UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS

GCE Ordinary Level

MARK SCHEME for the October/November 2011 question paper for the guidance of teachers

5090 BIOLOGY

5090/32 Paper 3 (Practical Test), maximum raw mark 40

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1 (a) (i) drawing marks; [3]
at least 7 cm good shape, (ridged) entire outline of transverse section;
realistic vascular bundles;
stained areas shown;

labels:
vascular bundles / xylem;
stained areas indicated;
epidermis / thickened tissue; R – epicarp [max 2]

(ii) shown where measured;
measurements to 1 mm (0.1 cm); (units/decimals given at least once)
drawing size over specimen equivalent;
magnification suitably expressed; [4]

(b) (i) simple diagram of vertical section (R – transverse section);
simple diagram of streak of stain down tissue (v.b.);
ref spread down tissue;
ref staining of other (thickened) tissue at end of specimen; [max 3]

(ii) uniform (all parts) in potato – regional (mainly v.b., xylem) in celery;
more heavily stained in potato, less heavily stained in celery /
turns black in potato, brown in celery; [2]

(c) starch turns black with iodine;
uniform/ all over/ widely spaced in potato tissue;
ref to storage (tissue/organ);
xylem / vascular/ conducting / tubular tissue in celery; (R – phloem as conducting tissue)
no/less starch in celery (or reverse more starch in potato);
ref staining of walls /xylem
ref to lignified tissue; [max 6]

[Total: 20]

2 (a) (i) preparation – cut/crush /chop (on tile);
dissolve /shake in ethanol;
add water / to water;
cloudy /chalky/ white emulsion if fat present; R – precipitate
remains clear/colourless / no change if none; [max 4]

(ii) preparation – cut/crush/chop (on tile)
add Biuret reagent;
mauve /purple /lilac / violet if protein present; R – precipitate
remains blue/no colour change if none; [4]

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(b) **Table 2.1**

	fats		proteins	
Observation	W1	W2	W1	W2
	stays clear / faintly cloudy	goes cloudy	faintly mauve	goes mauve
Conclusion	no fat / <u>small amount</u>	fat present	<u>small amount</u> present	protein present

Marks for Table
note that alternatives for colour observations are given in **(a)(i)** and **(ii)**.
column 1 (I mark if consistent)
column 2 (2 marks to allow clear terminology for fats)
column 3 (1 mark if consistent and to allow positive results for proteins)
column 4 (2 marks to allow clear terminology for proteins) [6]

(c) suitable named specimens e.g. W1/W2/ food rich in fats, carbohydrates;
measured mass (of substrate) ;
measured volume (of water);
use of forceps /needle and ignited/burned;
used to heat water (in tt);
measure initial and subsequent temperature;
note temp. <u>increase;</u>
more energy release;
repeat the procedure /compare with another specimen;
OVP – re-ignition/ complete combustion /replication and taking mean values [max 6]

[Total: 20]

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