SET 10

FORM 4

231/1

BIOLOGY PAPER 1

MARKING SCHEME

1. a) Study of cells✓
b) Study of fungi✓

2. Helps to develop scientific skills like observation, recording e.t.c.
Helps to arrange information in orderly manner to avoid confusion
Helps to understand evolutionary or phylogemetic relationship
Helps to know features or characteristics of organisms
Helps to identify organisms
Helps to avoid chaos and confusion among scientists
(Mark first three correct answers)

3. a) Sensory neuron / Afferent neuron
- Cell body of the axon ✓ (***Mark 1st correct answer)***
- Short axon
- No dendrites on the cell body

b) **A** schwann cells✓ ***(Reject Schwann cell)***
D node of ranvier✓ (**rej. Nodes of ranvier**)

c) **C** transmits impulse from receptors/ sense organs to central nervous system / brain/ spinal cord.

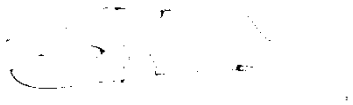
4. Diameter of field of view = 3 mm = 3000 µm✓
No of cells = 20 cells
Length of one cell = $\frac{3000\,\mu m}{20} = 150\,\mu m$✓

(3 marks)

5. Arachnida (**rej arachnidesx**)
-Four pairs of legs✓ ***(reject cephalothorax)***
-Lack antennae✓

6. i) Quantity of dry matter of a given type of organisms or dry weight of a given type of organism per unit area
ii) Natural unit made up of biotic and abiotic factors that interact with one another to form a stable self-sustaining system.

7. a)



b) - Ensure / impulses travel in one direction✓
- Control learning/ memory / ensure one neuron can make joints with several other neurons✓

8. a) Collenchyma✓
b) Sclerenchyma✓ / xylem ***(first correct answer)***

9. a) Site for respiration/ produce energy
b) Inner membrane greatly folded into cristae to increase surface area for attachment of respiratory enzymes / To increase surface area for respiration.
c) lysosomes - destroy worn out cell organelles and pathogens
Packaging, modification and transport glycoproteins, form lysosomes

10. a) A - Epidermis ✓
B - Vascular bundles✓ / xylem and phloem
b) i) Monocotyledonae
ii) Vascular bundles scattered.

11. a) fern
b) A – sorus rej. sori
B - Pinna
C - Adventitious roots
D - rhizome
c) Division pteridophyta

12. In humid conditions, the air contains so much water vapour that the sweat may not evaporate rapidly enough to produce an adequate cooling effect. This may lead to heat accumulation in which the body temperature rises above normal hence the discomfort.
In hot dry weather, the sweat produced evaporates by use of latent heat from the body hence reducing the body temperatures.

13. When is waterlogged the air spaces are occupied by water; this reduces the amount of oxygen in the soil , causing poor root respiration hence poor uptake of mineral salts

14. a) Glucose
b) Glycogen

15. No production of bile to emulsify fats.

16. a) X^NX^N
b) X^nX^n
c) X^NX^n

17. - Head contains a haploid nucleus that fuses with the ovum nucleus during fertilization to form a zygote
- The neck has (a) centrioles for controlling the axial filaments
- Has a tail with axial filament for propulsion
- Has an acrosome that contains lytic enzymes which dissolve the vitelline membrane of the ovum to allow its penetration
- The middle piece is packed with mitochondria that provide energy for propulsion;

18. a) A - Plumule
B – Radical
C – Micropyle
D – Cotyledon
b) - Store food for the embryo
- After germination, it turns green and photosynthesis
- Protects plumule from mechanical damage.
c) Epigeal

19. a) Shall be a universal recipient ; can receive blood from any blood group ; while a person with blood group 'O' can only receive blood from a person with blood group O/ AB has no antibodies while O has no antigen
b) To check for compatibility
To make sure the blood is free from diseases (such as HIV, Hepatitis B, Etc)

20. a) Ability of the body to identify / recognize foreign antigens and develop mechanisms of destroying item or ability of the body to resist infections
b) Natural immunity is inborn /inherited /passed from parents to offspring while acquired immunity is obtained in life through immunization or through infection and production of antibodies
c) Tuberculosis, poliomyelitis, diphtheria whooping cough, measles

21. i) Vibrio cholerae✓ ***(rules of binomial nomenclature should be followed)***
ii) Entamoeba histolytica ✓

22. The carbon (IV) oxide produced during respiration is utilized during photosynthesis✓ while the oxygen produced during photosynthesis is used during respiration. ✓

23. a) A - Has umbilical vein to supply foetus with nutrient and umbilical artery to remove waste products lie CO_2
B - Protect the embryo from shock
- Regulate temperature
b) Widened cervix
Head of foetus directly above the cervix

24. Phenotypically acquired characteristics are not genetically transmitted from parents to offspring's; but only those genotypically controlled are transmitted.

25. a) To replace those members of a species that dies hence ensuring continuity of the species/ improves quality.
b) Helps to remove metabolic waste products from the body; which can be toxic/ poisonous

26. The released ovum is viable for 12- 24 hours while the sperm might live in the female reproductive organs for 2-3 days.

27. a) I – condensation
II – hydrolysis
b) Boiling (the test solution) in a dilute acid;