Answer Paper - Paper I

01. (2)   02. (4)   03. (3)   04. (2)   05. (1)   06. (2)   07. (3)   08. (1)   09. (3)   10. (4)

11. (1)   12. (4)   13. (3)   14. (1)   15. (4)   16. (2)   17. (1)   18. (3)   19. (4)   20. (2)

21. (3)   22. (3)   23. (2)   24. (1)   25. (1)   26. (2)   27. (4)   28. (4)   29. (4)   30. (1)

31. (3)   32. (3)   33. (3)   34. (1)   35. (2)   36. (1)   37. (1)   38. (4)   39. (1)   40. (4)

(2 x 40 = 80 marks)

Paper II

A - Structured Essay.

01 A (i)   A - Oesophagus   B - Stomach

         C - Pancreas   D - Liver

         E - Gall bladder   F - Puodenum   (1/2 x 6 = 3 marks)

   (ii)   a. Renin   b. pepsin (1/2 x 2 = 01 mark)

   (iii)   a. amylase   b. lipase   c. trypsin   (1/2 x 3 = 1 1/4 marks)

   (iv)   (a) bile (1 mark)   (b) makes the food basic and ensures easy digestion of fat. (1 1/2 marks)

   B. (i)   a. chloroplast   b. consist of green pigments and surrounded by a membrane.

         c. stacks of flattened plates / surrounded by aembrane

         d. transportation / secretion   e. endo plasmic reticulum f. (1/2 x 6 = 3 marks)

   (ii)   a. Vessels   b. tracheid   c. fibres   d. parenchym   (1/2 x 4 = 02 marks)

   (iii)   radial transport mass flow. (1 x 2 = 2 marks)

02. A. (i) $CaCO_3 \; g \; CaO_{(s)} + CO_{2(s)}$ (01 mark)

   (ii)   Mixing the ash of the fire wood with CaO. More environmental pollution. (01 mark)

   (iii)   To neutralise the acidity in agricultural soils. Preparation of plaster. As a Carbon dioxide absorber In pottery paint or any 2 use of CaO (02 marks)

   B. (i)   to observe the products of combustion (01 mark)

   (ii)   (a) $CuSO_4$ turn in to blue colour   (b) lime water become milky colour (02 marks)

   (iii)   to condense water vapours (01 mark)

   (iv)   Because it will blow out with out oxygen supply. (01 mark)

   C (i)   Mg strip (01 mark)   (ii) $Mg - 2e \rightarrow Mg^{2T}$ (01 mark)

   (iii)   No colour change (01 mark)   (iv)   Fe nail (01 mark)

   (v) $2H_2O + 4e + O_2 \rightarrow 40H$ (01 mark)   (vi)   Pink (01 mark)

03. A. (i)   Show a quick deflection and it will stop (01 mark)

   (ii)   No deflection (01 mark)

   (iii) $\dfrac{Vx}{Vy} = \dfrac{Nx}{Ny}$ $\dfrac{15}{Vy} = \dfrac{20}{500}$ $Vy = \dfrac{500 \times 15}{20} = 375$ (02 marks)

   B (i)   p - n junction can be made by joining a p - type semi - conductor and a n-type semi conductor in a special way. (01 mark)

   (ii)   a (01 mark)

   (iii)   to convert alternating current into PC current to convert high frequency radio waves to audio frequency waves etc (02 marks)

   C. (i)   kWh (01 mark)   (ii) $kWh = \dfrac{100 \times 300}{1000} = 30\,kWh$ (02 marks)

   (iii)   Fuse   Trip switch (1/2 x 2 = 01 mark)

   (iv)   a) Do not enter wires directly to plug base   b) Use fuse wires of appropriate ampere value or any other answer as teacher wish. (03 marks)

04 A (i)   increasment in concentration of sulphur dioxide in air. (01 mark)

   (ii) $SO_{2(s)} + H_2O_{(l)} \rightarrow H_2SO_{2(eg)}$ (01 mark)

   (iii)   Nitrogen dioxide (01 mark)

   (iv)   Destruction of plants and forest, Destruction of aquatic flora and fauna, Dissolving of minerals like limestone ? for any 2 (1 x 2 = 2 marks)

