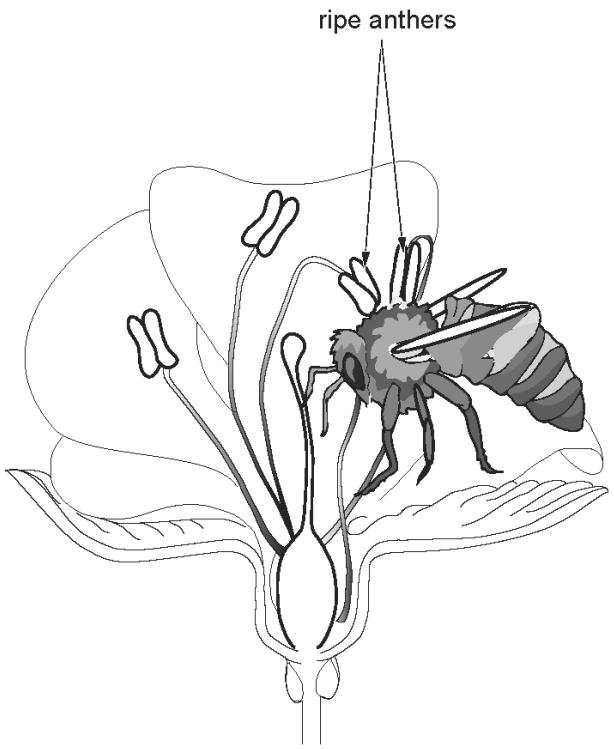
WJEC (Wales) Biology A-level
Topic 4.2: Sexual Reproduction in Plants
Questions by Topic

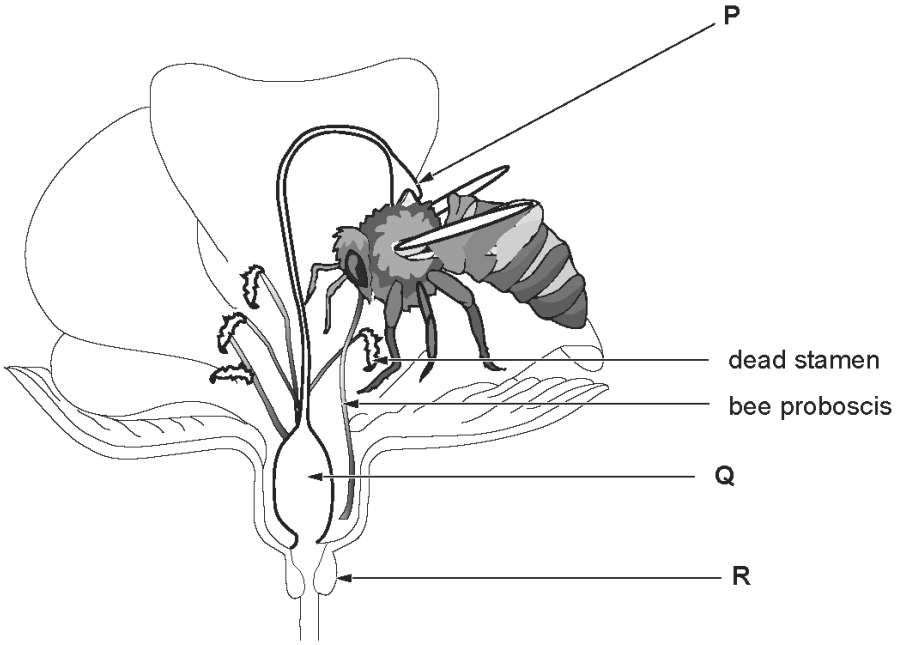
1.

The diagrams below show pollination in an insect-pollinated flower.

I



II



(a) (i) Name parts: [1]

P .....

Q .....

(ii) Name the substance produced by structure **R**. [1]

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(iii) What is the function of this substance? [1]

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(b) Describe what happens to the pollen in diagrams **I** and **II**. [2]

I. .....

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II. .....

