**Q 2004 1**

1. Name an autotrophic organism
2. Give an example of a catabolic reaction
3. The conversion of atmospheric nitrogen to nitrates by bacteria is called
4. What is the ratio of hydrogen atoms to oxygen atoms in a carbohydrate?
5. A relationship between two organisms in which both benefit is called
6. An example of a protein that has a structural role is

**MS 2004 1**

1. Any named plant **or** named photosynthetic bacteria **or** cyanobacteria [*allow grass, seaweed, fern, moss*]
2. Respiration **or** digestion **or** deamination **or** any correctly described reaction e.g. protein amino acids **or** equation
3. (nitrogen) fixation
4. 2:1 [*allow if correctly shown in formula e.g. C6 H12O6*]
5. Mutualism **or** symbiosis
6. Keratin **or** myosin **or** elastin **or** collagen **or** other correct example [*allow fibrin*]

**Q 2005 1**

1. Cellulose is an example of a structural
2. Vitamins are either water-soluble or …soluble.

(c)Fats are composed of oxygen, hydrogen and

1. When an iodine solution is added to a food sample and remains red-brown in colour,

…… is absent.

( e) When two monosaccharides unite they form a …

1. Removal from the body of the waste products of metabolism is called…..………

**MS 2005 1**

1. Carbohydrate/polysaccharide
2. Fat
3. Carbon / C
4. Starch
5. Disaccharide
6. Excretion

**Q 2006 1**

1. In the human diet zinc, iron and copper are examples of
2. The walls of xylem vessels are reinforced with
3. Where in a cell would you expect to find phospholipids?
4. Vitamin ……………….. is an example of a water-soluble vitamin.
5. Name a disorder associated with a deficiency of the vitamin that you have named in (d) or of another **named** vitamin in the human diet
6. What are the final products of the digestion of a protein?

**MS 2006 1**

|  |  |  |
| --- | --- | --- |
| (a) | minerals **or** trace elements **or** inorganic nutrients |  |
| (b) | lignin |
| (c) | membrane **or** named membrane |
| (d) | Vitamin C **or** ascorbic acid / Vitamin B **or** named |
| (e) | correctly matched disorder |
| (f) | amino acid - [*accept peptide*] |

**Q 2007 1**

Give an example the following;

1. A catabolic reaction in an animal. …
2. An anabolic reaction in a plant. …
3. A fat-soluble vitamin. …
4. A reducing sugar. …
5. A polysaccharide.……
6. A trace element in the human diet .……

**MS 2007 1**

1. respiration **or** digestion **or** deamination **or** other correct process **or** named stage **or**

example of chemical reaction (word or equation)

1. photosynthesis **or** protein synthesis **or** replication **or** other correct process **or**
   * 1. named stage **or** example of chemical reaction (word or equation)
2. Vitamin A **or** D **or** E **or** K **or** chemical name
3. glucose **or** maltose **or** other correct sugar
4. cellulose **or** starch **or** other correct polysaccharide
5. iron **or** copper **or** zinc

**Q 2008 1**

Answer the following by filling in the blank spaces.

1. Biomolecules of the general formula C*x*(H2O)*y* are examples of
2. Give **two** functions of water in a living organism.
3. Is energy release a feature of anabolic or catabolic reactions?
4. How do fats differ from oils at room temperature?....
5. Name the test or give the chemicals used to detect the presence of protein in a food sample
6. Name a structural polysaccharide

**MS 2008 1**

|  |  |  |
| --- | --- | --- |
| (a) | Carbohydrate **or** sugar **or** saccharide |  |
| (b) | solvent / transport / support / reaction medium/reactant / turgidity / reference to changing concentration / movement of sperm / temperature function **or** example |  |
| (c) | Catabolic |  |
| (d) | (fats are) solid **or** oils are liquid |  |
| (e) | Biuret **or** (sodium) hydroxide and copper sulfate **or** correct formulas |  |
| (f) | Cellulose |  |

**Q 2009 1**

Answer the following:

1. In carbohydrates, which two elements are in the ratio 2:1?
2. Cellulose is a polysaccharide. Explain the term *polysaccharide*.
3. Name a polysaccharide other than cellulose.
4. Where precisely in a plant cell would you expect to find cellulose?
5. Name a test or give the chemicals used to demonstrate the presence of a reducing sugar.
6. In relation to the test referred to in (e) which of the following is correct?
7. No heat needed.
8. Heat but do not boil.
9. Boil.

