

ROYAL CIVIL SERVICE COMMISSION
BHUTAN CIVIL SERVICE EXAMINATION (BCSE) 2012
EXAMINATION CATEGORY: TECHNICAL

PAPER III: SUBJECT SPECIALIZATION PAPER FOR FOOD AND NUTRITION

Date : 14 October 2012
Total Marks : 100
Examination Time : 150 minutes (2.5 hours)
Reading Time : 15 Minutes (Prior to exam time)

INSTRUCTIONS

1. Write your Roll Number clearly on the answer booklet in the space provided.
2. The first 15 minutes is being provided to check the number of pages, printing errors, clarify doubts and to read the instructions. You are not permitted to write during this time.
3. Use either Blue or Black ink for the written part.
4. All answers should be written on the answer booklet provided. Candidates are not allowed to write anything on the question paper.
5. This question booklet contains 10 pages. It is divided into two sections. Section A (50 marks) and Section B (50 Marks).
6. **Section A** consists of two parts, Part I and Part II.
 - Part I consists of 30 multiple choice questions carrying 1 marks each and is compulsory
 - Part II consists of Four short answer questions of 5 marks each and all questions are compulsory
7. **Section B** has two questions out of which you are required to do only **ONE** question (50 marks)

SECTION A

PART I: Multiple choice (The answer of your choice should be clearly written in whole along with the question and option number on your answer booklet. You do not need to write the whole question). Answer ALL questions.

1. An excess of which one of the following can leach calcium from bones?
 - a) carbohydrates
 - b) protein
 - c) trans fat
 - d) saturated fat

2. Which one of the following groups of nutrients do products in the Dairy group primarily provide?
 - a) calcium, potassium, Vitamin D
 - b) dietary fiber, Vitamin A, Vitamin E
 - c) folate, dietary fiber, Vitamin C
 - d) protein, B vitamins, iron

3. When treating a patient who has been diagnosed with milk allergy, which one of the following should be done **FIRST**?
 - a) Eliminate all dairy products from the patient's diet, and add a calcium supplement.
 - b) Try small amounts of lactose-containing foods, and gradually increase them.
 - c) Have the patient consume dairy foods separately from other foods.
 - d) Prescribe only fat-free dairy products.

4. A tube feeding with 1.2 kcal/cc is to run at 100cc q hr at full strength for 12 hours, how many calories will it provide?
 - a) 1200
 - b) 1440
 - c) 1640
 - d) 1800

5. After review of his lab work, a patient was informed that his renal failure had progressed to the point where he now needed dialysis treatment. Which lab results would have indicated this?
- a) Hyperkalemia
 - b) Elevated GFR
 - c) Low GFR
 - d) Hypokalemia
6. A patient with type 2 diabetes is obese and has persistent hyperglycemia. The priority for nutrition counseling should be:
- a) weight loss
 - b) control of serum glucose levels
 - c) consumption of a low-fat diet
 - d) consumption of a low-protein diet
7. Which of the following is **NOT** a contraindication for Enteral Nutrition?
- a) Complete bowel obstruction or severe bowel ileus
 - b) Intractable vomiting or major UGI hemorrhage
 - c) Complete inability to absorb nutrients through the GI tract
 - d) Inadequate oral intake
8. Fat in the intestine triggers the release of _____, which then signals the gallbladder to send bile.
- a) Cholecystokin (CCK)
 - b) Citric acid
 - c) Glucose 6 phosphate
 - d) Glucagon
9. A deficiency of thiamine (vitamin B1) in the diet causes:
- a) Osteopenia
 - b) Beri-beri
 - c) Protein malnutrition
 - d) Scurvy

10. All of the following statements about omega-3 fatty acids are true **EXCEPT**:
- a) They help to maintain healthy triglyceride and high-density lipoprotein
 - b) They have significantly contributed to the obesity epidemic
 - c) They are necessary for healthy infant growth and development
 - d) They play an important role in the production of hormones that govern numerous metabolic and biological processes
11. Fruits, vegetables and cereals are potent sources of:
- a) Antioxidants
 - b) Unsaturated fat.
 - c) Saturated fat
 - d) Free radicals
12. Products that contain live microorganisms in sufficient numbers to alter intestinal microflora and promote intestinal microbial balance are known as:
- a) Antibiotics
 - b) Probiotics
 - c) Fruits and vegetables
 - d) Digestive enzymes
13. To improve the absorption of calcium you should have all the following except:
- a) acid medium
 - b) take calcium supplement with a meal
 - c) include lactose
 - d) include oxalic acid
14. A client comes to you on a low carbohydrate diet. She reports having one serving of carbohydrate per meal, 3-5 oz of meat each meal, no milk but eats cheese, and 2 vegetables. What nutrients will she most likely be lacking?
- a) vitamin c, thiamine, calcium
 - b) zinc, iron, calcium
 - c) folic acid, potassium, vitamin A
 - d) vitamin D, vitamin C, vitamin A