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(c) Using the diagrams opposite, explain how these flowers are adapted to ensure that;

(i) there is effective pollen transfer between two flowers of the same species, [1]

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(ii) self-pollination is avoided. [1]

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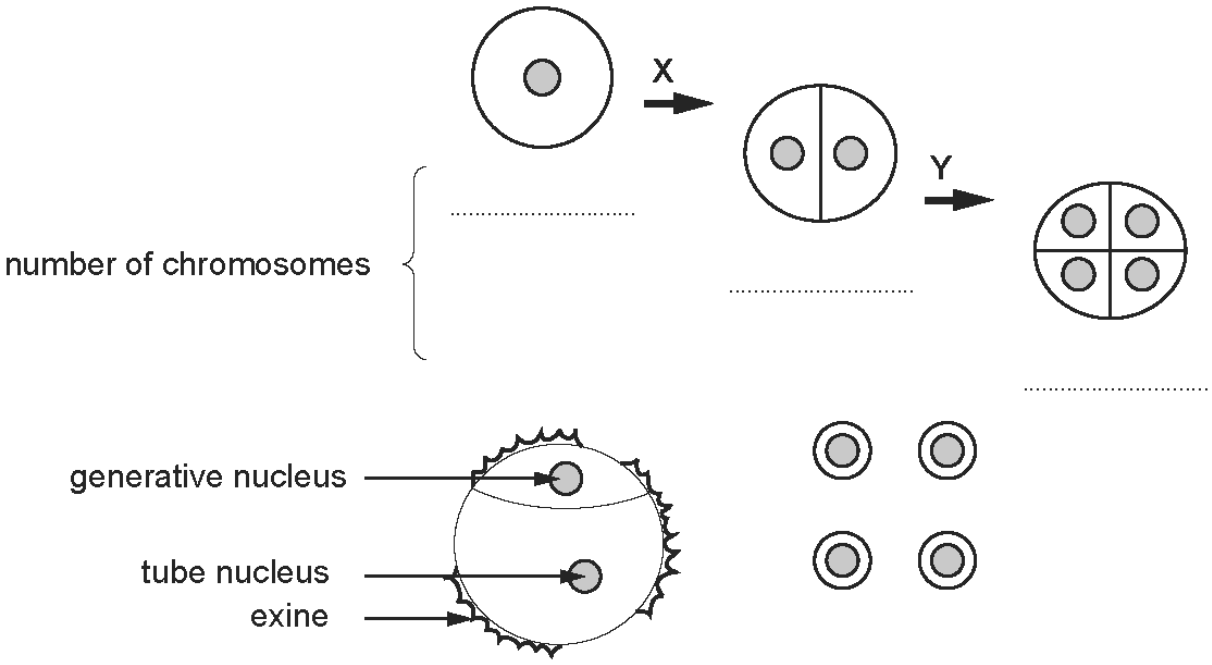
(d) The diagrams below show the formation of pollen grains.



(i) In which floral part does this take place? [1]

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(ii) Name the cell process represented by arrows **X** and **Y**. [1]

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(iii) The diploid number of this species is 10, underneath **each** structure indicated above, write the number of chromosomes in **each** nucleus. [1]

(iv) Give the functions of:

I. the generative (male) nucleus; [1]

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II. the tube nucleus. [1]