B. (i) Agricultural waste matter (02 marks)

(ii) NO_3^- and PO_4^{-3} $(1 \times 2 = 02 \text{ marks})$

(iii) Loss of biodiversity in water bodies. Lose their beauty. Limits the uses of water. $(1 \times 2 = 02 \text{ marks})$

C. (i) 1st - 30000 units 2nd 3000 units $(1/2 \times 2 = 1 \text{ marks})$

(ii) a) Respiration   b) excreation $(1 \times 2 = 2 \text{ marks})$

(iii) Number pyramid / Bio mass pyramid $(1/2 \times 2 = 1 \text{ marks})$

Essay questions - Biology

01. A. (i) A - Spinal cord   C - Sensory neuron   B - motor neuron   D - effector $(1/2 \times 4 = 2 \text{ marks})$

(ii) sense organ $\rightarrow$ sensory neuron $\rightarrow$ spinal cord $\rightarrow$ moto neuron $\rightarrow$ Effector (02 marks)

(iii) Spinal reflexes (01 mark)   cranial reflexes (01 mark)   Spinal reflexes - touch a hot object or similar answer (01 mark) Cranial reflexes -sneezing, Salivation, moving headaway when a harmful object comes near the eyes. (01 mark)

(iv) pain touch / pressure / cold / heat receptors - for any 2 $(1/2 \times 2 = 01)$

B. (i) They are organic compounds act at low concentration. (01 mark)

(ii) Male - testosterone (01 mark)   Female - oestrogen / Progesterone (01 mark)

(iii) testosteron - Testis (01 mark) Oestrogen / Progesterone - Ovaries (01 mark)

C. (i) Two testes, two epididgmis vas deferent, penis. $(1/2 \times 4 = 02)$

(ii) The uterus can enlarge. (01 mark)   (iii) Umbilical cord (01 mark)

(iv) Nutritive materials Oxygen, Carbondioxide, Waste matter (02 marks)

(v) Prolactin (01 mark)

02. A. (i) Carbon dioxide is needed or not for photosynthesis. (02 marks)

(ii) Plant should exposed to the sunlight. A and B leaves should boil in water. A and B leaves should boil in alcohol. Wash the two leaves with water. Put two iodine drops. (03 marks)

(iii) leaves are same in size Both leaves got same amount of sunlight. (02 marks)

(iv) CO_2 to absorb carbon dioxide gass (01 mark)

(v) to remove the starch in the leaf before the experiment (01 mark)

B. (i) White / colourless (01 mark)   (ii) brown (01 mark)

(iii) Dark blue / dark purple or black colour can be seen outside the cellophane sac. (02 marks)

(iv) The dark blue colour can be observed in side the sac. (02 marks)

C. (i) Mineral salts - active absorption (01 mark)   water - Osmosis (01 mark)

(ii) Stomata (01 mark)   (iii) Removal of water from plant surface as water vapour (02 marks)

Chemistry

01. A. (i) to remove the oxides of the metal (01 mark)

(ii) $Mg_{(s)} + H_2O_{(g)} \rightarrow MgO_{(s)} + H_{2(g)}$ (02 marks)

(iii) H_2 gas (01 mark)

(iv) boiling tube is kept vertically so the heat may not supplied to the metal pieces equally. Steam also may not supplied equally. (02 marks)

(v) When Mg was heated with steam more gas volume can be traped in the test tube. / When Al was heated with steam less gas volume can be traped. / When Cu was heated with steam no gas will be traped. $(1 \times 3 = 03)$

(vi) Cu, Al, Mg (03 marks)

B. (i) heamatite, limestone, coke

a. $C_{(s)} + O_{2(g)} \rightarrow CO_{2(g)}$ b. $CO_{2(g)} + C_{(s)} \rightarrow 2CO_{(g)}$

c. $Fe_2O_{3(s)} + 3CO_{(g)} \rightarrow 2Fe_{(s)} + 3CO_{2(g)}$ d. $CaCo_{3(s)} \rightarrow CaO_{(s)} + Co_{2(g)}$

e. $CaO_{(s)} + SiO_{2(s)} \rightarrow CaSiO_{3(s)}$ $(1 \times 5 = 05)$

02. A. (i) Solubility is the maximum amount of solute that can dissolve in 100 g of the solvent at a given temperature. (02 marks)

(ii) temperature / nature of the solute / nature of the solvent   for any two $(1 \times 2 = 02)$

