HOT – Nutrition

T091

Thursday, 30/11/2017

08:30 – 11:30 AM

WORKFORCE DEVELOPMENT AUTHORITY

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ADVANCED LEVEL NATIONAL EXAMINATIONS, 2017, TECHNICAL AND PROFESSIONAL STUDIES

Marking guides

EXAM TITLE: NUTRITION

OPTION: Hotel Operations (HOT)

DURATION: 3 hours

INSTRUCTIONS:

The paper is composed of **three (3) main Sections** as follows:

Section I: Fourteen (14) compulsory questions.	**55 marks**
Section II: Attempt **any three (3)** out of five questions.	**30 marks**
Section III: Attempt **any one (1)** out of three questions.	**15 marks**

Note:

Every candidate is required to carefully comply with the above instructions. Penalty measures will be applied on their strict consideration.

Section I. Fourteen (14) Compulsory questions **55 marks**

01. List down the important nutrients required by all living organisms.

3 marks

Answer:

(0.5 mark for each nutrient)

- Fat/Lipid
- Protein
- Minerals
- Carbohydrate
- Water
- Vitamins

02. Give the health effect of the following substances: **4 marks**

a) Fiber

b) Cholesterol

Answer:

a) Fiber: (2 marks)

- To prevent constipation (0.5 mark)
- To control high blood pressure (0.5 mark)
- To facilitate the excretion of waste products and cholesterol (0.5 mark)
- To facilitate the digestion (0.5 mark)

b) Cholesterol: (2 marks)

It is a component of fat and it is important in the body for production of bile, hormones and vitamin D. **(1 mark)**

When it is in excess it leads to health complications such as atherosclerosis (accumulation of fat on the inner walls of arteries) leading to heart disease (High blood pressure). **(1 mark)**

03. Why do you think that it is important to eat fruits and vegetables at each meal? **4 marks**

Answer:

Because they are the main sources of vitamins and minerals for body protection and regulation.

04. When taken in too much quantity, fats may lead to different health troubles. What are those troubles? **3 marks**

Answer:

When taken in **excess** fats lead to:

- Heart disease **(0.5 mark)**
- Cancer **(0.5 mark)**
- Obesity **(0.5 mark)**
- Liver problems **(0.5 mark)**
- Respiratory troubles **(1 mark)**

05. Kwashiorkor is a well-known Protein Calorie Malnutrition (PCM) caused by an unbalanced diet, enumerate any five factors influencing PCM.

5 marks

Answer:

Factors influencing PCM (1 mark for each listed factor)

- Getting too little protein / Protein deficiency
- Lack of other important nutrients
- No respect of family planning
- Precocious weaning
- Frequent infections
- Lack of nutritional education/ ignorance
- Avarice /greed (avaricious/ greedy)
- Food taboos
- No concern and no love of parents for their babies
- Poverty
- Natural disasters
- War

06. Differentiate the two broad categories of vitamins and give two examples for each category. **5 marks**

Answer:

(1 mark for each category, 2 marks for the differentiation and 0.5 mark for each example)

- There are 2 broad categories of vitamins:

- Fat-soluble vitamins (Lipo-soluble vitamins)
- Water-soluble vitamins (Hydro-soluble vitamins)

Fat-soluble vitamins are vitamins that are soluble in fat (or in lipid), they can be dissolved in lipids (Vitamin A, D, E, K). They require bile for their digestion and absorption.

Water soluble vitamins: are vitamins that dissolve in water. Examples are B vitamins and C vitamin.

07. Nutrients can be classified into organic and non-organic nutrients. Differentiate those two groups and give an example for each. **3 marks**

Answer:

(1 mark for each definition and 0.5 mark for each example)

- Organic nutrients: Are nutrients that contain carbon.
  Example Carbohydrate, Vitamins, fats, protein
- Inorganic nutrients: Are nutrients that do not contain carbon.
  Example Water, Minerals

08. Outline any three reasons why food hygiene is important in Hotel industry. **3 marks**

Answer:

(1 mark for each correct reason)

- Food hygiene is important in hotel industry to fight against microbes (Bacteria)
- To prevent diseases
- To prevent food deterioration (food spoilage).
- To attract customers
- To prevent waste
- To minimize cost

09. No any other type of feeding can properly replace breast feeding. It is suitable and enough to satisfy the nutritional needs of the baby especially for the six first months. Illustrate the benefits of breast feeding. **5 marks**

Answer:

(1 mark for each correct answer)

Benefits of breast feeding

- It contains all nutrients required by the baby in the balanced form.
- Its quality remains the same all the time except in case of some infections.
- It incurs no additional cost while artificial feeding (bottle feeding) is costly.
- It's always at the right temperature
- It helps to build a close relationship between the mother and her baby
- It helps to the brain development
- It does not need preparation
- It helps to prevent breast cancer
- It helps to delay another pregnancy
- It helps mothers to avoid obesity
- It gives warmth and comfort to the baby when feeding.

