SECTION B: GENERAL PAPER

1. Which of the following structure are present in both epidermis and dermis of the skin?
(a) hair and sweat ducts (b) fatty tissues and sweat glands (c) hair and fatty tissues (d) sweat glands and sweat ducts

2. The number of individuals of a specie per unit area at a particular time is a
(a) niche (b) population density (c) population (d) community

3. Cockroach has been found to carry germs of dangerous diseases such as
(a) AIDS, dysentery, cholera (b) leprosy, dysentary, tyhoid fever (c) skin disease, heart attack, cholera (d) diabetes, typhoid fever, AIDS

4. Which of the following glands secrets a substance into the blood stream
(a) Gastric glands (b) salivary glands (c) tear glands (d) Adrenal glands

5. Which of the following substances from the mother's blood diffuse through the placenta into the blood vessels of the foetus?
(a) Glucose and oxygen (b) Urea and carbon (IV) oxide (c) Digested food and Carbon (IV) oxide
(d) Carbon (IV) oxide and oxygen

6. Which of the following is not an abiotic factor (a) precipitation (b) Grazing (c) Predation (d) Migration

7. To form ball and socket joint, the head of the humerus must fit into another structure in the scapula called the
(a) acctabulum (b) glenoid cavity (c) patella (d) Olecranon fossa

8. All are examples of alkaloids except (a) Morphine (b) Quinine (c) Cocaine (d) Cinnamon

9. Which of the following pairs of organelles are likely to be present in an activitely respiring and photosynthesizing cell?
(a) food vaculoes and contractile vacuole (b) Lysosome and ribosomes (c) Chloroplast and mitochondria (d) Golgi bodies and endoplasmic reticulum

10. Spermatogenesis and Ogenesis are both terms used to describe
(a) mitosis (b) gametogensis (c) meiosis (d) implantation

11. Which disease is sex-linked and mainly afflicts male offspring?
(a) Sickle cell anaemia (b) Haemophilia (c) diabetes (d) malaria

12. A genetic make-up of an organism is described as its
(a) phenotype (b) genotype (c) character (d) chromosome

13. During blood transfusion, agglutination may occur as a result of the reaction between
(a) similar antigens and antibodies (b) contrasting antigens and antibodies (c) two different antigens (d) two different antibodies

14. Species can be defined as the group or organisms that
(a) resemble each other and live in the same habitat (b) are of common origin and are always found together
(c) resemble each other and can interbreed freely (d) resemble each other and occupy the same niche

15. Which of the following represents the phenotype ratio, when a plant Rr is crossed with another plant Rr assuming that the gene R for round seed is dominant and wrinkled r is recessive?
(a) 1:2:1 (b) 2:2:1 (c) 3:2 (d) 3:1

The theory that new organs or characterics develop in organism when there is a need for them was postulated by
(a) Charles Darwin (b) Jean Lamarck (c) Gregor Mendel (d) Wallace

17. Which of the following parts of the mammalian brain in involved in taking the decision to run rather than walk
(a) Cerebellum (b) Medulla oblongata (c) cranial nerves (d) Cerebrum

18. In testing for a reducing sugar the food substance is usually warmed with
(a) Sulphuric acid (b) Million's reagent (c) Sudan III (d) Benedict's solution

19. Which of the following statements about the circulation of blood is not correct?
(a) Dexygenated blood flows in the heart through the vena cavae (b) Blood is pumped out of the heart through the aorta (c) oxygenated blood from the lungs is carried to the left auricle (d) The oxygenated blood enters the lungs through the pulmonary vein

20. The enzyme that acts on milk in the stomach is (a) invertase (b) trypsin (c) diastase (d) renin

21. Elements P, Q, R, S, have 6, 11, 15, and 17 electrons respectively, therefore
(a) Q will from a covalent bond with S (b) Q will form an elctrovalent bond with S (c) R will form an electrovalent bond with S (d) Q will form a covalent bond with R

22. The empirical formula of an oxide of nitrogen containing 30.4 percent of nitrogen is
(a) N_2O_3 (b) NO (c) NO_2 (d) N_2O

23. Given the mean atomic mass of chlorine prepared in the laboratory to be 35.5 and assuming that chlorine contains two isotopes of mass number 35 and 37, what is the percentage compostion of the isotope of mass number 35?
(a) 75 (b) 20 (c) 50 (d) 25

24. Which of the following types of reactions takes between C_2H_4 and halogens?
(a) Addition (b) Substitution (c) Polymerization (d) Oxidation

25. Water is poured over a white solid and a colourless neutral gas in evolved. It burns with a sooty flame. The white solid is
(a) Calcium (b) Calcium Oxide (c) Calcuim Carbide (d) Sodium peroxide

26. The reaction $Mg + H_2O \rightarrow MgO + H_2$ takes place only in the presence of
(a) excess Mg ribbon (b) excess cold water (c) very hot water (d) steam