(iii) nature of solvent (01 mark)   (iv) X (01 mark)

(v) Temperature (01 mark)

(vi) Solubility of A in 500 g of water at 90°C   =   7.8 g

      Solubility of A in 100 g of water   = $\dfrac{7.8}{500}$ x 100

                                         =   1.56 g (03 marks)

B. (i) $[12 + 16 + (14 + 2) + (1 + 4)]$ g mol⁻

       60 g mol^{-1} (01 mark)

(ii) Amount of moles in 60 g of urea   = 1 mol

      Amount of moles in 120 g of urea   = $\dfrac{1\,mol}{60}$ x 120 = 2 mol

      Amount of moles in 1 dm³ concentration   =   2 mol dm^{-3} (03 marks)

C. (i) Organic polar   -   Ethanol, Acetone
      Organic non polar   -   Benzen, Hexane
      Inorganic Polar   -   Water
      Inorganic non polar   -   Carbon disulfide   (1/2 x 6 = 3 marks)

(ii) Jak latex is a non polar solute. but water is a polar solvent so it can not be dissolved and washed away by water. but kerosene is a non polar solvent. so jak latex dissolves in kerosene.   (03 marks)

Physics

01. A.
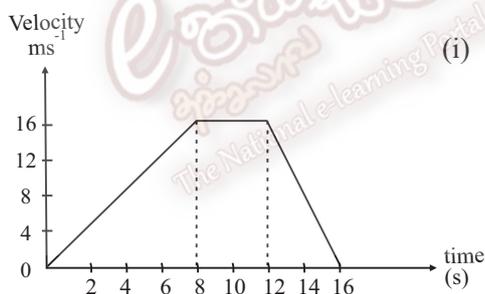
(i) acceleration during first 8S $= \dfrac{\text{velocity change}}{\text{time}}$

           $\dfrac{16\ mc^{-1}}{8\ s} = 2\ ms^{-2}$

                                  (02 marks)

(ii) Area covered   =   1/2 x 81 x 1.6 ms^{-1}

                   =   64 m   (02 marks)

(iii) Deceleration during the last 4 s $= \dfrac{\text{velocity change}}{\text{time}}$

              $\dfrac{-16\ ms^{-1}}{4\ s}$ = 4 ms^{-2} (02 marks)

B. (i) A - will register the highest temperature.   B - next and
      C - lowest temperature.   (01 mark)

(ii) Radiation   (01 mark)

(iii) dull black surfaces are the best absorbers of radiation. White surfaces are poor absorbers and shining surffaces are the poorest.

(iv) A - will cool fastest   B - next and   C - last (01 mark)

(v) dull black surfaces are best emitters. white surfaces are poorest.   (01 mark)

02.   A.   (i)   2   (01 mark)

(ii) S_1 and S_3 / S_2 and S_3 (01 mark)

(iii) decreases   (01 mark)   (iv)   A   (01 mark)

(v) $1 / R$ $=$ $1 / r_1$ + $1 / r_2$

$1 / R$ $=$ $1 / 30 + 1 / 30$

$1 / R$ $=$ $2 / 30$

R $= 15 \ \Omega$ (03 marks)

(vi) Direction of the deflection changes (01 mark)

(vii) When a current flows through a conductor a magnetic field forms around it. When the direction of magnetic field also changes accordingly.   (02 marks)

B. (i) Refraction   (01 mark)   (ii) PQY / YQP   (01 mark)

(iii) critical angle   (01 mark)   (iv) Total internal reflection   (01 mark)

(v)
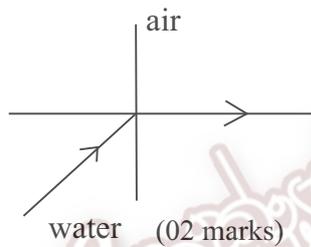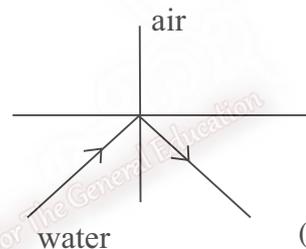
water   (02 marks)   water   (02 marks)

(vi) Refractive index $=$ $\dfrac{\text{Real depth}}{\text{Apparent Depth}}$

$=$ $\dfrac{50 \, cm}{40 \, cm}$

$=$ 1.25   (02 marks)