2024 YEAR 4 EXPRESS BIOLOGY PRELIMINARY EXAMINATION

Paper 3 Confidential Instructions

Question 1

No.	Materials and Apparatus for each student	Quantity
1	**[C][MH]** 1% hydrogen peroxide solution in bottles labelled **H**, provided at room temperature	about 200 cm^3
2	celery extract in a capped plastic tube, labelled **celery extract**, provided at room temperature (see *Preparation of materials*)	about 15 cm^3
3	distilled water in a small beaker labelled **W**, provided at room temperature	about 100 cm^3
4	empty 250 cm^3 beaker labelled **For waste**	1
5	small paper discs in a Petri dish	20 - 25
6	10 cm^3 measuring cylinder	1
7	stopper to fit test-tube	1
8	glass rod	1
9	forceps	1
10	small plastic container	1
11	standard test-tube	5
12	long test-tube	1
13	test tube rack	1
14	ruler with mm scale	1
15	permanent marker	1
16	stop-watch	1
17	paper towels	10
18	safety googles	1
19	disposable gloves	1 pair

Question 2 and 3

No additional materials required.

Preparation of materials

H should be made from a fresh stock solution as close to the time of the exam as possible.

Materials	**Preparation**
Celery extract	• Use fresh stalks of celery (*Apium graveolens*). • Homogenise the celery stalks in a food processor to release the juice. • Filter the juice through muslin or similar material to remove the solid material. • Provide about 15 cm^3 in a capped plastic tube labelled **celery extract** for each student. *Note* *This should be made from a fresh stock solution as close to the time of the exam as possible.* *Before the exam test the catalase activity of the celery extract. Soak one paper disc in the celery extract. Put the soaked paper disc into the bottom of a standard test-tube. Pour in 18 cm^3 of 1% hydrogen peroxide solution; the disc should take between 10 to 60 seconds to rise to the surface. If the time taken is less than 10 seconds or more than 60 seconds, adjust the concentration of the hydrogen peroxide solution accordingly.*
Paper discs	• Paper discs (6 mm in diameter) can be prepared from filter paper using a standard stationery hole puncher. • Provide about 20 – 25 discs in a Petri dish per student.
W	• Distilled water in a small beaker labelled **W.** • Dispense about 200 cm^3 in a beaker for each student.
H ***Note: ***[C][MH]***	• Prepare 1% hydrogen peroxide solution. • Dispense about 200 cm^3 of hydrogen peroxide in bottles labelled **H** for each student.