SECTION II: GENERAL PAPER

1. a – *Rattus rattus* b – *Agama agama* c – *Bufo regularis* d – *Tilapia zilli*. The order of evolutionary advancement of the above vertebrates is
(a) d → c → b → a (b) d → b → a → c (c) c → b → a → d (d) b → c → d → a

2. Which of the following is likely to have higher concentration of mitochondria?
(a) white blood cell (b) egg cell (c) sperm cell (d) red blood cell

3. Which of these diseases is not caused by virus?
(a) maize rust (b) Rinder pest (c) New castle (d) cassava mosaic

4. Metabolic production of urea is carried out by the
(a) Kidney (b) Pancreas (c) Liver (d) spleen

5. If a nursing mother is not producing enough milk, her hormonal system is probably deficient in
(a) Prolactin (b) Oestrogen (c) Insulin (d) Thyroxine

6. Nervous control differs from hormonal control in that the former
(a) is a slower process (b) involves only chemical reaction (c) produce short-term changes
(d) has no specific pathway

7. The two key captions involved in the action potential of nervous transmissions are
(a) Mg^{2+} and K^{+} (b) Na^{+} and Fe^{2+} (c) Na^{+} and K^{+} (d) Na^{+} and Mg^{2+}

8. A boy who is fond of swimming in a pond finds himself passing urine with traces of blood. He is likely to have contacted
(a) Onchocerciasis (b) Poliomyelitis (c) Tetanus (d) Schistosomiasis

9. The presence of a large number of mitochondria in a cell indicates that
(a) it has little cytoplasmic content (b) the cell is dormant (c) the cell is very active (d) the respiration is poor.

10. If the cerebellum of a person is slightly damaged, which of the following will be impaired?
(a) vision (b) walking (c) digestion (d) breathing

11. Herbs differ from shrubs because they
(a) are only perennials (b) useful to herbalists (c) do not produce fruits (d) do not become woody

12. Which of the following represents the evolutionary sequence in these plants?
(i) mango plant (ii) mosses (iii) spirogyra (iv) ferns (v) whistling pine
(a) iii, ii, iv, v and i (b) iii, iv, v, i and ii (c) ii, iv, i, ii and v (d) iv, ii, iii, v and i

13. By which process in man does oxygen pass from the alveoli of the lungs into the blood?
(a) excretion (b) osmosis (c) diffusion (d) transpiration

14. The aspects of growth in living organisms include all the following processes except
(a) reversible increase in size (b) increase in dry weight (c) increase in number of cells
(d) irreversible increase in length

15. Which of these excretory products is not found in mammals
(a) Carbon dioxide (b) Mineral salt (c) ammonia (d) urea

16. Which of the following organism is a producer?
(a) yeast (b) fungus (c) *Rhizopus* (d) spirogyra

17. Changes in energy flow between organisms in a habitat can be represented by a
(a) pyramid of biomass (b) flow chain (c) food web (d) pyramid of energy

18. Important abiotic factors which affect all plant and animals in the habitat are
(a) rainfall and relative humidity (b) temperature and rainfall (c) salinity and relative humidity (d) temperature and turbidity

19. Which of the following factors may not affect living organisms in an aquatic habitat
(a) Light (b) Turbidity (c) pH (c) Humidity

20. The accepted concept for the theory of Natural Selection does not include
(a) tendency for organisms to overproduce (b) struggle for existence (c) survival of the fittest
(d) Use and disuse of body parts

21. Which of the following pairs of structure does not perform the similar function
(a) Lungs and Spiracles (b) Root hairs and mammalian hairs (c) feathers and scales
(d) contractile vacuole and kidney

22. Which of the following is not an evidence of evolution?
(a) Anatomy (b) Genetics (c) Behaviour (d) Fossils

23. Find the variance of the numbers K, K+1, K+2,
(a) 2/3 (b) 1 (c) K+1 (d) $(K+1)^2$

24. Find the positive value of x if the standard deviation of the numbers 1, x + 1, 2x +1 is $\sqrt{6}$
(a) 1 (b) 12 (c) 3 (d) 4

