

**ROYAL CIVIL SERVICE COMMISSION
BHUTAN CIVIL SERVICE EXAMINATION (BCSE) 2016
EXAMINATION CATEGORY: TECHNICAL**

PAPER III: SUBJECT SPECIALIZATION PAPER FOR NUTRITION

Date: 2 October 2016
Total Marks: 100
Examination Time: 150 minutes (2.5 hours)
Reading Time: 15 minutes (*prior to examination time*)

GENERAL INSTRUCTIONS

1. Write your Registration Number clearly and correctly on the Answer Booklet.
2. The first 15 minutes is being provided to check the number of pages, printing error, clarify doubts and to read instructions in Question Paper. 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 - **4 Short Answer Questions.**
All questions under **Section A** are **COMPULSORY.**
Section B consists of 2 case studies. Choose only **ONE** case study and answer the questions under 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 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. The Question 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 (c). Each question carries ONE mark. Any double writing, smudgy answers or writing more than one choice shall not be evaluated.

1. Non-digestible food products that stimulate the growth of symbiotic bacterial species, already in the colon, that improves the health of the host are called
 - a. Probiotics
 - b. Prebiotics
 - c. Antibiotics
 - d. Nitrogenous wastes

2. Which of the following vegetarian diet, allows the use of egg(s) in their diet?
 - a. VEGAN diet
 - b. Lacto-vegetarian diet
 - c. Ovo-Vegetarian Diet
 - d. Zen Macrobiotic Diet

3. This diet is also known as non-residue diet, the foods allowed, leaves no residue in the gastrointestinal tract. Therefore it is non-distending, non-irritating, and non-stimulating to peristaltic action.
 - a. Soft Diet
 - b. Bland Diet
 - c. Full Liquid Diet
 - d. Clear Liquid Diet

4. The deficiency of this nutrient is associated with impaired immune function, anorexia, dysgeusia, delayed wound healing and pressure sores.
 - a. Zinc
 - b. Calcium
 - c. Folic Acid
 - d. Ascorbic Acid

5. Process of removing excess fluid and metabolic waste products from the body by filtering the blood artificially using a hyperosmolar solution is termed as
 - a. Osmosis
 - b. Diffusion
 - c. Hemodialysis
 - d. Peritoneal Dialysis

6. Characterized by hematuria, edema, proteinuria, hypertension and immune complex, glomerulonephritis is caused by
 - a. Salmonellatyphosa
 - b. Entamoebahystolytica
 - c. Streptococcal infection
 - d. Myobacterium tuberculosis

7. Which of the following is not a soluble fiber?
 - a. Gums
 - b. Pectin
 - c. Cellulose
 - d. Mucilages

8. Originally known as the “antisterility vitamin,” it is known for its antioxidative properties. It also appears to be important for the development and maintenance of nerve and muscle function.
 - a. Thiamine
 - b. Vitamin D
 - c. Vitamin E
 - d. Ascorbic acid

9. In a 1800 kCal diet, 90g was allotted for Protein alone. Thus, what percentage of the total energy makes up the protein distribution?
 - a. 15%
 - b. 20%
 - c. 10%
 - d. 25%

10. If a product is said to be “Cholesterol Free”. It contains how much cholesterol?
 - a. None
 - b. Less than 0.5g
 - c. less than 2 mg
 - d. less than 5 mg

11. A high protein diet is an allowance of food and drinks which provides_____ protein per kg Body Weight
 - a. 1.2-1.5 g
 - b. 1.5g-2.0g
 - c. 0.8-1.0g
 - d. 0.5-0.8g

12. It is a potentially life-threatening complication seen in Type 1 DM. It occurs when blood glucose cannot get into the body cells or when not enough insulin is available to utilize glucose.
 - a. Diabetic Nephropathy

