

**ROYAL CIVIL SERVICE COMMISSION  
BHUTAN CIVIL SERVICE EXAMINATION (BCSE) 2019  
EXAMINATION CATEGORY: TECHNICAL**

**PAPER III: SUBJECT SPECIALISATION PAPER FOR NUTRITION AND DIETETICS**

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<b>Date</b>	: October 13, 2019
<b>Total Marks</b>	: 100
<b>Writing Time</b>	: 150 minutes (2.5 hours)
<b>Reading Time</b>	: 15 Minutes (prior to writing time)

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**GENERAL INSTRUCTIONS:**

1. Write your Registration Number clearly and correctly on the Answer Booklet.
  2. The first 15 minutes is to check the number of pages of Question Paper, printing errors, clarify doubts and to read the instructions. You are NOT permitted to write during this time.
  3. This paper consists of **TWO SECTIONS**, namely SECTION A & SECTION B:
    - **SECTION A** has two parts: Part I - 30 Multiple Choice Questions  
Part II - 4 Short Answer QuestionsAll questions under SECTION A are COMPULSORY.
  - **SECTION B** consists of two Case Studies. Choose only **ONE** case study and answer the questions of your choice.
4. All answers should be written on the Answer Booklet provided to you. Candidates are not allowed to write anything on the question paper. If required, ask for additional Answer Booklet.
  5. All answers should be written with correct numbering of Section, Part and Question Number in the Answer Booklet provided to you. Note that any answer written without indicating the correct Section, Part and Question Number will NOT be evaluated and no marks would be awarded.
  6. Begin each Section and Part in a fresh page of the Answer Booklet.
  7. You are not permitted to tear off any sheet(s) of the Answer Booklet as well as the Question Paper.
  8. Use of any other paper including paper for rough work is not permitted.
  9. **You are required to hand over the Answer Booklet to the Invigilator before leaving the examination hall.**
  10. This paper has **7 printed pages**, including this instruction page.

**GOOD LUCK**

**SECTION A**

**PART I: Multiple Choice Questions (30 marks)**

**Choose the correct answer and write down the letter of your chosen answer in the Answer booklet against the question number e.g. 31 (d). Each question carries ONE mark. Any double writing, smudgy answers or writing more than one choice shall not be evaluated.**

1. Which of the following nutrients is needed for making hormones, healthier skin and to make cell membrane?
  - a) Fat
  - b) Carbohydrate
  - c) Fiber
  - d) Vitamin B12
  
2. How many serving of vegetables do we need each day?
  - a) 6-11
  - b) 2-3
  - c) 3-5
  - d) 1-2
  
3. Foods from meat, poultry, fish, dry beans, eggs and nuts group are an important source of
  - a) Iron
  - b) Fiber
  - c) Beta carotene
  - d) Calcium
  
4. Which of the following is added to food label because people sometimes do not eat enough of this?
  - a) Fat
  - b) Calcium
  - c) Sodium
  - d) Cholesterol
  
5. Your body needs vitamins and minerals because
  - a) they give the body energy.
  - b) they help carry out metabolic reactions.
  - c) they insulate the body's organs.
  - d) they withdraw the heat from the body.
  
6. Amylases in saliva begins the breakdown of carbohydrate into
  - a) Fatty acid
  - b) Polypeptide
  - c) Amino acid
  - d) Simple sugar

7. Degenerative diseases are closely associated to
  - a) diet deficient in protein.
  - b) affluent lifestyle.
  - c) hereditary.
  - d) All of the above.
  
8. Jam, jellies and preserves can be preserved by adding sugar at a concentration of
  - a) 65%
  - b) 75%
  - c) 40%
  - d) 30%
  
9. Mold inhibitor used in bread is
  - a) Calcium carbonate
  - b) Sodium chloride
  - c) Sodium/calcium propionate
  - d) None of the above.
  
10. Who developed the process of canning?
  - a) Nicolas Appert
  - b) Louis Pasteur
  - c) Norman Borlaug
  - d) Walter Hasse
  
11. The first synthetic sweetening agent used was
  - a) Saccharine
  - b) Cyclamate
  - c) Aspartame
  - d) Sucralose
  
12. In high temperature, short time method of pasteurization, milk is heated at a temperature of
  - a) 72 degree for 15 seconds
  - b) 62 degree for 15 seconds
  - c) 72 degree for 30 seconds
  - d) 62 degree for 30 seconds
  
