidants and write the factors to be considered for selection of suitable antioxidants.
  - c) Explain with examples Antacids Combination Therapy.
  - d) Explain principle involved in the limit test for Iron with suitable reactions.
  - e) Describe mechanism of action of anti-microbial agents.
  - f) Write properties and uses of :
    - (i) Talc
    - (ii) Selenium sulphide

P.T.O.



- g) Define Antidote and classify them with examples.
- h) Name any four official compounds of Iron and write their chemical formulae.

**2. Attempt any THREE of the following: 12**

- a) Explain GIT Protectives and Adsorbents. Give properties and uses of Bismuth subcarbonate.
- b) Discuss the importance of Quality Control in Pharmacy.
- c) Enlist various major intra and extra cellular electrolytes occurring in the human body. Describe the physiological role of potassium ion with disorders.
- d) Explain how dental caries are formed and give role of fluoride in prevention of dental caries.
- e) Define respiratory stimulants. Write formula, properties and uses of Ammonium chloride.

**3. Attempt any THREE of the following: 12**

- a) State uses and storage condition of :
  - (i) Oxygen
  - (ii) Carbon dioxide
- b) Define the following terms :
  - (i) Astringent
  - (ii) Achlorhydria
  - (iii) Metabolic acidosis
  - (iv) Desensitising agent
- c) Give formula, properties and uses of silicone polymers.
- d) Explain electrolyte combination therapy. Give a formula of oral rehydration salt mixture recommended by WHO and UNICEF.
- e) Draw a well labelled diagram of Gutzeit apparatus.

**4. Attempt any THREE of the following: 12**

- a) State the formula, synonym, properties and uses of calcium hydroxide.
- b) Describe the role of calcium or Iodine in the body.
- c) Classify cathartics with suitable examples.
- d) Explain radio opaque contrast media. Give the properties and uses of Barium sulphate
- e) Mention the molecular formula and synonyms of :
  - (i) Magnesium sulphate
  - (ii) Antimony potassium tartrate

**5. Attempt any THREE of the following: 12**

- a) Give the properties and storage condition of hydrogen peroxide and potassium permanganate.
- b) Define Inhalant. Explain role of oxygen in human body.
- c) Enlist various units used for measuring radioactivity. Explain the construction and working of Geiger - Muller counter.
- d) State synonym, formula, properties and uses of Boric acid.
- e) Explain how physiological acid - base balance of the body is maintained.

**6. Attempt any THREE of the following:****12**

- a) Name the various sources of impurities present in pharmaceutical substances. Explain any two.
  - b) Define Antioxidants. Write formula, properties and uses of sodium thiosulphate.
  - c) Define Radioisotopes and write any three applications of radioisotopes.
  - d) Write the properties and uses of :
    - (i) Zinc Chloride
    - (ii) Potassium iodide
  - e) Write two identification tests for the following ions/radical (Any two)
    - (i) Calcium
    - (ii) Ferrous
    - (iii) Acetates
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15 minutes extra for each hour

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**Marks**

- 1. Attempt any EIGHT of the following. 16**
- a) Define Pharmacognosy. Give the contribution of Galen.
- b) Write the biological source of following drugs
- i) Digitalis
- ii) Ajowan
- c) Give the synonyms of following drugs.
- i) Vinca
- ii) Vasaka
- iii) Liquorice
- iv) Neem
- d) Give the difference between Organised and Unorganised drugs.
- e) Draw the well labelled diagram, showing morphology of Fennel fruit.

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- f) Which part of the plant is used as drug in case of
- i) Ispaghula
  - ii) Gokhru
  - iii) Colchicum
  - iv) Nutmeg
- g) Give two examples of drug from following family.
- i) Solanaceae
  - ii) Leguminoceae
- h) Define enzymes ? Give its example.
- i) Describe the method of preparation of silk fibre.
- j) Give the function of trichome and name the drug containing unicellular trichomes.
- k) Define Antitussive with examples.
- l) Give the method and significance of "Modified Borntrager test".

**2. Attempt any THREE of the following. 12**

- a) Explain pharmacological method of classification of crude drugs with merits and demerits.
- b) Draw the well labelled diagram of T.S. of Datura and describe its microscopy.
- c) Give uses and chemical constituents of : (any two)
  - i) Chaulmoogra oil
  - ii) Rauwolfia
  - iii) Garlic
  - iv) Honey
- d) Describe any four physical methods of evaluation of crude drugs.
- e) Write the meaning of Umbelliferous fruit ? Describe morphological characters of any one Umbelliferous fruit with diagram.

**3. Attempt any THREE of the following. 12**

- a) Explain Ayurvedic system of medicine.
- b) Give the uses and chemical constituents of following: (any two)
  - i) Nux-vomica
  - ii) Tobacco
  - iii) Senna
  - iv) Papaya
- c) Explain the following chemical tests.
  - i) Keller-Killiani test
  - ii) Vitalis-Morine test
- d) Define Diuretics. Give Biological source, uses and chemical constituents of any one drug.
- e) Define volatile oil. Explain in brief various methods used for isolation of volatile oil.