- b. Diabetic Retinopathy
 - c. Diabetic Neuropathy
 - d. Diabetic Ketoacidosis
13. This type of diet is given to those patients suffering from Celiac Disease, wherein wheat, oats, rye, barley and cereals containing these are eliminated.
- a. Ketogenic Diet
 - b. Gluten-free Diet
 - c. Acid-ASH Diet
 - d. Mediterranean Diet
14. A phytochemical; one of the carotenoids that gives yellow colouring to certain fruits such as tomatoes, papaya and mango is
- a. Lutein
 - b. Lycopene
 - c. Glutathione
 - d. Beta-carotene
15. Inflammation of the tongue, maybe a symptom of a gastrointestinal disorder or a nutritional deficiency (deficiencies in niacin, riboflavin, vitamin B12, folic acid or iron).
- a. Pellagra
 - b. Glossitis
 - c. Cheilosis
 - d. Gingivitis
16. Hormone that is secreted by the pyloric mucosa that stimulates hydrochloric acid secretion by the parietal cells.
- a. Gastrin
 - b. Pepsin
 - c. Insulin
 - d. Thyroxine
17. In the OPD (out-patient clinic), say a patient with an abnormally high uric acid level has come to seek dietary advice. Which of the following food items would you tell the patient to avoid?
- a. Dried beans & lentils
 - b. Green leafy vegetables
 - c. Rice & rice alternatives
 - d. Fruits (eg. Banana, apple, mango etc)
18. Artificially created form of fat that occurs when an unsaturated fat is hydrogenated, a process that makes the fat solid and spreadable.
- a. Trans Fats
 - b. Saturated Fatty Acids
 - c. Polyunsaturated Fatty Acids
 - d. Monounsaturated Fatty Acids

19. This is one of the interpretation of growth problems in children, indicated by low weight-for-height and is often termed as acute malnutrition.
- Obesity
 - Stunting
 - Wasting
 - Low birth weight
20. The process that explains the swelling and increase in viscosity of the starch molecule due to absorption of water on heating is
- Osmosis
 - Diffusion
 - Imbibition
 - Gelatinization
21. A sugar alcohol found in fruits and is poorly digested yielding about half as much calories as glucose.
- Sorbitol
 - Inositol
 - Maltitol
 - Mannitol
22. A 3-year-old baby girl with a body weight of 7 kg is referred to the Pediatric Ward in your respective hospital. The child has oedema on her face and lower limbs and appears to have flaky paint appearance with sparse, soft and thin hair. The child is also suffering from loose bowel motion, anemia and has bleeding gums. What is the child suffering from?
- Marasmus
 - Kwashiorkor
 - Underweight
 - Failure to thrive
23. Which of the following statement is false about weaning?
- Breastmilk alone is not able to provide sufficient amount of all the nutrients needed to maintain growth after the first six months.
 - Breastmilk is a good source of vitamin C, thus supplementation with fruit juices is not needed.
 - Introduction of weaning food too late can lead to under nutrition and increased diarrheal morbidity.
 - Weaning begins from the moment supplementary food is started, continues till the child is taken off the breast completely.
24. This diet is a high fat, low carbohydrate and adequate protein diet. This diet is suggested for seizure control
- Atkins diet
 - DASH diet
 - Kempner`s diet
 - Ketogenic diet

25. In a normal diet, the total fat intake should be
- 10-15 % of total calories
 - 20-30% of total calories
 - 30-45% of total calories
 - 15-25% of total calories
26. According to the Bhutan Multiple Indicator Survey (BMIS) conducted in 2010, the figures for the children under the age of five who were found to be underweight is
- 37 %
 - 4.3%
 - 10.5%
 - 15%
27. A female student visits the clinic with chief complaints of weakness, dizziness, pale complexion and shortness of breath. Upon laboratory investigations, it has been noted that her RBC, MCV and MCVC are elevated, while hemoglobin is very low. What type of anemia is she suffering from?
- Thalassemia
 - Pernicious Anemia
 - Sickle cell Anemia
 - Macrocytic Anemia
28. Prescribing a proper and accurate progressive diet is very vital especially if the patient is bound for an operation or has already undergone operation (post op). Which of the following is the right progressive diet for a post-op?
- NPO -Full Liquid – Bland - Normal Diet
 - Liquid Diet -Soft Diet -Low Protein – Normal Diet
 - NPO- Clear Liquid- Full Liquid- Soft Diet –Normal Diet
 - NPO- Soft Diet - Clear Liquid - Full Liquid – Normal Diet
29. Inflammation of the gall bladder without infection is
- Cholangitis
 - Cholecystitis
 - Cholecystolithiasis
 - Choledocolithiasis
30. According to the National Nutrition Survey 2015, anemia prevalence in children (6-59 months) is
- 43.5 %
 - 40.5 %
 - 42.8 %
 - 43.8 %

PART II – Short Answer Questions (20 marks).