13. Butylated hydroxy anisole (BHA) is
  - a) Chelating agent
  - b) Antioxidant
  - c) Stabilizer
  - d) Emulsion

14. The limiting amino acid in green vegetable is
- Arginine
  - Lysine
  - Methionine
  - Tryptophan
15. Yellow coloured vegetables are rich sources of
- Vitamin A
  - Vitamin B
  - Vitamin C
  - Vitamin D
16. Vitamin D is chemically known as
- Retinol
  - Cobalamin
  - Calciferol
  - Tocopherol
17. Lois Pasteur established the modern era of food microbiology in 1857 when he showed that microorganisms cause \_\_\_\_\_ spoilage.
- Beer
  - Wine
  - Juice
  - Milk
18. Which of the gastrointestinal hormone stimulates insulin secretion?
- GIP
  - CCK
  - Gastrin
  - Secretin
19. What do the endocrine cells of pancreas secrete?
- Omega growth hormone
  - Beta somostatin
  - Delta insulin
  - Alpha glucagon
20. What do the delta cells secrete?
- Cortisol
  - Glucose
  - Pancreatic enzyme
  - Somastatin

21. Choose the incorrect statement about BMR from the following:
- BMR is directly related to surface area.
  - BMR is inversely proportional to the age.
  - BMR is increased in warm climate.
  - Males have higher BMR than age matched females.
22. A 72-year-old male has been brought to the emergency in a state of coma. The patient is a known alcoholic for the past 10 years. A diagnosis of hepatic encephalopathy has been made. Which of the following nutrient should be avoided so as to reduce the ammonia formation in the body?
- Protein
  - Carbohydrate
  - Fats
  - Minerals
23. Which of the following is a correct statement to justify the cause of fatty liver in kwashiorkor?
- There is more mobilization of lipids from adipose mass.
  - There is more synthesis of lipids in the liver.
  - There is deficiency of apo B100 protein.
  - All of the above.
24. Which of the following has the highest glycemic index?
- Ice cream
  - Cucumber
  - Bread
  - Dextrose
25. A 34-year-old female has reported with a history of forgetfulness, loss of hair and cold intolerance. She has been diagnosed with hypothyroidism. What would be the effect of this disease on BMR?
- BMR remains unaltered.
  - BMR increases.
  - BMR goes down.
  - There is initial rise with a subsequent fall.
26. In a child suffering from marasmus, which of the following clinical manifestation is NOT observed?
- Watery diarrhea with acid stools.
  - Subnormal temperature.
  - Visible peristalsis from thin abdominal wall.
  - Generalized edema.

27. The energy yield during the conversion of succinate to fumarate is
- 2ATP
  - 1ATP
  - 3ATP
  - No ATP
28. Which vitamin is required for almost all aspects of protein and amino acid metabolism?
- Vitamin B6
  - Vitamin B12
  - Vitamin C
  - Vitamin B3
29. Cholesterol is precursor of all EXCEPT
- Bile salt
  - Bilirubin
  - Steroids
  - Vitamin D
30. The disease caused due to deficiency of iodine is
- Anemia
  - Goiter
  - Chicken pox
  - Swine flu

**PART II – Short Answer Questions (20 marks)**

**Answer ALL the questions.**

1. What are the methods and principles of food preservation? (5 marks)
2. Differentiate between enteral and parenteral feeding? (5 marks)
3. What are the different ways to assess the nutritional status? Elaborate with their cutoff levels. (10 marks)

**SECTION B: Case Study (50 marks)**

**Choose either CASE I or CASE II from this section. Each case study carries 50 marks. Mark for each sub-question is indicated in the brackets.**

**CASE I**

Mr. Penjor, aged 43 years started noticing his abdomen growing larger in size with dyspnea, oliguria, dysgeusia, nausea, and GI discomfort. On consultation, he was advised to undergo blood test and ultrasonography. The blood test revealed he had abnormal SGOT, SGPT, GGT and hypernatremia. Ultrasound revealed distended hepato veins, fibrous hepatocytes, and reduced liver size with mild necrotization of the parenchymal hepatocells along the abundant fluid collection in peritoneal cavity. He was strictly advised to abstain from alcohol and continue prescribed medications. His height is 5ft 8inch and weighs 75 kg.

1. Diagnose the case. (2.5 marks)
2. Write the nutritional management of the patient. (10 marks)
3. Plan and calculate day's menu. (10 marks)
4. What micronutrient deficiency will you find on assessing him? (2.5 marks)
5. What instruction will you give him on counselling? (5 marks)

In addition to the above questions, explain the following:

6. Pathogenesis of hypertension and the causes and types of hypertension. (20 marks).

**CASE II**

Plan and calculate the diet for enteral feed for a 60% burn patient - 39 female, 5ft 2inch height, 50 kg weight from low income group. She is unable to eat orally; RT tube feed diet is suggested.

1. Plan the diet with calculations and the nutritional advice you will give? (20 marks)

In addition to the above question explain the following:

2. Glycolysis pathway and write a note on its significance? (15 marks)
3. Discuss the hormones secreted by adrenal cortex with respect to: (15 marks)
  - a) Actions and Functions.
  - b) Regulation of their synthesis.
  - c) Disorder associated with adrenal cortex hormones.

**TASHI DELEK**