This is a Class 1 exam

Lebanon Evangelical School
for Boys and Girls
Loueizeh - Baabda

Stage Exam 01

06NOV2023

Do NOT write in this box. Your MARK will be placed here.

Subject :	Biology
Class :	10A
Teacher :	Miss Rahmeh Hilal
Duration :	1 hour

Your name :		*Time taken to complete exam*
Your Class :		
Exam Room :		
How many sheets, including cover sheet :		

- Do not open this paper until the teacher in charge instructs you to do so.
- The most important thing to remember in taking an exam is NEVER PANIC.
- If you are caught cheating in this exam, you will be awarded zero for ALL exams that are taken on this day.

Q1.

Plants can reproduce sexually or asexually.

Plants that reproduce sexually can be pollinated by insects or by wind.

(a) State three ways in which the structure of insect-pollinated flowers differs from the structure of wind-pollinated flowers.

(3)

1 .....

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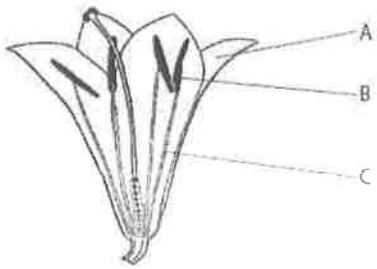
2 .....

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3 .....

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(b) The diagram shows a flower from a plant.



Name the structures labelled on the diagram.

(3)

A .....

B .....

C .....

(c) The flower in the diagram is insect-pollinated.

An insect carrying pollen lands on the flower.
Describe the events that lead to seed formation.

(5)

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(Total for question = 11 marks)

Q2.

Plants can reproduce sexually and produce seeds.

These seeds can remain dormant for long periods of time before germination takes place.

(a) What is meant by the term **germination?**

(1)

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(b) Explain three conditions needed for seeds to germinate.

(6)

1 .....

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2 .....

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3 .....

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(Total for question = 7 marks)

Q3.

The passage describes the events that lead to the production of a seed in a plant.

(a) Complete the passage by writing a suitable word in each blank space.

(7)

Pollen grains are produced in the ..... of a flower by a process of cell division called ..... . The pollen grains land on the ..... of another flower and each grain grows a pollen tube down the ..... .

Each pollen tube grows until it reaches the ovary of the flower.

The pollen tube then enters the micropyle of an ..... .

The male nucleus passes down the pollen tube and ..... takes place.

A seed is produced and the ovary becomes a ..... .

(b) Flowers can be insect-pollinated or wind-pollinated.

Some people have an allergy to the pollen produced by flowering plants.
This allergy is known as hay fever.
Suggest why hay fever is more likely to be caused by pollen from a wind-pollinated flower than by pollen from an insect-pollinated flower.

(2)

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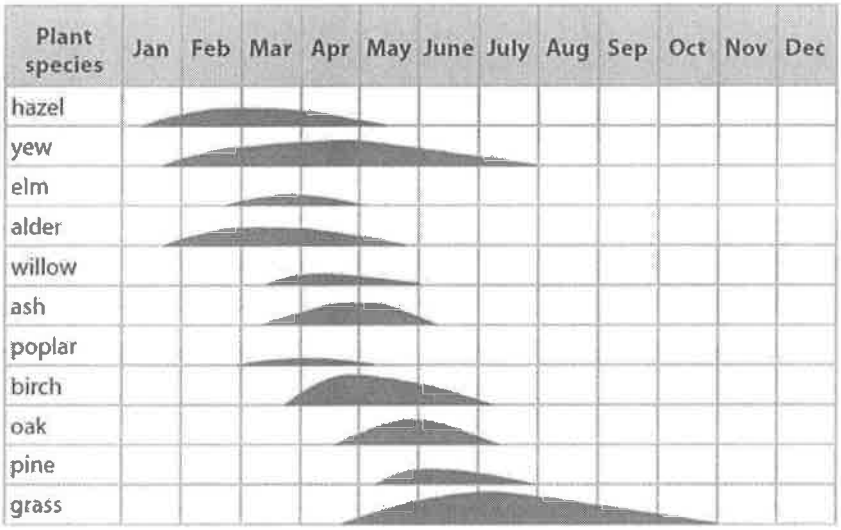
(Total for question = 9 marks)

Q4.

Different plant species in the UK release pollen in the air.
This pollen may land on people causing an allergic reaction called hay fever.

For this reason, daily pollen counts are carried out in some cities and the results are used to advise people who have allergic reactions when to stay inside their houses.

The diagram shows how the size of the pollen count varies for each species. It also shows the months when the pollen from each species is released into the air.



(a) (i) In which months is there no risk of hay fever?

(1)

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(ii) Explain which plant species is likely to have the greatest effect of causing hay fever.