**MS 2009 1**

|  |  |  |  |
| --- | --- | --- | --- |
|  | (a) | Hydrogen and Oxygen |  |
|  | (b) | (Made up of) many sugar units |  |
|  | (c) | Starch [*accept* other correct named] |  |
|  | (d) | Cell wall |  |
|  | (e) | Benedict's **or** Fehling's |  |
|  | (f) | 2. (Heat but do not boil) |  |

**Q 2010 1**

Answer the following by filling in the blank spaces.

1. In relation to the human diet, what is meant by a trace element?
2. Give an example of a trace element .
3. State **one** way in which an oil differs from a fat
4. Vitamins may be divided into two groups depending upon their solubility. Name these **two** groups.
5. What is a triglyceride?
6. Give an example of a catabolic reaction in a cell

**MS 2010 1**

|  |  |  |
| --- | --- | --- |
| (a) | Small amount (needed) **or** indication of e.g. < 0.01% |  |
| (b) | e.g. Fe, Cu, Zn **or** other correct |  |
| (c) | Oil is liquid (at room temperature) **or** fat is solid **or** oils are unsaturated or explained |  |
| (d) | Fat-soluble Water-soluble | **(4, 2, 0)** |
| (e) | Fat (or lipid or oil) unit (or molecule) **or** glycerol and three fatty acids **or** ester |  |
| (f) | Respiration **or** fermentation **or** glycolysis [*allow digestion*] |  |

**Q 2011 1**

Answer the following:

1. Which food type may be identified in the laboratory by the use of Sudan III or brown paper?
2. Give one role for a **named** mineral in plants.
3. What colour indicates a strong positive result of the Fehling’s or Benedict’s test for reducing sugar?
4. Give a role of lipids in cells.
5. Give a role of water in the human body other than as a component of cytoplasm and body fluids.
6. How many common amino acids are found in proteins?

**MS 2011 1**

|  |  |  |
| --- | --- | --- |
|  | (a) | Fat (or oil or lipid) |
|  | (b) | Role matching named mineral |
|  | (c) | Orange **or** red |
|  | (d) | Component of membranes (or of named membrane) **or** storage **or** energy **or** solvent **or**  reference to steroid **or** (formation of ) phospholipid (or lipoprotein) |
|  | (e) | Solvent (or example of solvent) **or** reaction medium **o**r transport **or** reactant (or example of reaction) **or** reference to temperature maintenance **or** reference to temperature regulation **or** lubrication qualified **or** protection qualified |
|  | (f) | 20 (common amino acids) |

**Q 2012 1**

Answer the following:

1. Name a monosaccharide.
2. Give the formula of the monosaccharide referred to in (a).
3. Name a polysaccharide that can be formed from the monosaccharide referred to in (a).
4. Give **one** way in which an amino acid differs from a monosaccharide, in terms of chemical composition.
5. What do carbohydrates and fats have in common, in terms of chemical composition?
6. How may one fat differ from another, in terms of chemical composition?

**MS 2012 1**

|  |
| --- |
| (a) Name of monosaccharide e.g. Glucose |
| (b) Formula of monosaccharide from (a) e.g. C6H12O6 for glucose |
| (c) Polysaccharide from (a) e.g. starch (from glucose) |
| (d) Contains N **or** contains –NH2 **or** contains –COOH (group) |
| (e) (mostly) composed of C, H and O |
| (f) Different (fatty) acids **or** some are phosphorylated (or have phosphate) |

**Q 2013 1**

In the case of the following pairs of terms, clearly distinguish between the first term and second term by writing a brief sentence about each.

1. Starch.

Glucose.

1. Amino acids

Proteins.

1. Cellulose.

Keratin.

1. Enzymes

Hormones.

1. Biuret test

Benedict’s (Fehling’s) test.