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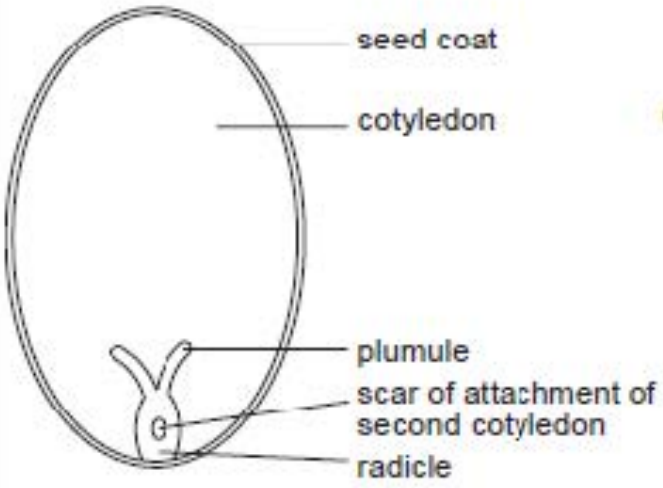
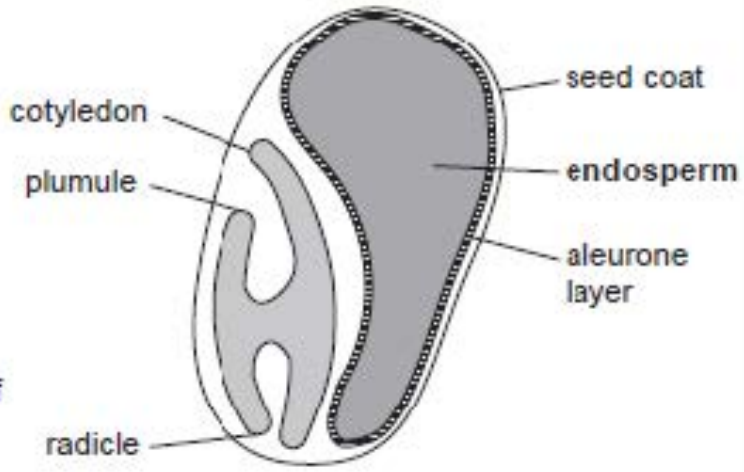
2. The diagrams below show a peanut seed *(Arachis hypogaea)* and a barley seed *(Hordeum vulgare)*.



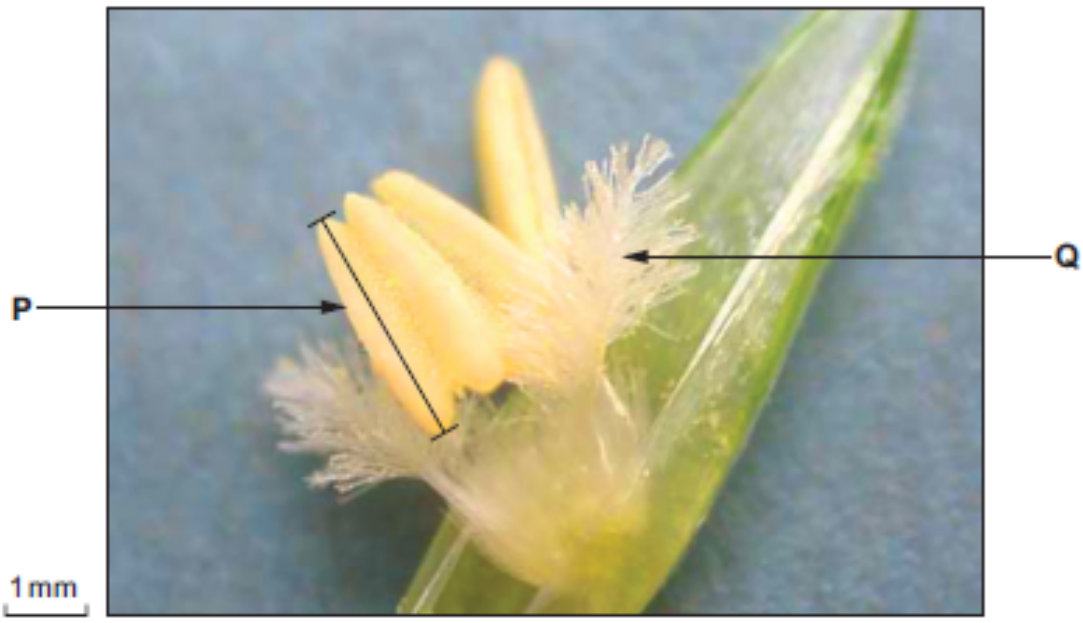
Peanut seed *(Arachis hypogaea)*



Barley seed *(Hordeum vulgare)*

State and explain the conditions required for germination to take place. Describe the germination of the peanut and barley seeds shown above. [9 QER]

3. *(a)* The photograph below shows a flower of the wheat plant, *Triticum aestivum*.



(i) Name the parts labelled P and Q. [1]

P .....

Q .....

