

Answer paper - Paper I

01. (3) 02. (2) 03. (4) 04. (3) 05. (1) 06. (1) 07. (3) 08. (3) 09. (4) 10. (4)
 11. (4) 12. (1) 13. (3) 14. (4) 15. (2) 16. (1) 17. (1) 18. (2) 19. (3) 20. (3)
 21. (1) 22. (1) 23. (2) 24. (2) 25. (1) 26. (1) 27. (3) 28. (2) 29. (3) 30. (1)
 31. (3) 32. (1) 33. (3) 34. (1) 35. (1) 36. (3) 37. (2) 38. (1) 39. (2) 40. (1)

Part II

(2 x 40 = 80 marks)

A

- 01 A (1) Stomatal transpiration 2. air pore transpiration 3. cuticular transpiration (03 m.)
 (2) Sucrose (01 m.) (3) phloem (01 m.)
 (4) sieve tubes / parenchyma cells / companion cells (two of them) (02 m.)
 B (1) has villi / rich with capillaries / being longer (two of them) (02 m.)
 (2) 1. Glucose / Amino acids / mineral salts (for one) (01 m.)
 2. Fatty acids and glycerol (01 m.)
 C (1) Fish / Pisces (01 m.) (2) for two fish (01 m.)
 (3) genus name, name of the species (02 m.)
 02 A (1) 1. Main switch 2. Trip switch (02 m.)
 (2) (a) Lead (Pb) and Tin (Sn) (02 m.)
 (b) 1. has a low melting point 2. an excessive resistance (02 m.)
 (c) Miniature circuit breakers / MCB (01 m.)
 B (1) Electric stove / immersion heater / electric iron etc. (for two answers) (02 m.)
 (2) 1. has a high melting point. 2. has an excessive resistance (02 m.)
 (3) (a) $E = VIt$
 (b) $12 \times 30 \times 2 \times 60 = 43200J$ (03 m.)
 03 A (1) 1.2 m / 120 cm (01 m.) (2) 0.2 m / 20 cm (01 m.)
 (3) Number of waves = 2.5
 time = 0.5 s (4) $V = f\lambda$
 frequency = $\frac{2.5}{0.5} = 5 \text{ Hz}$ (02 m.)
 $V = 5 \times 1.2 = 6 \text{ ms}^{-1}$ (01 m.)
 (5) Surface waves, primary waves, secondary waves (03 m.)
 (6) Primary waves (01 m.)
 B (1) (a) Echo (b) Reflection (c) Ultra sound (03 m.)
 (2) (a) ✓ (b) ✓ (02 m.)
 04 A (1) 2, 8, 8, 2 (01 m.) (2) Completing outer most shell (01 m.)
 (3) period - 3 group - 7 (02 m.) (4) BC (01 m.)
 (5) ionic (02 m.)
 B (1) Hematite / Magnetite / Limonite (02 m.)
 (2) C (coke) / Lime stones / ore (for 2 correct answers) (02 m.)
 (3) $\text{Fe}_2\text{O}_3 + 3\text{CO} \rightarrow 2\text{Fe} + 3\text{CO}_2$ (02 m. for the unbalanced reaction) (03 m.)
 (4) lower part of the blast furnace (01 m.)