**4. Attempt any THREE of the following. 12**

- a) Define perfumes and flavouring agents. Give biological source and chemical constituents of any one -
  - i) Lemon grass oil
  - ii) Peppermint oil
- b) Describe method of collection and preparation of Digitalis or Senna for market.
- c) Define Tannins. Write the general chemical test for tannins.
- d) Give the biological source, chemical constituents and uses of Ephedra.
- e) Define Sutures and Ligatures. Write ideal requirements of sutures.

**5. Attempt any THREE of the following. 12**

- a) Define and classify Alkaloids with examples of crude drugs.
- b) Define with example
  - i) Laxatives
  - ii) Carminative
  - iii) Anti-tumour
  - iv) Anti - tussive
- c) Define adulteration. Give the various methods of adulteration with suitable example.
- d) Define Antirheumatics ? Write biological source, uses and chemical constituents of any one Antirheumatic drugs.
- e) Describe the life cycle of Ergot with labelled diagram.

**6. Write chemical tests of following crude drugs. (any FOUR) 16**

- a) Wool
  - b) Acacia
  - c) Asafoetida
  - d) Shark Liver oil
  - e) Agar
  - f) Turmeric
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00808

**21222**

**3 Hours / 80 Marks**

Seat No.

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15 minutes extra for each hour

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- Instructions :**
- (1) All Questions are *compulsory*.
  - (2) Answer each next main Question on a new page.
  - (3) Illustrate your answers with neat sketches wherever necessary.
  - (4) Figures to the right indicate full marks.
  - (5) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

**Marks**

**1. Solve any EIGHT of the following :**

**2 × 8 = 16**

- (a) Define Biochemistry & Pathology.
- (b) Explain the term 'Isoelectric pH'.
- (c) Explain the term 'Mutarotation' with example.
- (d) Define the terms (any **two**) :
  - (i) Acid value
  - (ii) Iodine value
  - (iii) Acetyl value
- (e) Give diagrammatic representation of Wald's visual cycle.
- (f) Give role of minerals in life processes (any four points).
- (g) Define isoenzyme & zymogens.
- (h) Give any four functions of proteins.



- (i) Give any four examples of normal constituents of urine.
- (j) Explain primary structure of proteins.
- (k) Explain Rancidity of fats.
- (l) Explain the term 'Denaturation of proteins'.

**2. Solve any FOUR of the following :**

**3 × 4 = 12**

- (a) Write functions of any three cell organelles.
- (b) Draw the structures of
  - (i) Optically inactive amino acid
  - (ii) Aromatic amino acid (any one)
  - (iii) Acidic amino acid (any one)
- (c) Explain polysaccharides in detail.
- (d) Describe functions of lipids.
- (e) Give biochemical role of Vitamin-D & Vitamin-E.
- (f) Explain conjugated proteins with examples.

**3. Solve any FOUR of the following :**

**3 × 4 = 12**

- (a) Describe Diabetes mellitus in detail.
- (b) Explain any two disorders related with lipid metabolism.
- (c) Write deficiency diseases of Vitamin-A, Vitamin-K, Vitamin-C.
- (d) Explain oxidation reactions of glucose.
- (e) Write in detail about phospholipids.
- (f) Name the Vitamin associated with following disorder :
  - (i) Egg white injury
  - (ii) Pellagra
  - (iii) Pernicious anaemia

**4. Solve any FOUR of the following :****3 × 4 = 12**

- (a) Give biochemical role of calcium, phosphorus & potassium.
- (b) Classify enzymes with examples.
- (c) Outline the steps involved in urea cycle.
- (d) Define Anaemia and explain sickle cell anaemia.
- (e) Explain dehydration in detail.
- (f) Give therapeutic & diagnostic uses of enzymes (Any three each).

**5. Solve any FOUR of the following :****3 × 4 = 12**

- (a) Name Zinborn errors of protein metabolism and explain alkaptonureia.
- (b) Write abnormal constituents of urine with their significance in diseases.
- (c) Explain Hyponatremia & Osteoporosis.
- (d) Explain effect of temperature & pH on rate of enzyme catalysed reaction.
- (e) Write note on Cholesterol.
- (f) Explain any two leucocyte disorders in detail.

**6. Solve any FOUR of the following :****4 × 4 = 16**

- (a) Explain Kreb cycle in detail.
  - (b) Explain various metabolic pathways for Carbohydrates.
  - (c) Explain glycolysis in detail.
  - (d) Explain  $\beta$ -oxidation of fatty acids in detail.
  - (e) Explain Ketosis in detail.
  - (f) Give coenzyme forms of  $\beta$ -complex group vitamins (Any eight vitamins of  $\beta$ -complex).
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00809

**21222**

**3 Hours / 80 Marks**

Seat No.

