ROYAL CIVIL SERVICE COMMISSION
BHUTAN CIVIL SERVICE EXAMINATION (BCSE) 2013
EXAMINATION CATEGORY: TECHNICAL

PAPER III: SUBJECT SPECIALIZATION PAPER for *NUTRITION & DIETETICS*

Date	: 14 October 2013
Total Marks	: 100
Examination Time	: 150 minutes (2.5 hours)
Reading Time	: 15 Minutes (prior to examination time)

GENERAL INSTRUCTIONS:

1. Write your Roll Number clearly and correctly on the Answer Booklet.
2. The first 15 minutes is being provided 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 and SECTION B:
   - **SECTION A** has two parts: Part I - 30 Multiple-Choice Questions
     Part II - 3 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 under your choice.
4. 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 any or correct Section, Part and Question Number will NOT be evaluated and no marks would be awarded.
5. Begin each Section and Part in a fresh page of the Answer Booklet.
6. You are not permitted to tear off any sheet(s) of the Answer Booklet as well as the Question Paper.
7. Use of any other paper including paper for rough work is not permitted.
8. You are required to hand over the Answer Booklet to the Invigilator before leaving the examination hall.
9. This paper has **10** printed pages in all, 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 the correct answer chosen in the Answer Booklet against the question number. E.g. 31 (c). Each question carries ONE mark. Any double writing, smudgy answers or writing more than one choice shall not be evaluated.

1. Consuming fewer than 130 grams of carbohydrates per day may lead to:

    a. Ketosis
    b. Hypoglycemia
    c. Marasmas
    d. Kwashiorkor

2. Margarine is produced by the process of:

    a. Dehydrogenation
    b. Chlorination
    c. Emulsifying
    d. Hydrogenation

3. The statement 'approximately 12.7 % of Bhutanese children under the age of five were found to be underweight in the year 2010' is a statement of:

    a. Mortality
    b. Incidence
    c. Prevalence
    d. Morbidity

4. Easily pluckable hair is a symptom of deficiency of which nutrient?

    a. Protein
    b. Calcium
    c. Fats
    d. Omega 3 fatty acids

5. A 49-year-old man has a 20 year history of chronic alcohol abuse. He has had worsening problems with ambulation for the past year. On physical examination his gait is ataxic. He is most likely to have a deficiency of which of the following vitamins?

    a. A
    b. B1
    c. E
    d. D

6. The Bhutan Multiple Indicator Survey (BMIS) of 2010 updated the nutrition status of the children and women. According to the survey the figures for children under the age of five who were severely stunted is:

    a. 33.5%
    b. 37%
    c. 13.3%
    d. 46.5%

7. The amount of fat found in a 2000 kcal diet; 55% from carbohydrates and 20 % from protein is:

    a. 55.6 g
    b. 60 g
    c. 115 g
    d. 17 g

8. Weight for Height is one of the most common anthropometric indices used to assess the growth status in Children. A child with the weight for height of -2SD below the median would be classified as:

    a. Stunted
    b. Chronically malnourished
    c. Moderate to severe wasted
    d. Moderate to severe stunted

9. Harris-Benedict equation is a method used to estimate the individuals:

    a. Basal Metabolic rate (BMR)
    b. Test used for testing the presence of sugars
    c. Globular Filtration Rate (GFR)
    d. Serum Osmolality

10. The RDA for nutrients generally are:

    a. Designed to be adequate for almost all healthy individual
    b. More than twice the requirement
    c. the minimum amounts the average adult male requires
    d. designed to prevent deficiency disease in half the population

11. Acquiring sufficient vitamin B 12 from the diet may be a problem for vegans because

    a. Phytic acid in vegetable proteins may inhibit its absorption
    b. It is only found in animal products
    c. The lack the R-protein in stomach
    d. Deficiency may result from high intakes of legumes

12. Pre-hypertension is defined by:

    a. Systolic of 140-159 mmHg and/or diastolic of 90-99 mmHg
    b. Systolic of 120-139 mmHg and/or diastolic of 80-89 mmHg
    c. Systolic less that 120 mmHg and Diastolic less than 180mmHg
    d. Systolic of 160 mmHg and/or diastolic of 100 mmHg

13. This vitamin, when consumed during pregnancy, can help prevent neural tube defects like spina bifida

    a. B6
    b. Niacin
    c. Riboflavin
    d. Folate/folic acid

14. Calories is a measure of

a. Sugar and fats in food
b. Nutrients in foods
c. Fat in food
d. Heat energy

15. Which of the following are characteristics of lipids?

a. Supply 4 kcal per gram
b. Supply concentrated form of fuel for the body
c. Add structural strength to bones and muscles
d. Add sweetness to foods

16. Vitamin involved in the red blood synthesis are-

a. Vitamin B 12 and folate
b. Folate and thiamine
c. Folate and pantothenic acid
d. Thiamine and niacin

17. Fruits, vegetables and cereals are potent sources of:

a. Antioxidants
b. Unsaturated
c. Saturated fat
d. Free radicals

18. The essential fatty acids that must be derived from the diet are:

a. Stearidonic acid and eicosatetraenoic acid
b. Eicosapentaenoic acid and docosapentaenoic acid
c. Linoleic and alpha-linoleic acid
d. Gamma-linoleic acid and arachidonic acid

19. A 4-year-old child was born at term, with no congenital anomalies. She is now only 70% of normal body weight. On examination she shows dependent edema of the lower extremities as well as an enlarged abdomen with palpable fluid wave. Her skin shows irregular areas of de-pigmentation, and hyper-pigmentation. Which of the following nutritional problems is most likely present in this child?