(ii) Calculate the actual length of structure P. [2]

Size = ... mm

(iii) Describe two features of the flower shown in the photograph which suggest it is wind pollinated. [1]

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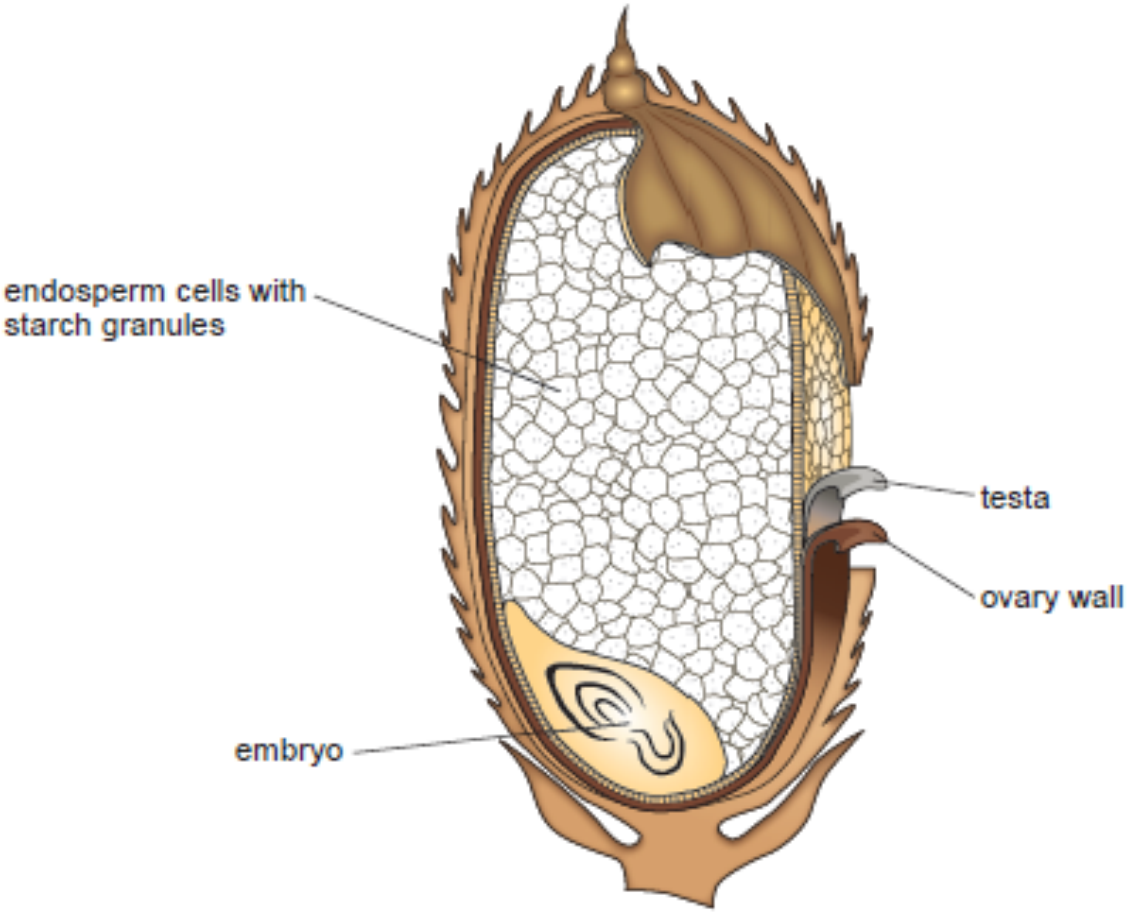
(b) The diagram below shows a wheat grain.