(2)

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(b) In order to measure the pollen count, pollen is collected using glass slides coated with jelly. The pollen grains stick to the jelly and can then be counted.

Suggest two abiotic (non-living) factors that could affect the number of pollen grains that land on the slides.

(2)

1 .....

2 .....

(c) Describe the events that take place from when pollen lands on the stigma of a flower to when seeds are formed.

(5)

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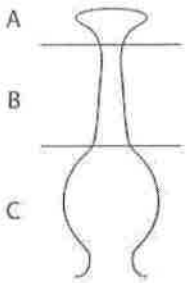
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(Total for question = 10 marks)

Q5.

The drawing shows part of a flower involved in sexual reproduction.
The drawing has been separated into three sections A, B and C.



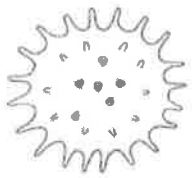
(a) Complete the table by giving the correct letter for the section that matches each statement.

Each letter may be used once, more than once or not at all.
The first one has been done for you.

(4)

Statement	Section letter
This is the stigma	A
This is where fertilisation occurs	
This is where the pollen grains land at pollination	
This is where most pollen tube growth occurs	
This is where a seed will develop	

(b) The drawing shows a pollen grain from an insect-pollinated flower as seen using a microscope.



Suggest how the structure of this pollen grain shows it is from an insect-pollinated flower.

(2)

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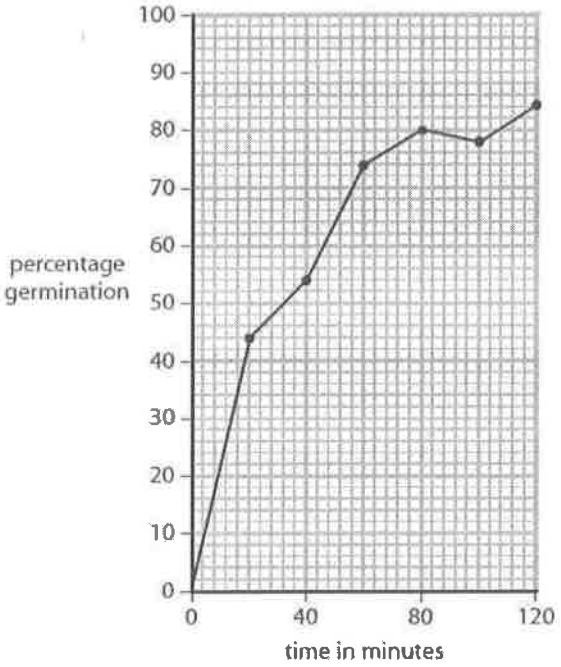
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(c) Pollen grains were placed in a solution that helps them to germinate (grow a pollen tube).
A microscope was used to observe the pollen grains for two hours.

The percentage of pollen grains that had started to germinate was measured during the two-hour period.
The graph shows the results.



(i) Describe how the percentage germination changed during the two-hour period.

(2)

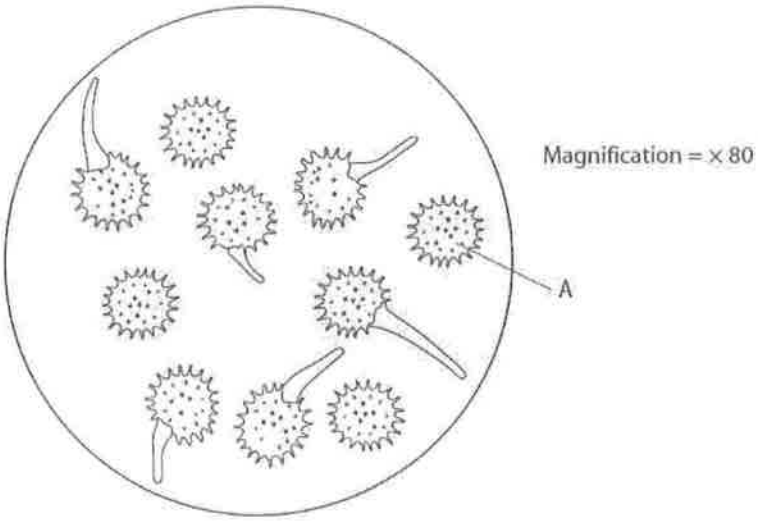
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(ii) The drawing shows pollen grains seen using the microscope at one time during the two hours.



Use the drawing and the graph to determine the time when these pollen grains were observed. Show your working.

(2)

Answer ..... minutes

(iii) Calculate the actual size of the pollen grain labelled A. Show your working.

(2)

Answer ..... mm

(d) Explain the benefit to the plant of producing offspring by sexual reproduction rather than by asexual reproduction.

