1. **7 (b)**

(a) (i) What is the chemical composition of a chromosome?

(ii) What is meant by the term *junk DNA*?

1. (i) In relation to the isolation of DNA from a plant tissue, explain why you used each of the following:
   1. Washing-up or similar liquid.
   2. Sodium chloride.
   3. Protease.
   4. Freezer-cold ethanol.

**MS 2015 7 (b)**

1. (i) 1. To breakdown the (cell) membrane(s)
   1. To cause the DNA to clump
   2. To breakdown (or remove or digest) the protein in the chromosomes
   3. To bring the DNA out of solution **or** to make the DNA visible

**or** to separate the DNA

**Q 2011 9**

(a) (i) How are the two strands of a DNA molecule joined together?

(ii) What is ‘junk’ DNA?

1. Answer the following questions by referring to the procedures that you used to isolate DNA from a plant tissue.
   1. Having obtained a plant tissue e.g. onion,
      1. What was the first procedure that you followed?
      2. What was the reason for that procedure?
   2. Washing-up liquid is then used in the isolation. Give a reason for its use.
   3. Salt (sodium chloride) is also used in the isolation. Give a reason for its use.
   4. 1. What is a protease?

2. Why is a protease necessary when isolating DNA?

* 1. The final stage of the isolation involves the use of freezer-cold ethanol.
     1. Describe how it is used.
     2. For what purpose is it used?

**MS 2011 9**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **9.** | (a) | (i) | Hydrogen bonds | **3** |
|  |  | (ii) | Non-coding (or described) | **3** |
|  | (b) | (i) | 1. Chop 2. To disrupt structure (or described) **or** to increase surface area | **3**  **3** |
|  |  | (ii) | To disrupt membranes | **3** |
|  |  | (iii) | To clump the DNA (or described) **or** to protect DNA from other positive ions | **3** |
|  |  | (iv) | 1. An enzyme that digests protein 2. Because DNA is combined with protein | **3**  **3** |
|  |  | (v) | 1. Added down the side of the test tube **or** added slowly 2. To bring the DNA out of solution | **3**  **3** |

**Q 2006 7 (b) (iii)**

1. In the case of each of the following state:
   1. An investigation in which you used it,
   2. The precise purpose for its use in the investigation that you have indicated.

Cold alcohol (ethanol) 1……………………………………………………………………………………

2……………………………………………………………………………………

**MS 2006 7 (b) (iii)**

|  |  |  |
| --- | --- | --- |
| 1. | isolation of DNA | **3** |
| 2. | to separate DNA | **3** |

**Q 2005 8**

(a) Explain each of the following terms in relation to DNA.

(i) Replication (ii) Transcription

(b) As part of your practical activities you extracted DNA from a plant tissue. Answer the following questions in relation to this experiment.

(i) What plant did you use?

1. It is usual to chop the tissue and place it in a blender. Suggest a reason for this.
2. For how long should the blender be allowed to run?
3. Washing-up liquid is normally used in this experiment. What is its function?
4. Sodium chloride (salt) is also used. Explain why.

(vi) What is a protease enzyme?

1. Why is a protease enzyme used in this experiment?
2. The final separation of the DNA involves the use of alcohol (ethanol). Under what condition is the alcohol used?

**MS 2005 8**

|  |  |  |  |
| --- | --- | --- | --- |
| **8.** (a) | (i)  (ii) | Making a copy  (Matching) RNA production | **3** |
| (notion of both DNA and RNA must be given) **3** | | | |
| (b) | (i) | Name of plant | **3** |
|  | (ii) | Break up of cell (walls) or release of cytoplasm | **3** |
|  | (iii) | A few seconds only (max 6 secs) | **3** |
|  | (iv)  (v) | To break down membrane(s) or membrane components Clumps (protects) DNA / to remove protein / separates DNA / separates protein | **3**  **3** |
|  | (vi) | Breaks down (acts on) protein | **3** |
|  | (vii) | Proteins are associated with DNA (histones or chromosomes) | **3** |
|  | (viii) | (Ice) cold | **3** |