1. Fats.

Oils.

**MS 2013 1**

|  |  |  |
| --- | --- | --- |
| (a) | *Starch*  *Glucose* | * polysaccharide (or explained) **or** polymer **or** correct test * monosaccharide (or explained) **or** monomer **or** correct test |
| (b) | *Amino Acid*  *Protein* | * building block of protein **or** monomer **or** unit of protein * polymer (of amino acids) **or** chain of (or many) amino acids |
| (c) | *Cellulose*  *Keratin* | * carbohydrate **or** polysaccharide **or** (found in plant) cell wall * protein **or** (found in human) hair (or nails or skin) |
| (d) | *Enzyme*  *Hormone* | * a catalyst (or explained) * a (chemical) messenger (or explained) |
| (e) | *Biuret*  *Benedict’s (Fehling’s)* | * (test for) protein * (test for) reducing sugar (or glucose or maltose) |
| (f) | *Fats*  *Oils* | * (lipids) solid at room temp * (lipids) liquid at room temp |

**Q 2014 2**

1. (a) The following biochemical reactions took place in some living cells:

A

### B + C + D

Is this an example of anabolism or catabolism?

### X

Fat

1. Fatty Acids + Y

Identify X and Y.

(b) (i) How does a phospholipid differ from a fat?

1. Name a fat-soluble vitamin.
2. State a disorder due to a dietary deficiency of the vitamin referred to in (b) (ii).
3. Give any **two** functions of minerals in organisms.

**MS 2014 2**

|  |  |  |
| --- | --- | --- |
| (a) | (i) | Catabolism |
|  | (ii) | X = lipase, Y = glycerol |
| (b) | (i) | (A phospholipid) has a phosphate **or (**a phospholipid) has two fatty acids |
|  |  | (A fat) has three fatty acids |
|  | (ii) | A, D, E, **or** K |
|  | (iii) | Matching disorder |
|  | (iv) | Formation of rigid structure (or named) / formation of soft tissue (or named) / |
|  |  | formation of fluid (or named) / formation of pigment (or named) / |
|  |  | biochemical function of a named mineral /any **other** specific function(s) of named |
|  |  | mineral(s) |

**Q 2015 1**

1. What name is given to the simplest units of carbohydrates?
2. Name a catabolic process that produces these simplest units.
3. The general formula of carbohydrates is Cx(H2O)y.What is the most common value of y in the carbohydrates used for energy by human cells?

(d) Name a structural polysaccharide found in plants.

1. Name a polysaccharide, other than the one referred to in part (d), commonly found in plants.
2. Which carbohydrate is always found in DNA?

**MS 2015 1**

|  |  |
| --- | --- |
| (a) | Monosaccharides |
| (b) | Digestion |
| (c) | 6 |
| (d) | Cellulose |
| (e) | Starch |
| (f) | Deoxyribose |

**Q 2016 2**

(a) Identify a non-metallic element, other than C, H, O and N, commonly found in proteins.

1. Give a metabolic role of proteins in the human body.
2. Give a structural role of proteins in the human body.
3. Name the **two** different biomolecular components of a lipid.
4. Where would you expect to find phospholipids in human cells?
5. Give a role of a named mineral, other than iron, which is required in the human body
6. What is the approximate percentage of water, by mass, in a human cell?

**MS 2016 2**

|  |  |
| --- | --- |
| **2.** | **2(3) + 7(2)** |
| (a) | *Non-metallic element in proteins:* Sulphur (or S) |
| (b) | *Metabolic role of protein:* Enzymes **or** hormones **or** antibodies **or** contractile (protein) |
|  | **or** named protein + role |
| (c) | *Structural role of protein:* (Component of) hair **or** nails **or** muscle **or** membranes **or** chromosomes |
| (d) | *Components of lipid:* (i) Glycerol |
|  | *Components of lipid:* (ii) Fatty acid |
| (e) | *Where phospholipids:* Membrane(s) |
| (f) | Named mineral |
|  | Matching role |
| (g) | *Human cell water % by mass:* 70 - 95% i.e. percentage or percentage range within this range |