10. Give the reasons why vegetables should be eaten raw or blanched whenever possible. **2 marks**

Answer:

Because cooking destroys some vitamins, enzymes and minerals, the heat effect may be dangerous for many nutrients.

Ref. George D. Pamplona-Roger, M.D. Encyclopedia of foods healthy recipes. p. 27.

11. Some nutrients are source of energy others do not supply any energy. Distinguish them. **4 marks**

Answer:

Nutrients source of energy: Lipid, Carbohydrate and protein. **(2marks)**

Nutrients which do not provide energy: Vitamin, water and Mineral. **(2marks)**

12. Bacteria prevention and control is very important in catering area. What are the strategies to be used in that control and prevention of bacteria? **5 marks**

Answer:

(1 mark for each strategy)

- Covering food to protect it from bacteria carried in the air.
- Do not keep food in the danger zone of temperature (7^0c-63^0c)
- Keep food at very high or very low temperature.
- Complying with hygienic rules.
- Wear clean clothing when handling food
- Keep nails trimmed
- Use food from approved supplier
- Observe the expiry date of products
- Keep your hands as clean as possible

13. Salmonella is one of the main toxi-infectious microbes commonly found in the catering area. Give the mode of contamination of salmonella, the disease it may cause and the symptoms of that disease. **5 marks**

Answer:

Mode of contamination (2 marks)

The contamination is done by ingesting contaminated food or drink. It can also be done by direct contact between the bacteria and the mouth through our hands or other contaminated objects.

Disease caused is: Salmonellosis or Typhoid fever *(1 mark)*

Symptoms of typhoid fever (2marks any four correct signs)

- Fever
- Vomiting
- Anorexia
- Nausea
- Abdominal pains
- Headaches
- Constipation or diarrhea

Reference: Kiguli M. Peter (2003), Hygiene for Colleges and schools, 1st Edition, YMCA Comprehensive Institute.

14. Explain the following terms: **4 marks**

a. Salting

b. Pickling

c. Jamming

d. Sterilization

Answer:

a) Salting: is a method of preserving food by using salt. **(1mark)**

b) Pickling: is a method of preserving food by using vinegar. **(1mark)**

c) Jamming: is a method of preserving food by using sugar. **(1mark)**

d) Sterilization: this is a process of creating unfavorable condition for multiplication of microorganism in food by heating food at about 120^0C for about 15 minutes. **(1mark)**

Kiguli M. Peter (2003), Hygiene for Colleges and schools, 1st Edition, YMCA Comprehensive Institute. P. 57.

Section II. Choose and Answer any three (3) questions **30 marks**

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15. Digestion is defined as a process by which food and drinks are decomposed into small particles useful for our body. The digestion takes place in the digestive system which is constituted with digestive tract and some organs that secrete digestive juice. Describe clearly the main steps of digestion. **10 marks**

Answer:

Main steps of digestion

There are 3 main steps of digestion:

- Transformation of big (complex) particles into small ones. ***1mark***

  This step takes place in the mouth **1mark** by the crushing ***0.5mark*** process of teeth and in the stomach **1mark** by the brewing movement of the stomach.
- Absorption ***1mark***: is the by which nutrients are separated ***1mark*** from waste and water. It's done in the small intestine ***1mark*** where villosities retain the nutrients in order to send ***0.5mark*** them in the blood.
- Waste excretion ***1mark***: after absorption the indigested substances (water, cellulose, mineral salts...) are sent to the large ***1mark*** intestine in order to be dehydrated and then excreted ***1mark***.

16. Obesity can be an influencing factor of many diseases and it can itself be influenced by food habit.

a) What are those diseases?

b) Which nutritional advice can be provided to prevent obesity?

c) Which diet can you recommend to a person with fever and why?

10 marks

Answer:

a) Diseases that may be influenced by obesity: heart diseases, respiratory troubles, arthritis and diabetes. **1 mark**

b) The person should take:

- ✓ Leafy vegetables **(0.5mark)**
- ✓ Salads **(0.5mark)**
- ✓ Boiled eggs **(0.5mark)**
- ✓ Meat poor in fat **(0.5mark)**

The person should reduce at maximum the consumption of:

- ☆ Carbohydrates **(0.5mark)**
- ☆ Feculent **(0.5mark)**
- ☆ Fats **(0.5mark)**
- ☆ Pastries and soft drinks **(0.5mark)**

c) The diet that can a person with fever take and why?

