

**ROYAL CIVIL SERVICE COMMISSION
BHUTAN CIVIL SERVICE EXAMINATION (BCSE) 2022
EXAMINATION CATEGORY: TECHNICAL**

PAPER III: SUBJECT SPECIALISATION PAPER FOR NUTRITION AND DIETETICS

Date	: October 9, 2022
Total Marks	: 100
Writing Time	: 150 minutes (2.5 hours)
Reading Time	: 15 Minutes (prior to writing time)

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 Questions
All 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 **8 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. The process by which nutrients are added to foods to improve the quality of the food is:
 - a) Enrichment
 - b) Fermentation
 - c) Fortification
 - d) Radiation

2. Indicator of iron deficiency anaemia for pregnant women is:
 - a) Hemoglobin < 11g/100 ml
 - b) Hemoglobin < 12g/100 ml
 - c) Hemoglobin < 13g/100 ml
 - d) Hemoglobin < 14g/100 ml

3. Fatty acids with 4 to 6 carbons atoms, produced in the human colon are:
 - a) Non-essential fatty acids
 - b) Medium-chain fatty acids
 - c) Sort-chain fatty acids
 - d) Long-chain fatty acids

4. Thiamine deficiency causes:
 - a) Night blindness
 - b) Arthritis
 - c) Wernicke's Encephalopathy
 - d) Scurvy

5. The primary emphasis in the dietary management of gas production in the colon is to reduce the intake of carbohydrates like:
 - a) Yoghurt
 - b) Legumes and fermentable starches
 - c) Wheat
 - d) Rice

6. _____ refers to the growth of malignant tissue that spreads to surrounding tissues or organs.
 - a) Neutropenia
 - b) Metastasis
 - c) Cachexia
 - d) Neoplasm

7. A cluster of metabolic disorders, including type 2 diabetes mellitus, hypertension, and dyslipidemia, that is characterized by insulin resistance is:
 - a) Caplan's syndrome
 - b) Babinski syndrome
 - c) Diploid syndrome
 - d) Metabolic syndrome

8. A malabsorption syndrome resulting from major resections of the small bowel; characterized by diarrhea, steatorrhea, and malnutrition is:
 - a) Crohn's disease
 - b) Diverticulitis
 - c) Short bowel syndrome
 - d) Sprue

9. Developmental anomaly, related to a folic acid deficiency in infants is:
 - a) Neural crest defect
 - b) Encephalopathy
 - c) Neural tube defects
 - d) Neonatal Jaundice

10. The complex of symptoms that involve weight loss and lessening of the body's fat and muscle stores that accompany advanced cancer is:
 - a) Cachexia
 - b) Hypogeusia
 - c) Dysgeusia
 - d) Ageusia

11. Gathering and evaluating a patient's medical, nutritional, physical examination, laboratory data, and medication history is:
 - a) Nutritional assessment
 - b) Nutrition intervention
 - c) Nutrition screening
 - d) Nutrition diagnosis

12. The process of adding hydrogen across the unsaturated fatty acid double bond of oil to increase saturation is:
 - a) Emulsification
 - b) Deamination
 - c) Hydrogenation
 - d) Transamination

13. The android obesity is most commonly found in:
 - a) Elderly
 - b) Male
 - c) Female
 - d) Children

14. Which one of the following is the symptom of goiters disease?
- Very short
 - Swelling in the neck
 - Swelling in both hands
 - Extremely Tall
15. Example of non-communicable disease is:
- Cancer
 - Enteritis
 - Diarrhea
 - Tuberculosis
16. An abnormal accumulation of fluid in the intercellular tissue spaces or body cavities is known as:
- Alkalosis
 - Edema
 - Acidosis
 - Intoxication
17. A complication caused by both enteral and parenteral feeding is:
- Tube obstruction
 - Thrombophlebitis
 - Refeeding syndrome
 - Aspiration
18. Provision of nutrients into the gastrointestinal tract through a tube or catheter when oral intake is inadequate:
- Parenteral nutrition
 - Nasal feeding
 - Transistional nutrition
 - Enteral nutrition
19. Pregnancy-induced hypertension with proteinuria developing after the 20th week of gestation is:
- Gestational diabetes
 - Hypermesis gravidarium
 - Preeclampsia
 - Ptylinism
20. Bitots Spot is a deficiency symptom caused by:
- Vitamin A
 - Vitamin D
 - Vitamin K
 - Vitamin E
21. Which of the following hormones controls a hyperglycemic state?
- Cortisol
 - Glucagon
 - Epinephrine
 - Insulin

