12

a) ANY 8:

1. Rods & cones have photosensitive pigment in the outer segment/membranes;
2. Rods have the pigment rhodopsin;
3. It is sensitive to low light intensities/ monochromatic vision/ not sensitive to colour;
4. Breaks down to form (protein) opsin & (light absorbing compound) retinal;
5. Cones have the pigment iodopsin;
6. Less readily broken down/ less sensitive to light/ requires high light intensity to break down;
7. 3 types of iodopsin sensitive to different wavelengths of light/ blue, green, red;
8. 3 types cones/ trichromatic theory of colour vision/ description of other colours;

9. Break down of pigment changes the membrane potential of the rod/cone cell/ creates generator potential;
10. If threshold level achieved the linking neurone / bipolar neurone becomes depolarised;
11. Conducts an action potential to the ganglion cells;
12. The axons of which form the optic nerve;

13. Rods show retinal convergence;
14. A number of rods synapse with a common bipolar neurone/ a number of bipolar neurones synapse with a common ganglion cell
15. Allows generator potentials from individual rod cells to combine together / summation to reach threshold (to produce AP in bipolar neurone/ ganglion cell);
16. Low visual acuity / low resolution;
17. Cones each synapse individually with bipolar neurone / ganglion cell producing a discrete image / high visual acuity

[8]

b) ANY 8

1. TISSUE TYPING (before)
2. Matching donor & recipient markers / antigens;
3. so that there is as good a match as possible/ little difference between self & non-self antigens;
4. The best tissue typing occurs between close relatives / identical twins (reducing the chance of rejection)
5. IMMUNOSUPPRESSION TECHNIQUES (during/after);
6. E.g. drugs to inhibit DNA replication / cloning of lymphocytes/ production of killer T cells;
7. Drugs have to be taken for life of transplant / life;
8. Compromises the recipient's immune system/ makes them more susceptible to infection;
9. X-RAYS;
10. Irradiates bone marrow / lymph tissue & inhibits lymphocyte production;
11. Usually backs up immunosuppressant drugs (due to unpleasant side effects);
12. MONOCLONAL ANTIBODIES;
13. Target and reduce the effect of T-cells;
14. ANTI-VIRAL DRUGS;
15. ANTI-BACTERIAL MOUTH RINSES; [8]

QWC [2]

TOTAL 18 MARKS