25. If $\frac{x+7}{(x+3)(x-4)} = \frac{m}{x+3} + \frac{n}{x-4}$ what is 3n-4m?
(a) 7 (b) 5 (c) 8 (d) 6

26. Calculate sin(A+B) if Sin A = 3/5 and Cos B = 5/13 where both A and B are acute
(a) 33/65 (b) 48/65 (c) 15/65 (d) 63/65

27. Find tan x given that tan (x + 45) = 2
(a) $\sqrt{3}/2$ (b) 1/3 (c) 2/3 (d) $2/\sqrt{3}$

28. Express $\frac{5x-12}{(x-2)(x-3)}$ in partial fractions
(a) $\frac{2}{x-3}+\frac{3}{x-2}$ (b) $\frac{2}{x-2}+\frac{3}{x-3}$ (c) $\frac{1}{x-3}+\frac{2}{x+2}$ (d) $\frac{2}{x-2}+\frac{3}{x-3}$

29. Evaluate $\int_1^6 (2x+3)dx$ (a) 18 (b) 50 (c) 12 (d) 36

30. Find the coordinate of the minimum point for the equation $y = 4t^2 - 40t + 300$
(a) (15,100) (b) (5,200) (c) (4,100) (d) (4,300).

31. 0.0075 mole of Calcium trioxocarbonate (IV) is added to 0.015 mole of a solution of hydrochloric acid. The volume of gas evolved at s.t.p. is (Molar volume of gas at s.t.p. = $22.4dm^3$)
(a) $224cm^3$ (b) $168cm^3$ (c) $112cm^3$ (d) $100cm^3$

32. What is the general formula of carbohydrates
(a) $C_nH_{2n}O_n$ (b) $C_x(H_2O)_y$ (c) $C_6H_{10}O_5$ (d) $C_6H_{12}O_6$.

33. A neutral water molecule (H_2O) has an electric dipole moment of 6.2×10^{-30}c.m. How far apart are the molecules centres of positive and negative charge?
(a) 4.9 Pm (b) 2.9 Pm (c) 3.9 Pm (d) 1.9 Pm.

34. What mass of sodium hydroxide is required to make $500cm^3$ of 0.2M solution?
(Na = 23, O = 16, ≃ H ≡ 1)
(a) 20g (b) 10g (c) 4g (d) 2g

35. $2NH_4Cl + Ca(OH)_2 \rightarrow 2NH_3 + CaCl_2 + 2H_2O$ From the equation, calculate the mass of calcium hydroxide needed to decompose 50g of ammonium
(a) 20.00g (b) 34.57g (c) 75.10g (d) 42.13g

36. Calculate the current that must be passed into a solution of chromium (III) salt for one hour in other to deposit 1.2g of chromium (Cr = 51)
(a) 3.50 amperes (b) 2.30 amperes (c) 1.89 amperes (d) 1.52 amperes

37. Fine the angle between $\vec{P}$ and $\vec{E}$ when the tongue on a dipole is a maximum
(a) 180^o (b) 90^o (c) 45^o (d) 30^o

38. Choose the correct statement
(a) electric potential is a scalar (b) electric potential is a vector (c) electric potential is neither a scalar nor a vector
(a) a and b (b) b (c) a (d) b and c

39. An electron in the atmosphere is moved upward through displacement 520m by an electrostatic force due to an electric field 150N/C. Take the charge on the electron to be 1.6×10^{-19}C. Calculate the work done on the electron
(a) -1.2×10^{-14}J (b) 1.2×10^{-14}J (c) 1.6×10^{-16}J (d) -1.6×10^{-16}J

40. The full meaning of the WWW in internet surfing is
(a) wide wide web (b) world wide web (c) wide world web (d) world web wide

41. Which country has just produced the fastest moving train in the world?
(a) U.S.A. (b) Germany (c) China (d) Japan

42. Who was the Nigeria's eight military ruler?
(a) Olusegun Obasanjo (b) Muhammadu Buhari (c) Abdulsalam Abubakar (d) Sanni Abacha