22. Following are the criteria for diagnosis of metabolic syndrome:
- Abdominal obesity
 - Fasting blood sugar < 100 mg/dl
 - Elevated blood pressure
 - High HDL cholesterol level
 - High LDL cholesterol level
- Correct options are i, iii, iv
 - Correct options are ii, iii, & v
 - Correct options are i, ii & iii
 - Correct options are i, iii & v
23. Adding _____ to a breakfast of cereal will help your body to absorb iron.
- milk
 - orange juice
 - coffee
 - water
24. A diet high in Saturated Fat can be linked to which of the following?
- Cholera
 - Anorexia
 - Cardiovascular disease
 - Kidney Failure
25. Angular stomatitis and glossitis are characteristic symptoms of deficiency of:
- Niacin
 - Folic acid
 - Thiamin
 - Riboflavin
26. Parenteral Nutrition involves provision of nutritional support through:
- Mouth
 - Nose
 - Gastro Intestinal tract
 - Veins
27. Cut off for severe acute malnutrition in children (6-60 months) as recommended by WHO (2009) are:
- Weight for height between -3SD and -2SD and MUAC <110mm
 - Weight for height <-2SD and MUAC <115mm
 - Weight for height<-3SD and MUAC <115mm
 - Weight for height<-3SD and MUAC <110mm
28. 1 Kcal is equivalent to:
- 4184 KJ
 - 4.184 MJ
 - 4.184 KJ
 4. 4184 MJ

29. The RDA of a nutrient is usually set at what level above the estimated average requirement?
- 1 SD
 - 2 SD
 - Between 1 SD and 2 SD
 - Between 2 SD and 3 SD
30. B12 deficiency can result in:
- Pernicious anemia
 - Neural Tube defects
 - Night blindness
 - Beri Beri

PART II – Short Answer Questions (20 marks)

This part has 4 Short Answer Questions. Answer ALL the questions. Each question carries 5 marks. Mark for each sub-question is indicated in the brackets.

- What are the steps in Nutrition Care Process and define each process briefly. **(5 marks)**
- Many Bhutanese today believe that juice is a healthy drink. Refer to the following table, which shows the nutrition information panel for 1000 mL of fresh fruit juice:

	Quantity per serving
Energy	1440 kcal
Protein	10 g
Total fat	0.9 g
– saturated fat	0.2 g
Total Carbohydrate	300 g
– sugars	70 g
Sodium	19 mg

- Carbohydrates provide 4 kilocal of energy per gram. Calculate the proportion (%) of the total energy content of one serving of juice that comes from carbohydrates. Show your calculations, and round your answer to the nearest whole number.
Proportion = _____ % **(3 marks)**
 - Calculate the total calories provided from proteins and the proportion (%) it contributes to the total energy. Show your calculations, and round your answer to the nearest whole number.
 - Calories from Proteins= _____ Kcal **(1 mark)**
 - Proportion = _____ % **(1 mark)**
- Explain Vitamin D **(5 marks)**
 - What is the function of a protein? **(5 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

Tenzin is a 42-year-old man with severe chronic obstructive pulmonary disease. He has been referred to your Clinic for a nutrition assessment. Tenzin looks pale and has very little energy. His health affects his day-to-day functions and he is very limited in what he is able to do. He has never seen a dietitian before.

Weight history:

Height: 168 cm

Current weight: 49 kg

Usual weight: 62 kg

Weight loss has occurred gradually over the last 6 years. Tenzin has had 5 hospital admissions this year. To feel much better, Tenzin must reach a goal weight of 62 kg.

Diet history

Breakfast	Lunch	Dinner	Snacks
1x slice bread and 1 x cup tea	1x small bowl rice Soup	½ cup small rice with 2x eggs and ½ x cup vegetables, (sometimes too tired to eat)	Rarely

1. Calculate Tenzin’s BMI and explain the severity of his condition based on the cutoff categories. **(5 Marks)**
2. Provide a summary nutrition assessment for Tenzin, based on the weight activity status noting any assumptions made. **(10 marks)**
3. Compare the diet history against the recommendations of the core food groups given in the “Food Guide Pyramid”. Draw the food guide pyramid. Indicate adequacy of each core food groups. **(15 marks)**
4. Identify and justify the optimal clinical goals and objectives of dietary management for Tenzin in order of priority. Include quantifiable goals. **(10 marks)**
5. Prepare a plan to evaluate the effectiveness of your intervention. Indicate in terms of Arthrometry, Biochemistry, Clinical and Dietary (ABCD) **(10 marks)**

CASE II

Pema is 43-year-old mother who has gained 24 Kgs since the birth of her youngest child 5 years ago. She is 163 cm and weighs 82 kgs with a BMI of 30.9. Her waist circumference is 37 inches. She eats very little during the day when she is busy with her work but she has cravings for sweets that come late into the night. She has a family history of diabetes and she is worried that she may get the disease. Her recent medical checkup revealed mildly elevated blood pressure but all her blood test were normal, including blood glucose and cholesterol. She loves to cook for her family, none of whom are overweight. She has started walking early in the mornings in a renewed effort to lose weight and get back in shape.

1. Based on her health history and physical measurements, describe how you would determine the seriousness of Pema's weight in relation to her health **(5 marks)**
2. What would you estimate to be a reasonable amount of weight for Pema to lose over the next three months **(5 marks)**
3. What meal timing strategies could help Pema's nighttime food cravings? **(10 Marks)**
4. What are some advantages of Pema keeping a record of her food and exercise? What other habits besides food intake and physical activity may be useful for Pema to record? **(5 marks)**
5. Why might strength training be an important addition to Pema's exercise regimen? **(10 marks)**
6. Prepare a 1500 kcal meal plan for Pema. Ratio- 50%: 30%: 20%: Carbs: Fats: Proteins **(15 marks)**

TASHI DELEK