

TB142300A

Reg. No:

Name :

**B.Sc. DEGREE (CBCSS) EXAMINATION, APRIL, 2015
SECOND SEMESTER – CORE COURSE (FAMILY AND COMMUNITY SCIENCE)
HSC2HPM – HUMAN PHYSIOLOGY AND MICROBIOLOGY**

Time: 3 Hours

Maximum: 60 marks

Part A

Answer *all* questions. (Each question carries 1 mark).

1. What is blood transfusion?
2. Define blood pressure.
3. What are the major functions of spleen?
4. What is a “Disinfectant”?
5. Name the valves present in heart and its function.
6. What is food Adulteration?
7. Define staining.
8. What is “AGMARK”?

(8x 1= 8 marks)

Part B (Brief Answer Questions)

Answer any *six* questions. (Each question carries of 2 marks).

9. Write on the process of Micturition.
10. Indicate the role of liver in human physiology.
11. Explain the different blood groups
12. Discuss the properties of cardiac muscle.
13. Give the classification of tissues.
14. What are the different methods of milk preservation?
15. Write on the classification of microorganism.
16. Write the method of preventing food borne infections.
17. Explain about HACCP.
18. Name any four viral diseases.

(6x 2= 12 marks)

Part C

Answer any *four* questions. (Each question carries of 4 marks).

19. Explain the process of clotting.
20. Write about bone marrow and explain its function.
21. Draw the structure of nephron and explain it.
22. Define immunity. Explain the different types.
23. Write a note on aetiology, symptoms and prevention of typhoid.
24. Describe the economic importance of Yeast.

(4x 4= 16 marks)

Part D

Answer any *two* questions. (Each question carries of 12 marks).

25. Discuss the methods to control and destroy microorganisms.
26. Explain bacterial and viral food poisoning.
27. Describe briefly the process of digestion and absorption of carbohydrates and proteins in human body.
28. Explain the structure of heart and cardiac cycle.

(2x12= 24 marks)

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1. Blood transfusion 3 methods – direct, indirect and plasma transfusion- depending on needs.
2. Elevated blood pressure – diastolic exceeds 95 mm Hg – systolic exceeds 160 mm Hg.
3. Any four. Defence – synthesis of RBCs and WBCs – destruction of RBCs and WBCs – bilirubin formation – removal of parasites and pigments – storage of iron.
4. Chemicals used in disinfection are called disinfectants.
5. Artrio ventricular valves – left bicuspid and right tricuspid- semi lunar valve.
6. Adding cheaper or inferior substances--- to the food.
7. Application of dye to colour microorganism – to elicit difference from the media.
8. Indian standards for ensuring food quality- quality and purity - grading and marketing of agricultural and other products.

(8x 1= 8 marks)

9. Urine ureter – peristaltic waves – pressure increase – micturition reflex- nervous activities – contraction.
10. Six roles – metabolic – synthetic – excretory – storage – immunological - haemopoiesis .
11. Blood grouping – A, B, AB & O. MN system, Rh factor.
12. Any six – Rhythmicity – all or none law – excitability and contractibility – refractory period – incomplete tetanus – long latent period – staircase effect – tonus.
13. Definition - classification – epithelial, muscular, connective and nervous with brief explanation.
14. Boiling – pasteurisation – low temperature- canning - dehydration.
15. Algae, moulds, actinomycetales, saccaromyces, bacteria, rickettesiae, viruses, protozoa- group. Microbes can be classified into four major groups: - Protozoa - Bacteria - Fungi - Viruses.
16. Inflammation is caused by infection, chemicals, or physical agents.
17. Hazard analysis critical control point (HACCP) – definition – food safety system- prevents rather than detect problems. Principles - establish corrective action, critical limits, procedure to monitor ccps and assess hazards and risks.
18. Small pox virus, Mumps, chicken pox, Measels.