(2)

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(Total for question = 14 marks)

Q1.

Question number	Answer	Notes	Marks
(a)	1. larger (petals); 2. colour; 3. enclosed anther / enclosed stamens / shorter stamen / shorter filament; 4. enclosed stigma / enclosed carpels / shorter style / stigma not feathery; 5. nectary;	ignore amount of pollen or nectar allow converse for wind-pollinated for all Mps ignore attractive / smell / sticky as not structures	3
(b)	A petal / petals / corolla;		1
	B anther;		1
	C filament;		1
(c)	1. stigma; 2. pollen tube grows (down style); 3. into ovule / ovary; 4. enters via micropyle; 5. (male) nucleus / (pollen grain) nucleus / male gamete; 6. fertilisation / fuse / join / eq; 7. ovum / egg / (female) nucleus / female gamete; 8. ovule becomes seed; 9. ovule wall becomes seed coat / testa; 10. ovary becomes fruit;	allow if shown on clearly labelled diagram	5

(Total for question = 11 marks)

Q2.

Question number	Answer	Notes	Marks
(a)	root appears / shoot appears / sprout / seed coat splits / eq;	ignore growth alone	1
(b)	1. oxygen; 2. respiration; 3. water / moisture / rain; 4. (activate) enzymes / reactions / hydrolysis / digestion / eq; 5. warmth / suitable temperature / optimum temperature; 6. enzymes / reactions; 7. light; 8. activate plant growth regulators / eq;	ignore air / pH 3. ignore humid 5. ignore temperature alone / heat four conditions and no explanations = 3 max	6

(Total for question = 7 marks)

Q3.

Question number	Answer	Notes	Marks
(a)	1. anther;	1. Ignore stamen	
	2. meiosis;		
	3. stigma;	3. Ignore carpel	
	4. style;		
	5. ovule;	5. Ignore ovum / ova / egg / ovary	
	6. fertilisation;	Ignore fusion	
	7. fruit;	7. Reject fruit wall	7
(b) (i)	1. stigma enclosed / covered stigma / short stigma / not feathery;	Allow converse	
	2. anthers enclosed / stamens enclosed / covered stamens / filaments short / eq;	2. Ignore pollen grains	
	3. petals large / (flowers) large;	3. Ignore bright / coloured	
	4. nectary;	4. Ignore nectar / scent	max 2
(ii)	1. more pollen / eq;	Allow converse	
	2. light / small / dust like / eq;		max 2

Total 11 marks

Q4.

Question number	Answer	Notes	Marks
(a) (i)	November and December;		1
(ii)	(grass / yew)		
	1. most months / 7 months / longest/longer duration / eq;	allow Mp1 for yew ignore many months	
	2. largest/highest count / highest/higher peak / most pollen / eq;		2
(b)	1. rain / precipitation / humidity;	1. ignore weather / water / time of day / slide size / amount of jelly	
	2. temperature;		
	3. wind;	3. ignore fans / eq	Max 2
(c)	1. pollen tube;		
	2. style;		
	3. ovary;		
	4. (pollen tube / male gamete into) ovule;		
	5. male nucleus / male gamete / male sex cell;	5. ignore pollen	
	6. fertilisation / fertilised / fertilize / fuses / joins / eq;	pollen fertilises the ovum = 2	
	7. female nucleus / female gamete / female sex cell / ovum / egg;		
	8. ovary becomes fruit;		Max 5

(Total for question = 10 marks)

Q5.

Question number	Answer	Notes	Marks
(a)	<table><tr><th>Statement</th><th>section letter</th></tr><tr><td>This is the stigma</td><td>(A)</td></tr><tr><td>This is where fertilisation occurs</td><td>C;</td></tr><tr><td>This is where the pollen grains land at pollination</td><td>A;</td></tr><tr><td>This is where most pollen tube growth occurs</td><td>B;</td></tr><tr><td>This is where a seed will develop</td><td>C;</td></tr></table>	if two letters in one box = 0	4
(b)	1. spikes / eq; 2. attach to insect / stick to insect / eq;	Ignore sticky / feathery	2
(c) (i)	1. increase / eq; 2. levels / decreases after 80 minutes / decreases at 100 minutes / from 80% / drops to 78%		2
(ii)	46 ± 2 / 44 to 48 (minutes);;	Allow one mark for 60% in working	2
(iii)	0.1125 to 0.175 mm;; (range between 9 and 14 mm)	Allow one mark for ÷ 80 in working	2
(d)	1. variation / diversity / different; 2. of alleles / genes; 3. better chance of survival / not all killed by disease / eq;	genetic variation = 2 Mp2 ignore DNA / chromosomes Mp3 allow resistance to disease	2 max

Total 14 marks