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15 minutes extra for each hour

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- Instructions :**
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**Marks**

**1. Attempt any EIGHT of the following :**

**8 × 2 = 16**

- (a) Define the terms Anatomy and Physiology.
- (b) State the functions of bone.
- (c) Give the composition of gastric-juice.
- (d) Explain – mitochondria is called power house of cell.
- (e) Name organs of respiratory system.
- (f) Name the gland which is called as Master gland ? Why.
- (g) What are Meninges ? Enlist them.
- (h) Mention four abnormal constituent of Urine.
- (i) Describe compound epithelium in short.
- (j) Define cardiac out-put ? Write its normal value.
- (k) Name sinuses present in the skull.
- (l) What is SA node and AV node ?

**2. Solve any FOUR of the following :****4 × 3 = 12**

- (a) Define blood pressure (B.P.). Name factors affecting B.P.
- (b) Differentiate between male pelvis and female pelvis.
- (c) Describe mechanism of respiration.
- (d) Define :
  - (i) Anaemia
  - (ii) Thrombocytopenia
  - (iii) Leukaemia
- (e) Give the function of skin.
- (f) Draw a well labelled diagram of cell.

**3. Solve any FOUR of the following :****4 × 3 = 12**

- (a) Write the composition of blood.
- (b) Draw a well-labelled diagram of L.S of kidney.
- (c) Explain the physiology of urine formation.
- (d) Describe the exocrine and endocrine function of pancreas.
- (e) Give composition and function of saliva.
- (f) Give the function of WBCs.

**4. Solve any FOUR of the following :****4 × 3 = 12**

- (a) Explain the structure of “Neuro-Muscular junction”.
- (b) Write the function of spleen.
- (c) Describe mechanism of hearing in short.
- (d) Define :
  - (i) Residual volume
  - (ii) Tidal-volume
  - (iii) Vital-capacity
- (e) Describe menstrual cycle in brief.
- (f) Describe various disorders of joints.

00809

[3 of 4]

5. Solve any FOUR of the following :

4 × 3 = 12

- (a) Explain the terms : Glycosuria, Protein Uria and Haematuria.
- (b) Write the function of hypothalamus.
- (c) Draw and label diagram of “Digestive system”.
- (d) Define the term puberty ? State the changes occurring in male at puberty.
- (e) Name the secretion of adrenal glands with their function.
- (f) Describe the physiology of muscle contraction.

6. Solve any FOUR of the following :

4 × 4 = 16

- (a) What is semen ? Describe spermatozoa in short.
  - (b) Define the term reflex action. Draw a neat labelled diagram of reflex arc.
  - (c) Describe internal structure of Heart.
  - (d) Differentiate between sympathetic and parasympathetic nervous system.
  - (e) Describe in brief the “Cardiac cycle”.
  - (f) Discuss the external organs of “Female reproductive system”.
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00810

**21222**

**3 Hours / 80 Marks**

Seat No.

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15 minutes extra for each hour

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- Instructions :**
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  - (4) Figures to the right indicate full marks.

**Marks**

**1. Answer any FOUR of the following :**

**16**

- (a) Define the following :
  - (i) Incubation period
  - (ii) Epidemiology
- (b) Name any 2 cardiovascular diseases & suggest prevention for cardio-vascular diseases.
- (c) Draw a diagram of bacterial cell. Give examples of any 2 bacterial infections.
- (d) Describe Noise, its parameters & provisions to reduce noise.
- (e) Write sources, functions and deficiency disease of vitamin A.

**2. Answer any THREE of the following :**

**12**

- (a) Health is multi-dimensional. Explain this statement.
- (b) Mention deficiency diseases of proteins. Write symptoms and control for these diseases.
- (c) Classify family planning methods.
- (d) Discuss Cardio-pulmonary resuscitation.
- (e) Classify micro-organisms. Give examples of any 2 protozoal infections.

[1 of 2]

**P.T.O.**



- 3. Answer any THREE of the following :** **12**
- (a) State various modes of disease transmission.
  - (b) Define & describe types of disinfection.
  - (c) State warning signals of cancer & prevention of cancer.
  - (d) Write sources, functions, deficiency of iron.
  - (e) Define sewage & sludge. Write aims of sewage treatment.
- 4. Answer any THREE of the following :** **12**
- (a) Explain role of Pharmacist in prevention of sexually transmitted diseases.
  - (b) Describe nutrition related programmes run by Govt. of India.
  - (c) Explain four determinants of health.
  - (d) Define First aid & write its aim & major principles of First aid.
  - (e) Distinguish between :
    - (i) Communicable diseases & non-communicable diseases.
    - (ii) Case control study & cohort study.
- 5. Answer any THREE of the following :** **12**
- (a) Categorise immunological products with examples.
  - (b) Discuss various disease agents.
  - (c) State 'Rule of Nine' & write First aid treatment for burns & scalds.
  - (d) Discuss symptoms and prevention of diabetes mellitus.
  - (e) Give procedures for Gram staining & Acid fast staining.
- 6. Write causative agents, modes of transmission, symptoms & prevention of any four of following diseases :** **16**
- (a) Hookworm infection
  - (b) Gonorrhoea
  - (c) Malaria
  - (d) Pertussis
  - (e) Influenza
-