(6x 2= 12 marks)

19. Platelet disintegration – tissue damage – prothrombin + Ca activated thromoplastin
thrombin + fibrinogen fibrin blood clot.

20. The central marrow cavities of long bones , yellow marrow- fat cells or adipose tissue, red marrow– spongy bone. Functions - production, osteogenic, immunologic, reticulo endothelial etc.
21. Structure with all parts marked.
22. Definition – Power of resistance of the animal body- Types – acquired and innate, Active and passive – active and natural and active and artificial, Passive and natural and passive and artificial.
23. Typhoid is an infectious disease - food born disease- causing organism Salmonella typhi- mode of transmission – incubation period – symptoms - diarrhoea, nausea, abdominal pain, prostration, chills, fever and vomiting. Salmonella can easily be controlled by good sanitation practices to prevent cross contamination. Prompt refrigeration of cooked foods or leftovers, properly storing, cooking, cleaning, and handling foods etc.
24. Economic importance of yeast any six. Fermentation – alcoholic – brewing- milk fermentation - coffee, cocoa seeds- distilled alcohol- fermentation of fruit juice etc.

(4x 4= 16 marks)

25. Sterilization- heat, low temperature, light electricity, r- rays, dessication, filtration
Disinfection – acids – alkalis – salts – halogens – phenols - dyes – oxidising agents – alcohols – antibiotics etc.
26. Bacterial infection - typhoid and pneumonia- its causes – symptoms and prevention. Viral infections hepatitis and Aids - its causes – symptoms and prevention.
27. Carbohydrate digestion starts in the mouth –
Starch amylase from saliva - pancreatic and intestinal juice – maltose + isomaltose + dextrin - maltose small intestine glucose + glucose.
In stomach amylase activity is inhibited by HCl.
The end products of CHO digestion are glucose, fructose and galactose absorbed in the intestine.
Protein – mouth no – gastric part – pepsin and HCl.
Pancreatic trypsin, chymotrypsin, carboxy peptidase A & B.
Intestinal peptidases amino acids and are absorbed by active process portal blood liver.
28. Structure of human heart with all parts marked- Auricles – Ventricles – (S.A Node – A.V node- Bundle of His). Changes that occur in the heart during one beat are repeated in the same order in the next beat. This cyclical repetition of the various changes in heart, from beat to beat, is called cardiac cycle.

In the cardiac cycle there are four main events - Arterial systole, Arterial diastole, ventricular systole and ventricular diastole, isometric ejection period, maximum ejection period, reduced ejection period, proto diastolic period, isometric relaxation period, first rapid filling phase, slow inflow phase, last rapid filling phase.

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Part A

Answer all questions. (Each question carries 1 mark)

1. List the constituents of gastric juice.
2. Define micturition.
3. Define Rh factor.
4. Give the difference between plasma and serum.
5. What is “Water activity”?
6. What is “BIS”?
7. Name the 6 common Adulterants.
8. List the factors affecting growth of bacteria.

(8x 1= 8 marks)

Part B (Brief Answer Questions)

Answer any six questions. (Each question carries of 2 marks).

9. Differentiate between sterilisation and disinfection.
10. Define “Anaemia”. List the different types.
11. How is WBC related to the defence mechanism of the body?
12. Give a brief note about heart rate.
13. List the anatomical structure associated with the respiratory system.
14. Write on different types of cell division.
15. Explain the different types of gases used in sterilisation and disinfection.
16. What is inflammation?
17. Draw and label the structure of yeast.
18. List any six symptoms of hepatitis.

(6x 2= 12 marks)

Part C

Answer any four questions. (Each question carries of 4 marks).

19. Explain the structure and functions of Kidney.
20. Explain the different blood groups
21. Describe the digestion and absorption of carbohydrate.
22. Define food poisoning and its impact.

23. Define immunity. Explain different types.
24. Describe the economic importance of “Moulds”.

(4x 4= 16 marks)

Part D

Answer any two questions. (Each question carries of 12 marks).