The diet will be composed of:

- ⅄ Too much liquid **(0.5mark)**
- ⅄ Fruits juice **(0.5mark)**
- ⅄ Lacteous or hydrous diet **(0.5mark)**
- ⅄ Many small meals **(0.5mark)**

The reason is because fever is a trouble characterized by body high temperature and can leads easily to dehydration by loss of water. **1mark**

17. a) Give the sources, function and the consequences of deficiency in vitamin D.

b) Give the function of fat in the body. **10 marks**

Answer:

a) Sources of vit D

- ➢ Milk and milk products **(0.5mark)**
- ➢ Egg yolk **(0.5mark)**
- ➢ Sun shines (sun beam) **(0.5mark)**
- ➢ Cod liver oil **(0.5mark)**

Function (Role, importance) of vit D

- Bones solidification/to maintain bones and teeth in good conditions by avoiding their deformities and fractures. **(1mark)**
- To facilitate the calcium absorption **(0.5mark)**
- To prevent rickets (Rachitisme), osteoporosis, osteoporosis. **(0.5mark)**

Deficiency in vit D (Hypovitaminosis D) results in

(1) rickets (Rachitisme), osteoporosis, osteoporosis (Characterized by bone softening leading to deformities and fractures) **(1mark)**

(2) Bad absorption of calcium. **(1mark)**

b) The function of fat in the body. /**4marks**

- To provide energy (1g=9 calories) **(0.5mark)**
- To protect some organs against shocks **(0.5mark)**
- To provide heat **(0.5mark)**
- Helps protein and carbohydrates to work effectively **(0.5mark)**
- Helps in brain development **(0.5mark)**
- Reserve of energy **(0.5mark)**
- Help in the absorption of liposoluble vitamins (Vit A, D, E, K) **(1mark)**

18. a) Water is a very important nutrient to the body because the human body can only survive a few without it. Describe any five functions of water in the body.

b) What is the health trouble caused by the deficiency in Calcium and its characteristics? **10 marks**

Answer:

a) functions of water in the body:____(1mark for each of 5 correct answers)

- Carrying nutrients through the body
- Facilitate the excretion of waste products
- To maintain the structure of large molecules
- To participate in metabolic reactions
- To serve as solvent for other substances and nutrients
- Helps in regulating body temperature
- To maintain the body volume

Ref: Kiguli M. Peter (2003), Hygiene for Colleges and schools, 1st Edition, YMCA Comprehensive Institute

b) The health trouble caused by the deficiency in Calcium and its characteristics:

The health trouble caused by deficiency in calcium is: hypocalcemia (1mark) that may be characterized by: (0.5 mark for each correct answers)

- Growth retardation – confusion or memory loss – Muscle spasms
- Numbness and tingling in the hands, feet, and face
- Depression – Hallucinations – Muscle cramps – Weak and brittle nails
- Easy fracturing of the bones.

19. a) Describe the role of vitamin E in the body and name at least two types of food that are sources of that vitamin.

b) List down any four different nutrients found in mangoes and two roles for each nutrient. **10 marks**

Answer:

Function (Role, importance) of vit E. **/(3marks)**

- To promote the reproduction
- To prevent reproduction troubles
- To prevent deficiencies in pregnancy period (Premature infants…)

Food Sources of vit E. **/(1mark)**

- Cereals in germination
- Palm oil
- Soy beans
- Sun flower seeds
- Egg yolk
- Ground nuts

b) Different nutrients found in mangoes and two roles for each nutrient listed. **0.5mark each element of the answer.**

1) Vitamin A:

- To maintain eyes in good conditions
- To prevent visual troubles: Keratomalachia, Xerophtalmia, Blindness
- To prevent skin troubles (Dermatitis)
- To promote the growth
- To prevent cancer
- To increase immunity

2) Vitamin C:

- ✓ Build and maintain body tissues
- ✓ Facilitate wounds healing
- ✓ Prevent scurvy
- ✓ To increase immunity
- ✓ To contribute to the hemoglobin formation.

3) Iron:

- ❖ Blood quantity,
- ❖ Hemoglobin formation,
- ❖ Anemia prevention

4) Carbohydrates:

- ✓ Provide energy,
- ✓ Increase calories

Section III. Choose and Answer any one (1) question **15 marks**

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20. Digestion process is facilitated chemically and mechanically by alimentary canal and some organs that secrete digestive juice. Explain both chemical and mechanical role, where applicable, of the following organs in the digestion process.

a) Mouth and its components:

b) Stomach

c) Describe the protein digestion and absorption.

Answer:

a) Mouth and its components:

In the mouth food is chewed (masticated) breaking the large particles into small pieces by the contribution of teeth, tongue and salivary glands. **(1mark)**

The tongue moves the food around in the mouth, and assists swallowing and tasting of the food. **(1mark)**

The function of salivary glands is to produce saliva. **(0.5mark)**

The function of saliva:

- To moisten food **(0.5mark)**
- To dissolve soluble food molecules **(0.5mark)**
- To facilitate the swallowing of food **(0.5mark)**
- To start the chemical digestion of starch by using amylase **(1mark)**.

b) Stomach

Stomach is a muscular bag where food eaten during the meal is stored for the processing (transformation) **(1mark)**. Food is subjected to a brewing process by a mechanical digestion **(1mark)**.

