**FORM THREE END TERM 2**

**BIOLOGY PAPER 2**

**MARKING SCHEME**

1. (a) Plants /Autotrophs ; ***(1mrk)***

(b) **R** Denitrification ; ***(1mrk)***

 **P** Feeding /Nutrition ; ***(1mrk)***

 **M** Absorption ; ***(1mrk)***

 **N** Decay/decomposition

(c) Fixation by lightning/ Biological fixation ***(1mrk)***

(d) (i) Nodules; ***(1mrk)***

(ii) They harbour Rhizobium bacteria which convert atmospheric nitrogen into ammonia, which is used by leguminous plants to form nitrogen containing organic compounds/proteins; ***(1mrk)***

2. (a) Type; meiosis I. stage; prophase I

 (b) (i) - Pairing of homologous chromosomes (synapsis);

 - Crossing over has occurred /chiasma formation;***Mark the first answer only***

 (ii) It allows for the exchange of the genes and hence variation in the species; ***(1mrk)***

 (c) Gonads ***(1mrk)***

 (d) **C** - Chromatid ***(1mrk)***

 **F** - bivalent /paire homologous chromosomes; ***(1mrk)***

 (e) **A**  - forms spindle fibres; /forms the opposite poles in relation to the equator of the cell; ***(1mrk)***

 (f) Haploid cell in plants -/synergids/ antipodal cells/ eggs cell in embryo sac;***rej pollen grain(1mrk)***

3. (a) To absorb oxygen; ***(1mrk)***

 (b) To absorb carbon (IV) oxide; ***(1mrk)***

 (c) Oxygen; 200 - 168 =32cm3

 32 x 100 =16%; ***(1mrk)***

 200

 Carbon (IV)oxide: 168 - 160 = 8cm3

 8 x 100 = 4%; ***(1mrk)***

 200

 (d) Exhaled air;

 (e) External intercostal muscles relax ; ***(1mrk)***

(f) Cigarette smoke inhibits action of cilia in the respiratory tract resulting to accumulation of dust particles, bacteria and mucus; bacteria invade cells of mucous membrane thus causing diseases /respiratory tract infections ***(2mrks)***

4. (a) Plasmolysis; ***(1mrk)***

 (b) **X** – Plasmolysed (Flaccids); ***(1mrk)***

 **Z** – Turgid; ***(1mrk)***

(c) **P**– Sap/cell sap; ***(1mrk)***

 **Y** – Hypotonic solution; ***(1mrk)***

(d) Name the part labeled **M** and **Q**

 **M-** Cell wall; ***(1mrk)***

 **Q** – Cell membrane; ***(1mrk)***

 (e) Chloroplast; ***(1mrk)***

5. (a) Carbon (IV) oxide ;/Oxygen/ urea/Food substances/ Ions;

 ***Any 2 - (2mrks)***

(b) (i) **b; *(1mrk)***

 (ii) **A**; ***(1mrk)***

 (iii) **A; AB;** ***(2mrks)***

(c) A hypersensitive reaction to an antigen by the body/over reaction by the body to certain foreign substances introduced into it or exposed to it;

 (d) - Drugs such as penicillin, chloroquine, aspirin;

 - Dust;

 - Pollen grains;

 - Certain foods such as meat eaten/amino- acids;***mark the first substance stated***

 **SECTION B**

6. (a) (i) Species **A; *(1mrk)***

 (ii) The rate of growth (multiplication) of species **A** is higher than that of **B**; ***(1mrk)***

(b) (i) Population increased exponentially (rapidly); due to high number of reproducing individuals; and

 suitable environmental conditions(such as food , space, resources not limiting e.tc.); ***(3mrks)***

 (iii) Population becomes constant; because of shortage of resources like food and space; and birth rate

 equals death rate; ***(3mrks)***

 (c) Species **A** would decrease; due to predation; while the population of species **B** would increase; due to

 less competition for food with species **A**/ more resources or food available; ***(4mrks)***

(d) (i) Predation; ***(1mrk)***

 (ii) Parasitism; ***(1mrk)***

 (iii) Symbiosis; ***(1mrk)***

 (iv) Saprophytism; ***(1mrk)***

(e) (i) Photographic light meter; ***(1mrk)***

(ii) Sacchi disc; ***(1mrk)***

(iii) Anemometer; ***(1mrk)***

(iv) Barometer; ***(1mrk)***

7. Describe how human male reproductive system is adapted to its functions

1. The testes found/ hang outside the body; to provide a cooler environment for sperm production;
2. Seminiferous tubules; consist of actively diving cell; which give rise to/ produce sperms;
3. Epididymis; is highly coiled; to store sperms; Sperm duct / vas deferens ; connect the epididymis to the urethra;
4. Seminal vesicle; provides an alkaline fluid which contains nutrients for spermatozoa;
5. Prostate gland; produce alkaline secretion to neutralize the vaginal fluids; also to activates the sperms;
6. Cowper’s gland; produce fluid to neutralize the acidity along the urethra;
7. Urethra used for the expulsion of urine to the exterior;
8. Penis is made up of spongy tissue/ muscles and blood vessels filled with blood; to enable vessels filled with blood to enable it penetrate during coitus;

8. Wind dispersal;

1. Small and light; to float in air/blown by air; Have wings; to increase buoyancy;
2. Have hairs/parachute shaped; to increase buoyancy in air.
3. Animal dispersal;
4. Are succulent; to attract animals;
5. Scented; to attract animals.
6. Have small and hard seeds resistant to digestive enzymes;to prevent digestion once swallowed; Have
7. hooks; to attach to fur/hair of animals;
8. Brightly coloured; to attract animals;
9. Water dispersal;
10. Water proof epicarp; to prevent entry of water or soaking;
11. Fibrous mesocarp; with air spaces to increase buoyancy in water;
12. Self-explosive mechanism;
13. Have lines of weakness; where they break to release seeds;
14. Have rings of pores; through which seeds are released;

 Max 20marks