15. In a 2000 kcal diet with an energy distribution of carbohydrate 50%, fat 30% and protein 20%; the total amount of the carbohydrate, fat and protein you will get is:
- a) 100 g, 70 g, 20 g
 - b) 250 g, 66.7 g, 100 g
 - c) 130.3 g, 56.5 g, 25 g
 - d) 200 g, 65 g, 96.8 g
16. In the absence of dietary carbohydrate all body cells can oxidize fatty acids into ketones for energy **EXCEPT**:
- a) RBC
 - b) Neuron
 - c) Nephron
 - d) A and B
17. In the food Guide Pyramid the recommended amount of Fruits per day is:
- a) 6-11 servings
 - b) 1 serving
 - c) 2-4 servings
 - d) 3 servings
18. In a Type 2 diabetic patient the blood glucose targets should be:
- a) FBS : 90-130 mg/dl; PPBS : more than 200 mg/dl
 - b) FBS: 90-130 mg/dl; PPBS: less than 180 mg/dl
 - c) FBS: more than 126 mg/dl; PPBS : less than 180 mg/dl
 - d) FBS: more than 126 mg/dl; PPBS: more than 200 mg/dl
19. A dietary deficiency of the following factor can lead to Wernicke-Korsakoff syndrome:
- a) Niacin
 - b) Biotin
 - c) Thiamine
 - d) Riboflavin

20. A 5-year-old child develops gradual loss of vision over the past 2 years resulting in blindness. On physical examination there is bilateral keratomalacia and corneal scarring. This child's blindness is most likely to have been prevented by adequate dietary intake of which of the following vitamins?
- a) A
 - b) B6
 - c) B12
 - d) K
21. A food contains 5 grams of carbohydrate, 10 grams of fat and 5 grams of protein. How many Calories (kcal) does this food provide?
- a) 150
 - b) 200
 - c) 130
 - d) 20
22. Dietary fiber:
- a) Is digested in similar fashion to that of dietary carbohydrates
 - b) It enhances triglyceride formation in the liver
 - c) Is found primarily in animal products
 - d) Enhances the rate at which chyme moves through the intestine
23. All are true **EXCEPT**:
- a) Dietary cholesterol intake should be less than 300 mg/day
 - b) Saturated fat should predominate over unsaturated fat in diet
 - c) Arachidonic acid can be synthesized from linoleic acid.
 - d) All of the above
24. Which one of the following fatty acids is considered essential from a nutritional point of view?
- a) docosahexaenoic acid (22:6)
 - b) linoleic acid (18:2)
 - c) palmitic acid (16:0)
 - d) palmitoleic acid (16:1)

25. Morbidly obese people are characterized by :

- a) less lean body mass and more fat mass than people at ideal body weight.
- b) a body weight which is less than 120% of the ideal body weight
- c) a body mass index of 40- 49.9
- d) a thyroid disorder.

26. Which of the following is most likely to be associated with anorexia nervosa?

- a) regular menstrual cycles at widely spaced intervals, such as every three months
- b) Binge eating
- c) BMI of 22
- d) Kwaishkor

27. An essential amino acid:

- a) Forms a complete protein.
- b) Is needed only by growing infants and children.
- c) may prevent dermatitis
- d) Cannot be synthesized by the body in sufficient amounts to meet the body's needs.

28. What is common in the management of patients with cardiac, renal & hepatic failure?

- a) Protein and fluid restriction
- b) Na and K restriction
- c) K and fluid restriction
- d) Na and fluid restriction

29. BMR is elevated in which of the following conditions?

- a) Hyperthyroidism
- b) ESRD
- c) Hypothyroidism
- d) Starvation

30. Aspartame is **NOT SAFE** for?

- a) T1DM
 - b) T2DM
 - c) Bulimics
 - d) Phenylketonurics
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PART II: Answer ALL questions (20 marks).

