

Question Number	Answer	Mark
9(a)(i)	mitosis / cloning ;	(1)

Question Number	Answer	Mark
9(a)(ii)	<ol style="list-style-type: none"> 1. {not all / different} genes are switched {on / off} / active / activated ; 2. correct and appropriate reference to factors / mechanisms for gene switching ; 3. e.g. reference to promoters / transcription factors ; 	max (2)

Question Number	Answer	Mark
9(a)(iii)	<ol style="list-style-type: none"> 1. if you (suffered an accident / disease / deterioration) and needed to replace damaged <u>brain</u> cells ; 2. would be <u>genetically</u> the same as the rest of your cells ; 3. able to replace more than one kind of brain cell ; 4. goes on generating new cells as required / eq ; 	max (2)

Question Number	Answer	Mark
9(b)(i)	<ol style="list-style-type: none"> 1. embryonic cells are easier to work with than adult stem cells ; 2. embryonic cells are (relatively) undifferentiated whereas adult stem cells {are/appear to be} less so ; 3. embryonic stem cells are {totipotent / pluripotent / able to become any kind of cell in the body}, but adult stem cells are {multipotent / able to become only a limited number of cell types} ; 4. embryonic stem cells have a wider range of clinical applications / adult stem cells have a narrower range of clinical applications ; 	max (2)

Question Number	Answer	Mark
9(b)(ii)	<p>Against Credit any three of the points below:</p> <ol style="list-style-type: none"> 1. embryonic stem cells (are taken from embryos) which (are to be considered) unborn children / eq ; 2. use of stem cells is thus effectively murder / lack of respect for embryo as a (potential) human ; 3. a lot of current (embryonic) stem cell treatment is fraudulent / badly regulated / exploits suffering / encourages IVF clinics to ‘create’ more ‘spare’ embryos ; 4. if we wait a few years longer we shall have the same benefits through adult stem cells ; 5. not enough funding for alternatives e.g. adult stem cells ; 6. an embryo becomes a new human at the moment of conception / eq ; <p>The fourth mark: for attempting to balance opposing points of view whilst thoughtfully coming down on one side e.g. “Even though it may benefit people this does not justify taking the life of an unborn child” ;</p> <p>For Credit any three of the points below:</p> <ol style="list-style-type: none"> 1. offers prospect of treatment to many suffering people ; 2. research using alternatives e.g. adult stem cells progressing more slowly than that with embryonic stem cells ; 3. if we ban it in the UK it’ll still happen in other countries ; 4. using spare IVF embryo which would alternatively be destroyed ; 5. research with embryonic stem cells is needed to develop use of adult stem cells ; 6. an embryo is not a new human until it is viable / eq ; <p>The fourth mark: for attempting to balance opposing points of view whilst thoughtfully coming down on one side e.g. “Alleviation of suffering in people (who have already been born) is (ethically) more important than destroying embryos” ;</p>	<p>max (4)</p>