25. Describe the composition and functions of blood.
26. Explain the term cardiac cycle. Describe the phases and significance of cardiac cycle.
27. Discuss the different methods employed in preventing food spoilage.
28. Write a note on aetiology, symptoms and prevention of AIDS and Typhoid

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1. Pepsin, Renin, Lipase, HCl with corresponding changes.
2. The periodic discharge of urine from the bladder.
3. Agglutination of cells Rh -ve , Rh +ve
4. Plasma blood kept with an anticoagulant added. Serum – without anticoagulant – yellowish fluid separates.
5. Water activity (a_w) is a measurement of the “free” water.

$$a_w = \frac{\text{Relative humidity of the product}}{\text{Relative humidity of pure water}}$$
6. Bureau of Indian Standards for ensuring food quality- safety, performance and reliability - Mark for certification of processed food items.
7. Asafoetida – soap stone, black pepper- dried seeds of papaya fruit, chilli powder- brick powder, coffe- chicory, like any six.
8. Light, moisture, pH (acid & alkali), temperature, osmotic pressure.
 (8x 1= 8 marks)
9. Sterilisation is the process of freeing an article from microorganisms including their spores and disinfection reducing the number of pathogenic microorganisms to the point where they no longer cause diseases.
10. Definition – any four – pernicious, normocystic, aplastic, haemolytic etc.
11. Phagocytic action, secretion of trypsin like enzyme, production of anti-toxins, formation of antibodies.
12. Heart rate – 72/min- factors affecting heart rate any 4.
13. Nose, naso-pharynx, pharynx, trachea, bronchi, bronchilos etc.
14. Mitotic- division of centrosome and meiotic- nuclear cell division.
15. Ethylene oxide, formaldehyde gas, beta propyolactone.
16. The immediate defensive mechanism of tissue to any injury, which may be caused by infection, chemicals or physical agents - Explain the symptoms of inflammation.
17. Structure with all parts like – cell, cell wall, nucleus etc.
18. Anorexia, fever, headache, loss of muscle tone, nausea, abdominal discomfort etc.- any six
 (6x 2= 12 marks)
19. Structure with all parts marked and functions.
20. Blood grouping – A, B, AB & O. MN system, Rh factor.

21. Carbohydrate digestion starts in the mouth – Starch amylase from saliva - pancreatic and intestinal juice – maltose + isomaltose + dextrin - maltose small intestine glucose + glucose.
- In stomach amylase activity is inhibited by HCl. The end products of CHO digestion are glucose, fructose and galactose absorbed in the intestine.
22. Definition – health hazard - common organisms responsible – symptoms and treatment.
23. Power of resistance of the animal body innate and acquired active and passive – naturally acquired – artificially acquired.
24. Economic importance of moulds - Fermentation – antibiotics – Citric acid – Fumaric acid - cheese.

(4x 4= 16 marks)

25. Blood composition- plasma and corpuscles - functions.
26. Changes that occur in the heart during one beat are repeated in the same order in the next beat. This cyclical repetition of the various changes in heart, from beat to beat, is called cardiac cycle. In the cardiac cycle there are four main events - Arterial systole, Arterial diastole, ventricular systole and ventricular diastole, isometric ejection period, maximum ejection period, reduced ejection period, proto diastolic period, isometric relaxation period, first rapid filling phase, slow inflow phase, last rapid filling phase.
27. Preservation by low temperature- freezing (slow freezing process, quick freezing process, dehydro freezing), - pasteurization, canning, Preservation by preservatives, Preservation by osmotic pressure (sugar, salt), Preservation by dehydration, (freeze drying, sun, osmosis, mechanical driers, spray), food irradiation.
28. AIDS - viral disease- causes - mode of transmission – incubation period – symptoms – prevention. Typhoid- bacterial disease - causes - mode of transmission – incubation period – symptoms – prevention.

(2x12= 24 marks)