B

- 05 A (1) A- Urethra B- Urinary Bladder C- Kidneys D- Aorta (04 m.)
 (2) Nephron (01 m.)
 (3) K - glomerulus E - Bowman's capsule L - Henle's loop J - renal artery (04 m.)
 (4) involuntary / unstriated / slowly fatigued / uninucleus (02 m.)
 (5) having a web of small capillaries / enters blood in high pressure (01 m.)
 (6) urea / uric acid / creatinine / extra water / salts (03 of above) (03 m.)
 B (1) epiglottis (01 m.) (2) larynx (01 m.)
 (3) by vibrating vocal cords (01 m.)
 (4) walls of trachea / walls of alveoli / walls of bronchus (for two of above) (02 m.)
- 06 A (1) A - Smooth muscle tissue B - cardiac muscle tissue C - skeletal muscle tissue
 D - blood tissue (4 m.) (2) A and B (02 m.)
 (3) C, striated, multi nucleus, has large number of mitochondria (2 marks for two characteristics)
 (4) transportation, protect body from agents of diseases. (02 m.)
 (5) does not get fatigue (02 m.) (6) for 3 correct answers (03 m.)
 (7) (a) nasal cavity / trachea / walls of bronchus (for 2 of above) (02 m.)
 (b) tissues which cover stomach / tissues which cover intestines / tissues which cover rectum (for 2 of above) (02 m.)
- 07 A (1) Protons, Neutrons, Electrons (03 m.)
 (2) Protons - Ernest Rutherford Neutrons - James Chadwick Electrons - J. J. Thomson (03 m.)
 (3) (a) Number of protons in an atom of a certain element (02 m.)
 (b) Total number of protons and neutrons of an atom (02 m.)
 (4) Atoms with different masses of the same element (02 m.)
 (5) ionic (01 m.)
 (6) 1. melting point and boiling point are very high. 2. Mostly exists in solid state. 3. Aqueous or fused solutions conduct electricity. (03 m.)
 (7) (a) K_2CO_3 $- 39 \times 2 + 12 + 16 \times 3 = 138$ (02 m.)
 (b) $(NH_4)_2SO_4$ $- [14 + (1 \times 4)] \times 2 + 32 + 16 \times 4$
 $18 \times 2 + 32 + 64 = 132$ (02 m.)
- 08 A (1) Mass of an element of a compound (02 m.)
 (2) 6.022×10^{23} (01 m.)
 (3) Mass of 1 mole of Mg = 24 (01 m.)
 Moles in 12 g of Mg = $\frac{24}{12} = 2$
 Atoms in 12 g of Mg = $2 \times 6.022 \times 10^{23}$ or $= 1.2044 \times 10^{22}$ (01 m.)
 (4) Relative molecular mass of $CaCO_3 = 40 + 12 + 48 = 100$ (01 m.)
 Moles in 100 g of $CaCO_3 = 1$
 moles in 500 g of $CaCO_3 = \frac{1}{100} \times 500$
 $= 5 \text{ mol}$ (01 m.)
 (5) Relative molecular mass of $C_6H_{12}O_6 = 6 \times 12 + 12 \times 1 + 6 \times 16 = 180$

$$\begin{aligned} \text{Molar mass of glucose} &= \frac{180 \text{ kg}}{1000} \text{ (02 m.)} \\ &= 0.18 \text{ kg mol}^{-1} \text{ or } 180 \text{ g mol}^{-1} \text{ (02 m.)} \end{aligned}$$

- B (1) electrolyte / acid solution / salt solution (01 m.)
 (2) Anode - Zn Cathode - Cu (02 m.)
 (3) $\text{Zn} \rightarrow \text{Zn}^{++} + 2\text{e}^-$ (03 m.)
 (4) Polarization / Zinc plate reduces rapidly / electric current can be obtained is very small. (for 2 points) (02 m.)
 (5) Collecting air bubbles (02 m.)
- 09 A (1) Obtaining the rough focal length of the lens (01 m.)
 (2) Marks for correct explanation (03 m.)
 (3) (a) object - beyond 2F Screen - between 2F and F (02 m.)
 (b) object - on F Screen - on 2F (02 m.)
 (c) Object - between 2F and F screen - beyond 2F (02 m.)
 (4) Between P and F (focus) (01 m.)
 (5) magnified, virtual, form in the same side of object (02 m.)
- B (1) Refraction (01 m.)
 (2) angle of incidence = 53° angle of refraction = 40° (02 m.)
 (3) Refractive index of glass = $\frac{\text{Sin } i}{\text{Sin } r} = \frac{\text{Sin } 53^\circ}{\text{Sin } 40^\circ} = \frac{0.80}{0.64} = 1.25$ (01 m.)
 (4) Refractive index = $\frac{\text{real depth}}{\text{apparent depth}}$ (01 m.)
- 10 A (1) Chemical effects, magnetic effects (02 m.)
 (2) By energy forms because of the vibration of particles when flowing electrons or similar idea (02 m.)
 (3) Because of increases of resistance (02 m.)
 (4) $E = I^2 R t$
 $= 5 \times 5 \times 70 \times 25 \times 10$
 $= 25 \times 70 \times 150$
 (01 m.) $= 26250 \text{ J}$ (01 m.)
 (5) (a) $= 1500 \text{ Js}^{-1} \times 40 \text{ s}$ (01 m.) $= 60000 \text{ J}$ (01 m.)
 (b) (1) $= 1500 \text{ Js}^{-1} \times 21 \text{ s} = 31500 \text{ J}$ (01 m.)
 (2) $E = mc$ $= 31500 \text{ J} = 1 \text{ kg} \times 4200 \text{ Jkg}^{-1} \times \theta$ $= \frac{31500}{4200} = 75^\circ \text{C}$
 Temperature increased = 75°C (03 m.)
- B (1) 2 marks for correct set of apparatus 1 mark for name the diagram (03 m.)
 (2) Plating on metal on another metal by using electrolysis (02 m.)

Paper I 2 x 40 = 80
 Paper II Part A 15 x 4 = 60
 Paper II Part B 20 x 3 = 60

200 / 2 = 100