

Please check that you have received the correct question paper.

1. All questions are compulsory.
2. Choice is internal
3. Figures to the right indicate full marks.
4. Draw structures and diagrams wherever necessary.

Q.1 A) Name one enzyme secreted by following organs: (04)

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|--------------------|-------------------------------|
| (i) Salivary gland | (iii) Pancreatic acinar cells |
| (ii) Tongue | (iv) Stomach chief cells |

Q.1 B) Write short notes on any three of the following: (09)

- Peptic ulcer
- Saliva production
- Anatomy of stomach
- Composition and functions of pancreatic juice
- Mixed micelle
- Mechanism of absorption of carbohydrates

Q.1 C) Answer any two of the following: (12)

- Describe the histology of small intestine.
- Justify-“Swallowing takes place in three stages.”
- Write an account of digestion of proteins.
- Elaborate on emulsification of lipids and its absorption in intestine.

Q.2 A) State True or False: (04)

- Bohr effect refers to the principle that pH of the blood is directly proportional to oxygen saturation.
- Smooth muscles present in the alveolar fluid help prevent collapsing of the alveoli.
- Length of loop of Henle of juxtamedullary nephrons is shorter than that of cortical nephrons.
- Mesangial cells are contractile cells that help regulate glomerular filtration.

Q.2 B) Answer any three of the following: (09)

- Write a brief note on transport of oxygen via blood.
- Explain: “Molecular weight of the gas affects its diffusion across the membrane”.
- Write a note on measurement of lung capacity.
- Enumerate the functions of kidney.
- Explain reabsorption in the kidney.
- Give a detailed account of ‘nephritis’.

Q.2 C) Answer any two of the following: (12)

- Explain in detail the process of inhalation and exhalation.
- Write a short note on the pathophysiological conditions and their causes associated with abnormally high and low CO₂ in blood. What is the normal range of O₂ and CO₂ in the arterial blood?
- Elaborate on the role of transporters present in nephron.
- Give a brief account of GFR and its regulation.

Q.3 A) Match the following:

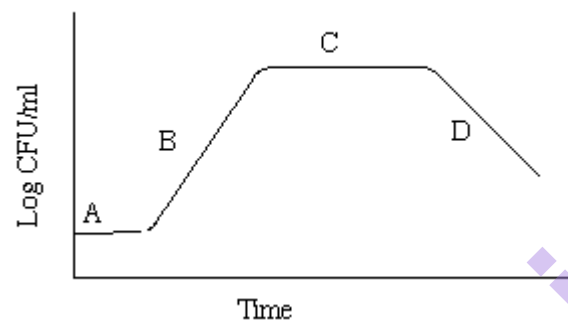
(04)

- | | |
|-------------------------|----------------------------------|
| 1. Cleaning | (a) Hydrogen peroxide sterilizer |
| 2. Disinfectant | (b) Formaldehyde sterilizer |
| 3. Gas Sterilization | (c) Removal of dirt |
| 4. Liquid Sterilization | (d) Hot air Oven |
| | (e) Halogens |
| | (f) Gamma rays |

Q.3 B) Answer any three of the following:

(09)

- (i) Using this typical bacterial growth curve, identify and explain A, B, C and D.



- (ii) Give reasons as to why agar is used as a component of culture media?
- (iii) Justify, with valid reasons: 'Generation time is not a constant characteristic for a species.'
- (iv) Give points of contrast between the following methods:
(a) Sterilization (b) Disinfection (c) Sanitization
- (v) Identify and explain **any three** major physical factors governing microbial growth.
- (vi) Derive the mathematical expression for representing microbial growth.

Q3. C) Answer any two of the following:

(12)

- (i) Discuss the direct methods for quantitative measurement of bacterial growth.
- (ii) Compare and contrast: Dry and Moist-heat sterilization.
- (iii) Elaborate on the chemical agents used for microbial growth control.
- (iv) Write an informative note on bacterial growth media.

Q.4 A) Define any five of the following:

(10)

- | | | |
|------------------------|-------------------------|-------------------|
| (i) Synchronous growth | (ii) Continuous culture | (iii) Podocytes |
| (iv) Altitude sickness | (v) JGA | (vi) Digestion |
| | | (vii) Mastication |

Q.4 B) Answer any three of the following:

(15)

- (i) In a tabular format, discuss the use of radiations as agents of sterilization under the following headings: (a) mode of action (b) examples
- (ii) Write an elaborative note on methods of bacterial enumeration.
- (iii) Elaborate on the factors that affect the rate of gas exchange in the body.
- (iv) Give a detailed account of formation of urine with the help of a neat-labelled diagram.
- (v) Explain parts and functions of large intestine.
- (vi) Discuss the enzymes involved in digestion of carbohydrates.