(i) Use information shown in the diagram to explain why the grain is more correctly described as a fruit rather than a seed. [2]

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(ii) Explain why the events taking place in the embryo sac of a wheat flower are described as a double fertilisation. [2]

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4. *(a)* Complete the table to show **four** differences between insect and wind pollinated plants. [4]

Insect pollinated	*Wind pollinated*

(b) Some flowers can self pollinate. What is the main **disadvantage** of self pollination? [1]

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(c) State how the production of pollen grains has enabled flowering plants to adapt to terrestrial life. [3]

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(d) On the following diagram of a broad bean pod (drawn in section), show which parts of the flower have developed into the labelled structures. [4]

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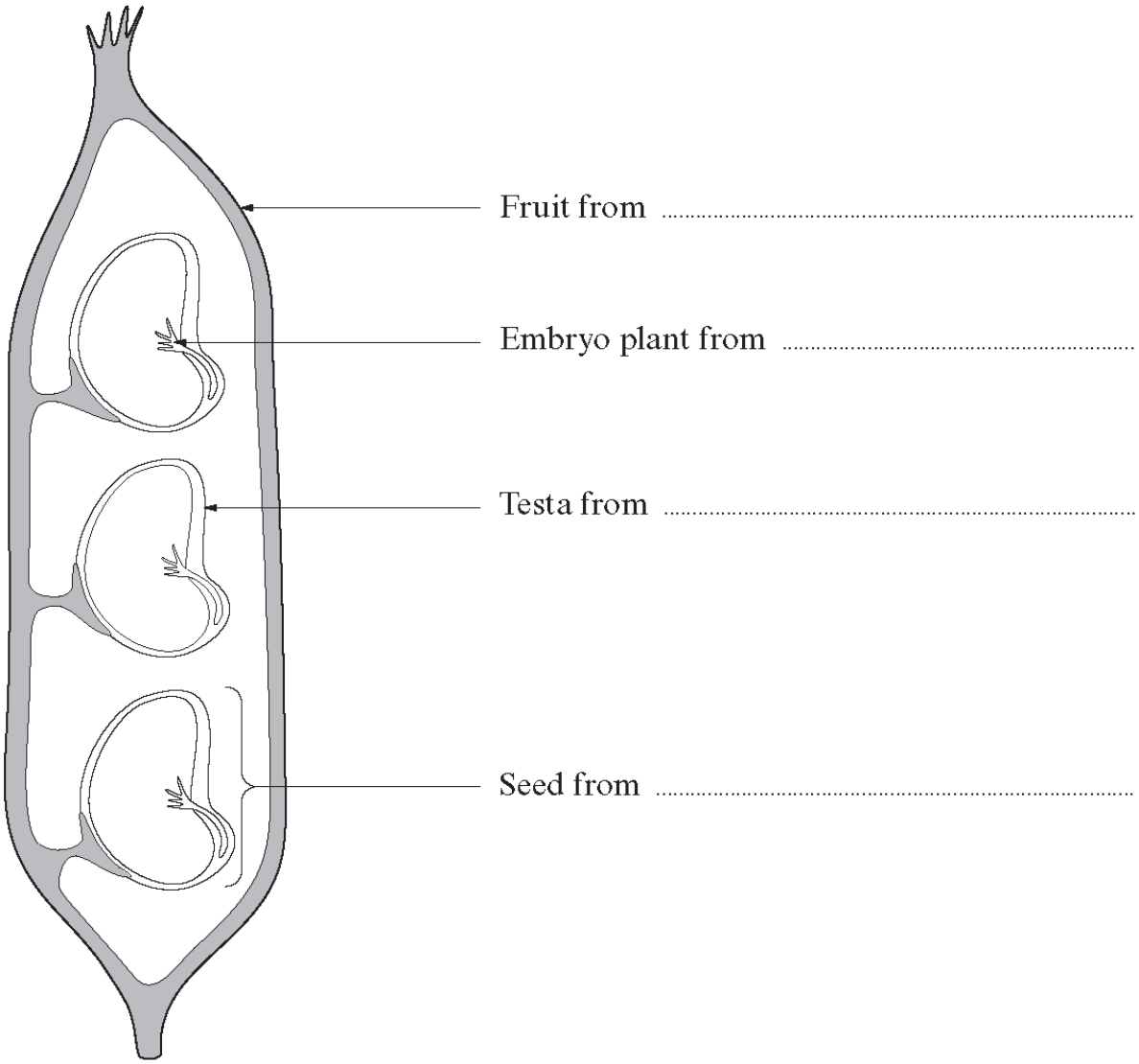

(Total 12 marks)