    a. Marasmas
    b. Scurvy
    c. Kwashiorkor
    d. Niacin toxicity

20. Blood sugar is well controlled when Hemoglobin A1C is:

    a. Below 7%
    b. Between 12%-15%
    c. Less than 180 mg/dL
    d. Between 90 and 130 mg/dL

21. A patient who was admitted in the ward with 15 % burn injury was given a 2200 kcal/day. The non protein kcalorie to nitrogen ratio (NPC:N) was 100:1. How much protein would the patient get?

    a. 137.5 g
    b. 60 g
    c. 110 g
    d. 80 g

22. It is recommended that 30% of the total daily calories should come from fat. Which one of the following is the recommended percentage that should come from saturated fats?

    a. 20%
    b. 15%
    c. 10%
    d. 5%

23. Which one of the following best describes parenteral feeding?

    a. Feeding administered via a naso-gastric tube
    b. Feeding administered intravenously
    c. Feeding administered directly into the stomach
    d. Feeding administered subcutaneously

24. Saturated fats contain how many double bonds

    a. Zero
    b. Single
    c. Two Double bounds
    d. More than one double bonds

25. Plasma loss resulting from a massive burn injury can cause what type of shock?

    a. Septic
    b. Neurogenic
    c. Cardiogenic
    d. Hypovolumic

26. A 20 year old girl reported with a history of forgetfulness, hair loss and intolerance to cold. She had been diagnosed with hypothyroidism. What would the effect of this disease on BMR?

    a. BMR remains unchanged
    b. BMR increases
    c. BMR goes down
    d. There is an initial rise and subsequent fall

27. This food group is our body's best source of energy?

    a. Meat group
    b. Fats, sweets and oils
    c. Breads and cereals
    d. Milk and cheese

28. In which of the following clinical situations should >1.0g protein per kg body weight be provided in nutrition support?

    a. Patients with renal failure on hemodialysis
    b. Hospitalized patients
    c. Obese patients
    d. Cirrhosis with hepatic encephalopathy

29. A 58 year old man has been brought to the emergency in a state of coma. The patient is a known alcoholic. A diagnosis of hepatic encephalopathy has been made. Which of the following nutrient should be restricted in order to improve his condition

    a. Proteins
    b. Carbohydrates
    c. Fats
    d. Vitamins

30. Which of the following statements regarding macronutrient energy value is TRUE:

    a. Carbohydrates provide 9kcal/gram consumed
    b. Protein provides 2 kcal/gram consumed
    c. Fat provides 9kcal/gram consumed
    d. Protein provides 7 kcal/gram consumed

PART – II : Short Answer Questions (20 marks)

Answer ALL the questions.

1. Explain the following (2.5 x 4 marks= 10 marks)
    a) Dyslipidemia
    b) Exclusive breast feeding
    c) Trans fat
    d) Macronutrients
2. Differentiate between Marasmus and Kwashiorkor (5 marks)
3. Explain the food guide pyramid (5 marks)

SECTION B
Case Study

Choose either Case 1 or Case 2 from this Section. Each Case carries 50 marks. Mark for each sub-question is indicated in the brackets.

CASE 1

Question 1

A 40 year old female with a body weight of 65 kg and a height of 155 cm, is referred to you after her annual health check-up. During her check up her blood pressure measured 140/100 mmHg. Blood tests showed her HbA1C to be 6.6 %, blood cholesterol 260 mg/dL and Triglyceride to be 265 mg/dL.

a) What are the possible medical conditions the patient suffers from? (5 marks)
b) Describe the nutritional care process for this patient. (10 marks)
c) What would you recommend to the patient? (5 marks)

AND

Question 2

Many different methods can be used for assessing dietary intake; three of the most common are food frequency questionnaires, food records and twenty-four hour diet recalls. Describe some of the pros and cons of the following (30 marks)

- Food Frequency Questionnaires
- Food Records
- Dietary Recalls

CASE 2

Question 1

An eight month old girl is referred to you diagnosed as failure to thrive (FTT). The girl after a thorough medical examination was not found to have any other medical condition.

a) What tools would you use to confirm her malnutrition status? Are there any factors you should consider when you perform the dietary assessment? (10 marks)

b) What would you recommend if you find that her intake is less than 80% of her needs? Give the recommendations based on the guidelines for her age. (10 marks)

AND

Question 2

Mrs. Tenzin, a 70-year-old retired schoolteacher was admitted in the hospital with pneumonia. She has a history of chronic heart failure. She routinely takes several medications, and, in addition to these, the physician has ordered antibiotics to treat the pneumonia. During an initial nutrition screening, Mrs. Tenzin states that she has been eating very poorly over the past two weeks. She says that she usually weighs about 55 kg. Although she feels that she has been losing weight, she doesn't know how much weight she has lost or when she started losing weight. She currently weighs 51 kg, and is 155 cm tall. Physical examination reveals edema, and tests confirm that she is retaining fluid. As a result of nutrition screening, Mrs. Tenzin has been referred to you for a complete nutrition assessment.

a) From the brief description provided, what factors in Mrs. Tenzin's health, medication, personal, and diet histories might put her at a risk for malnutrition? (5 marks)

b) Identify a desirable body weight for Mrs. Tenzin. What do the results reveal? What effect does fluid retention have on Mrs. Tenzin's weight? (5 marks)

c) What tools would you use to estimate what and how much Mrs. Tenzin has been eating and why? (5 marks)

d) Estimate Mrs. Tenzin's Nutrient needs and plan her diet? (15 marks)