

Question	Expected Answers	Marks
5 (a)	avoid attracting a mate of a different species; ORA ensure reproductive isolation;	max 1
(b) (i)	diffusion;	1
(ii)	so that they do not receive oxygen constantly; there are mitochondria between them and the cell surface;	max 1
(c)	mitochondria / aerobic respiration / oxidative phosphorylation, inhibited only briefly; oxygen concentration decreases again ; preventing, action of luciferase / production of light ; each flash short; ORA e.g. so not continuously lit AVP ;	max 2
(d)	active transport; <b>A</b> e.g. Na <sup>+</sup> /K <sup>+</sup> pump protein synthesis; synthesis of named substance; movement of organelles; phosphorylation of glucose; AVP;;; e.g. transcription, translation, anabolic reaction  <b>R</b> respiration, DNA replication, chromosome movement, mitosis	max 3
(e)	cells / membranes, damaged / disrupted; nitrous oxide released ; mitochondria stop using O <sub>2</sub> ; oxygen, allows light production / reaches light-producing organelles; in unlimited quantities / continuously, so light is brighter;  respiration / oxidative phosphorylation, ceases ; no more, ATP / NADH <sub>2</sub> ; luciferin, synthesis / regeneration, stops; AVP;	max 3
(f)	live bacteria, respire / produce ATP; ORA	1
(g)	<u>mRNA</u> (coding for luciferase); <b>A</b> DNA	1
<b>[Total:</b>		<b>13]</b>