Chemical digestion can be done in the stomach using different digestive juices (Enzymes and acids) according to the food to be digested **(1mark)**: Gastric acids, Bile, pepsin, peptidase, protease, lipase, pancreatic juice **(2marks)** ...

c) The protein digestion and absorption.

Protein digestion starts in the mouth by crushing and moistening of protein with saliva **(1mark)**. It continues in the stomach by the pepsin action **(1mark)** and takes end in the small intestines by protease and peptidase action **(1mark)**. The absorption is done once the amino acids enter the small **(1mark)** intestine's cells to be distributed in the body **(1mark)**.

21. a) What is the meaning of a low sodium diet and in which cases can you recommend a low sodium diet to your guest?

b) Describe any five various forms of vegetarianism.

Answer:

a) Low salt diet (Low sodium diet): By this diet, the person must take dishes that include low salt **(1mark)** and cooked with very limited salt or no use of salt **(1mark)**.

It may be recommended in case of:

- High blood pressure (hypertension) **(1mark)**
- Kidney troubles **(1mark)**
- Edema of pregnancy **(1mark)**

b) Various forms of vegetarianism. **(2 marks for each form and its explanation)**

- Semi-Vegetarianism (Demi-Vegetarianism)
  - The person takes vegetables and all other foods except red meat.
- Lacto-ovo-vegetarianism
  - The person will not eat all meat, fish and poultry. He takes vegetables, eggs, milk and milk products.
- Lacto- vegetarianism
  - The person will not eat all meat, fish and poultry. He takes vegetables, milk and milk products.
- Vegans
  - These people will not eat any food of animal origin. They take only vegetables (Fruits, cereals nuts, seeds...).
- Fruitarians
  - They constitute a restricted form of vegetarianism. They eat only fruits, nuts, honey and olive oil.

22. Explain the different groups of food and their functions within the body.

Answer:

different groups of food and their functions within the body:

- Energetic foods **(0.5mark)**

  Energetic foods are foods rich in Carbohydrates (Sugars) supplying energy to the body **(1mark)**. These are examples of energetic foods: Cereals (Maize, rice, wheat, sorghum, millet,); Feculent (Cassava, Yam, Potatoes,); sugar, honey... **(1mark)**

  Normally 1g of carbohydrates provides 9 calories **(0.5mark)**.

- Caloric foods **(0.5mark)**

  Caloric foods refer to foods rich in lipids providing heat and energy to the body **(1mark)**.

  Lipids include fats and oils **(0.5mark)**.

  Fats are solid or creamy lipids at the room temperature and many of them are from animal origin (ex. Butter, margarine) **(0.5mark)**

  Oils: are liquid lipids at the room temperature. Many of them are from plant origin **(0.5mark)**

  (ex. Olive oil, soya oil, palm oil, maize oil...)

Cod liver oil is an oil from animal origin.

Normally 1g of lipid provides 9 calories **(0.5mark)**. Considering this quantity of calories Lipids constitute the main source of heat to our body **(0.5mark)**.

- Building and repairing foods **(0.5 mark)**

  Foods rich in protein are a main source of building material for the body **(0.5mark)**. The human being body requires also maintenance to be healthy. Proteins are necessary in that maintenance **(0.5mark)**. Examples of foods rich in protein are: meat, fish, egg, milk, bean, peas, soya... These foods are therefore rich in amino acids **(0.5mark)**. There are 20 important amino acids and two main types of them: Essential amino acids and Non Essential amino acids **(1mark)** (For more details, see Protein).

Water and minerals contribute also to build and repair the body **(0.5mark)**.

- Protective and regulating food (Functional food) **(0.5mark)**

  Vitamins, minerals and water are important nutrients required to protect the body and to regulate the body mechanism. They are called functional nutrient so as they are fundamental element of body functioning **(1mark)**.

  These nutrients are in high concentration in fruits and other vegetables **(0.5mark)**.

- Meat and meat products group: include different types of meat and food items derivate from meat. They are generally rich in protein and contribute to build the body **(0.5mark)**.
- Vegetable group: they are generally rich in vitamins, mineral and contribute to protect and regulate the body **(0.5mark)**.
- Milk and Milk products group: They are rich in protein, lipid and minerals **(0.5mark)**.
- Cereals and cereals products group: They are rich in carbohydrates **(0.5mark)**
- Fruits group: they are generally rich in vitamins, mineral and contribute to protect and regulate the body **(0.5mark)**.

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