

**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;  $200 - 168 = 32\text{cm}^3$  (1mrk)  
 $\frac{32}{200} \times 100 = 16\%$ ;
- Carbon (IV)oxide:  $168 - 160 = 8\text{cm}^3$   
 $\frac{8}{200} \times 100 = 4\%$ ; (1mrk)
- (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 dividing 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