27. Increasing the pressure of a gas
(a) lowers the average kinetic energy of the molecules (b) decreases the density of the gas (c) decreases the temperature of gas (d) increases the temperature of gas

28. Which of the following solid will leave a black residue after being heated strongly
(a) Iron (II) trioxonitrate (V) (b) Iron (II) trioxosulphate (IV) (c) Copper (II) trioxonitrate (V) (d) Calcuim trioxocarbonate (IV)

29. Which of the following will ungergo addition reaction
(a) Ethyne (b) Butane (c) Pentane (d) tetrachloromethane

30. The scum formed when soap is mixed with hard water could be
(a) Calcuim hydrogen trioxocarbonate (IV) (b) propane-1,2,3-triol (c) calcium hydrogen trioxocarbonate (IV) (d) magnesium tetraoxosulphate (VI)

31. The headquaters of the world health oraganisation is located in which of the following
(a) Geneva (b) Zurich (c) New York (d) Madrid

32. Secretary General of the United Nations is one of the following
(a) Kofi Annan (b) Banki Moon (c) Henry Kissinger (d) Ken Bank Annan

33. Nigeria became a Republic in (a) 1960 (b) 1964 (c) 1963 (d) 1962

34. A man stands on a spring scale placed in a lift. The lift descends at constant velocity as a result, the scale read a weight
(a) greater than the weight of the man (b) the same as the weight of the man (c) of zero (d) less than the weight of the man

35. A load of 5N gives an extension of 0.56cm in a wire which obeys Hooke's Law. What is the extension caused by a load of 20N
(a) 2.14cm (b) 2.24cm (c) 1.12cm (d) 2.52cm

36. In what range of temperature is the expansion of water anomalous?
(a) +208°C (b) -80°C to 76°C (c) +96°C to 100°C (d) -4°C to 0°C

37. Change of state is accompanied by change of
(a) Temperature (b) Volume and heat content (c) Temperature and volume (d) Volume

38. A metal cube of volume V and linear expansivity α is heated through a temperature rise of T. The increase in volume of the cube is
(a) $\alpha VT/3$ (b) $2\alpha VT$ (c) $3\alpha VT$ (d) αVT

39. Which is the following arrangement gives the electromagnetic radiations in their ascending order of wavelength?
(a) Radio waves, ultraviolent rays, X-rays, γ-rays (b) γ-rays, X-rays, ultraviolet rays, radio waves
(c) X-rays, γ-rays, radio waves, ultraviolet rays (d) Ultraviolet rays, γ-rays, X-rays, radio waves

40. Which of the following is used to slow down fast moving neutrons in a nuclear reactor?
(a) Concrete shield (b) carbon dioxide gas (c) Boron rods (d) Graphite block

41. x is directly proportional to y and inversely proportional to z. If x = 9 when y = 24 and z = 8, what is the value of x when y = 5 and z = 6?
(a) 5/6 (b) 11 (c) $3^3/_5$ (d) $2^1/_2$

42. If $\sqrt{3x} = \sqrt[3]{9}$, then the value of x is (a) $^3/_4$ (b) 4/3 (c) 1/3 (d) $^1/_2$

43. Find the missing numerator $\frac{5}{x+1} - \frac{3}{1-x} - \frac{7x-1}{x^2-1} = \frac{\quad}{x+1}$ (a) -1 (b) x – 1 (c) $\frac{3(1-5x)}{x-1}$ (d) 3(1 - 5x)

44. Solve the following equation 4x - 3 = 3x + y = 2y + 5x - 12
(a) x = 5, y = 2 (b) x = 2, y = 5 (c) x = -2, y = -5 (d) x = 5, y = -2

45. If x = 1 is a root of the equation $x^3 - 2x^2 - 5x + 6$ find the root
(a) -3 and 2 (b) -2 and 2 (c) 3 and -2 (d) 1 and 3

46. If x is jointly proportional to the cube of y and the fourth power of z. In what ratio is x increased or decreased when y is halved and z is doubled?
(a) 4:1 increase (b) 2:1 increase (c) 1:4 decrease (d) 1:1 no change

47. One interior angle of a convex hexagon is 170° and each of the remaining interior angles is equal to X°. Find X
(a) 120° (b) 110° (c) 105° (d) 102°

48. List all integers satisfying the inequality $-2 \leq 2x - 6 < 4$ (a) 2, 3, 4, 5 (b) 2, 3, 4 (c) 2, 5 (d) 3, 4, 5

49. If the quadratic function $3x^2 - 7x + R$ is a perfect square, find R
(a) 49/24 (b) 49/3 (c) 49/6 (d) 49/36

50. The bearing of a bird on a tree from a hunter on the ground is N72°E. What is the bearing of the hunter from the bird?
(a) 18°W (b) S72°W (c) S72°E (d) S27°E