This part has 4 Short Answer Questions. Answer ALL the questions. Each question carries 5 marks.

1. Explain the following conditions: (2.5 X 2 =5 marks)
 - a. Necrosis
 - b. Dysphagia
2. What are some of the feeding problems faced by school children? (5 marks)
3. Enumerate non-pharmacological management of the feeding problems. (5 marks)
4. What type of diet will you prescribe to a cancer patient? List down some of the objectives for a cancer treatment diet. (5 marks)

**SECTION B
Case Study**

Choose either Case 1 or 2 from this section. Each case study carries 50 marks.

Case 1

Mr. Namgay Tshering, a 55 years old contractor was admitted on 22nd August, 2016 with chief complaint of fatigue, nausea, abdominal pain, headache and vomiting. Patient had undergone endoscopy last July, which showed positive for H.pylori bacteria. No history of smoking or drinking alcohol, but with a family history of diabetes and cardiovascular disease. He has a very poor appetite and usually prefers to eat noodles like koka even during regular meals and often consumes a lot of fruit juices. He says he used to weigh about 65 kgs six months ago. He currently weighs 50kgs at 175cm height. Physical examination reveals signs of pale complexion and pedal oedema. His laboratory results are as follows:

CBC-----RBC: 3
Hematocrit: 30
Hemoglobin: 10 g/dl

RFT-----Urea: 55 mg/dl
Creatinine: 6.5 mg/dl
Potassium: 8.8 mg/dl
Sodium: 135 mg/dl
Chloride: 96 mg/dl

BP: 160/100 mm Hg
Blood Sugar----FBS: 350 mg/dl
PPS: 300 mg/dl
Urine Output: 900 ml over 24 hours

Reminders:
Physical Activity = Bed Rest = 27.5

Protein allowance =0.6g

Round off the numerical for Protein to (+/-) 5, while (+/-) 50 for calories. Answer the following questions:

1. What is the primary diagnosis of the patient? (5 Marks)
2. What are the underlying complications? (5 Marks)
3. Show the Cock-Croft Gault calculation to assess the grade of kidney stage. Interpret what stage is he in? (5 Marks)
4. What is the nutritional status of the patient? What is the other name for BMI? (Use WHO cut-off as the marker for BMI) (5 Marks)
5. What is the ideal body weight? What is the % weight loss? Calculate the total energy requirement, total protein needs and total fluid requirement. (10 Marks)
6. What are some of the complications of diabetes mellitus? (5 Marks)
7. What is the diet prescription of the patient? List the foods allowed and not allowed based on food groups. (10 Marks)
8. Name the condition in which potassium in the blood is higher than normal? List some of the food items that should be avoided. Mention a method that can reduce the potassium levels from food sources. (5 Marks)

OR

Case 2

According to World Health Organization (WHO), Non-communicable diseases (NCDs) are the leading cause of mortality, accounting for more deaths than all other causes combined. NCDs hit the hardest at the world's lowest and middle-income population, contributing nearly 80% of NCD related deaths. In order to reduce the growing burden of diseases, WHO recommended reduced salt intake among the general population as a cost effective strategy. A step survey conducted by WHO in Bhutan, reported that an average Bhutanese salt intake was 9 g/person. That is an alarming high salt intake. In this context salt is the common name for sodium chloride. Now, address the following issues:

1. According to WHO, what is the daily-recommended sodium intake for adult? What is the amount of sodium in that recommended salt amount (2 Marks)
2. What is the relationship between high salt intake and NCDs. Explain in detail. (15 Marks)
3. What are the other risk factors for NCDs? (5 Marks)
4. In line with the WHO recommendation, the Ministry of Health, Department of Nutrition asked you to develop a salt reduction strategy. Design an appropriate plan on salt reduction. Be clear in your objective, identify partners and stake holders, and mention your outcome. (20 Marks)
5. In the above question you have developed an appropriate salt reduction strategy for Bhutan. Now, identify at least four important risk factors that could impede your strategy and what can be done to address them. (8 Marks)