1. Explain the following (2 x 5 marks)

- a) Fad diet
- b) DASH diet
- c) Atkins diet
- d) Renal diet
- e) Carbohydrate restricted diet

2. Give two benefits of consuming Omega-3-fatty acid in the diet (2 marks)

3. Differentiate between regular and soft diet. Give examples (2 marks)

4. Explain COPD and give the nutrition care guidelines (2 marks)

5. What is metabolic syndrome? (2 marks)

6. Define obesity (2 marks)

SECTION B

Answer only **ONE** question.

Question 1

- i. Mr Tenzin had accidental 2nd degree burns due to gas cylinder burst. He has not been able to eat orally for the past 8 days. So a NG tube has been passed, Plan an NG feed for him. You can use kitchen feed alone or in combination with suitable formula (20 marks)

Age: 35 years, Weight: 57 Kgs, Height 157 CM.

Total Protein: 4.8 Gm%, Albumin:1.5 Gm%, RBS 156 mg/dl

- ii. 48 year old Mr. Sonam was admitted with uremic symptoms with fluid overload. His caloric intake was of approximately 235kcal/day which continued to deteriorate. His urine output is 700ml/day.

Height 168cms, BUN 77mgs/dl , S.Creatinine 6.9 mgs/dl , S.Albumin 2.2g/dl
S.Sodium 148 meq/l, S.Potassium 5.8 meq/l , eGFR <15ml /min , Blood pressure 180/110 mmhg

- Write the diagnosis. 1mark
- Write the normal values. 3 marks
- How will you prevent tissue catabolism? 1 mark
- How will you correct the fluid overload through MNT? 2 mark
- Write the nutritional mgt & objectives. 3 marks
- Plan and calculate a day's diet for Mr. Sonam*. 20 marks

***Note: Use the Food Exchange Table to plan the meals**

Food Exchange Table				
Group/list	CHO	Prot	Fat	Kcal
Starch	15	2	0	80
Veg	5	2	0	25
Fruit	15	0	0	60
Milk				
Skim	12	8	0-3	90
Low-fat	12	8	5	120
Whole	12	8	8	150
Meat				
Very lean	0	7	0-1	35
Lean	0	7	3	55
Medium fat	0	7	5	75
High fat	0	7	8	100
Egg	0	6	6	75
Fat	5	0	0	20

OR

Question 2

On December of 2011, 23 boarding students from Orong Higher Secondary School had been hospitalized. Two had died and the rest were admitted with an illness characterized by acute

onset of peripheral edema, tingling sensation and numbness of feet, and difficulty in walking. On medical examination, all the patients were found to have lower extremity edema and paraesthesia, weakness, and some in addition complained of dyspnea, chest pain, difficulty walking, and tachycardia. It was assumed that the probable causes for their hospitalization could be due to multi-vitamin deficiency.

School meal; Breakfast: "channa fried rice" rice (160 gm), channa (80 g), oil (15 g).

Lunch and Dinner: "Rice and potato curry with dal" rice (240 gm), potatoes (120 g), oil (10 g), dal (60g), cheese (15 g)

- Estimate and compare with RDA the amount of Iron, B1, B6, B12, vitamin A and Folate from their school meals by using the Food composition table provided*. (15 marks)
- What is the most probable cause of the two deaths? Explain. ~~(5 marks)~~ (10 marks)
- Plan a diet for the school correcting the micronutrient deficiencies that you found in your calculation (15 marks)
- Explain the government programs we have for some of the micronutrients (10 marks)

***Food Composition Table**

Item/100g	Iron (mg)	B1(mg)	B6(mg)	Folate(µg)	B12(µg)	Vit A IU
RDA	8	1.2	1.3	400	2.4	900
Lentils	3.33	0.12	0.18	181	0.00	8
Maize	7	0.39	0.62	19	0.00	214
Polished rice	0.14	0.02	0.03	1	0.00	0
Parboiled rice	1.81	0.212	0.16	81	0.00	0
Potatoes	0.31	0.01	0.027	9	0.00	3
Beef	2.81	0.07	0.3	11	2.24	0
Pork	1.97	0.74	0.34	4	1.77	0
Dry Fish	1.91	0.09	0.14	17	2.31	115
Eggs	1.19	0.07	0.12	44	1.11	520
Cheese	0.14	0.02	0.07	12	0.63	41
Sac	3.57	0.09	0.2	146	0.00	10481
cabbage	0.17	0.06	0.11	30	0.00	80
Dal	3.33	0.17	0.18	181	0.00	8
Channa	2.89	0.12	0.14	172	0.00	27
Vegetable oil	0.05	0.00	0.00	0.00	0.00	0.00

GOOD LUCK