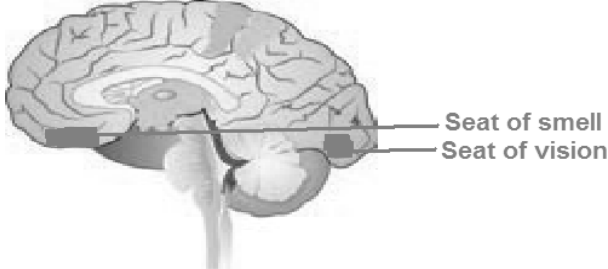


SECTION – I

CHOOSE THE CORRECT ANSWER

Q.No.	ANSWER	MARK	Q.No.	ANSWER	MARK
1	b)Beta	1	9	Decomposition reaction	1
2	d) BCG	1	10	c) 3	1
3	b) Grass	1	11	a) $9.467 \times 10^{15}$ m	1
4	b) Thymus	1	12	Tiger	1
5	b) Pachytene	1	13	b) Liquid Helium	1
6	c) Gigantism	1	14	c) Voltmeter	1
7	b) Isotones	1	15	b) Ammonia	1
8	Isotopes ${}_1\text{H}^1, {}_1\text{H}^2$ / Isotones ${}_6\text{C}^{13}, {}_7\text{N}^{14}$	1			

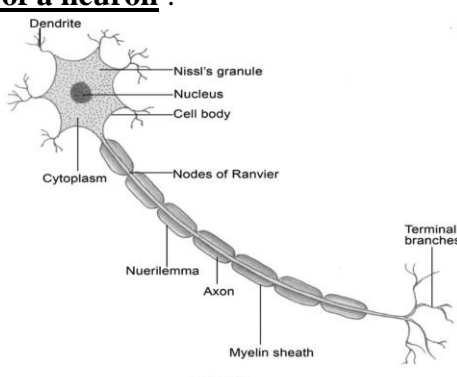
SECTION –II – ( 40 MARKS )

Q.No.	Answer	Division of mark	Total mark										
16	Variation may be defined as differences in the characteristics among the individuals of the same species. (A) Intra specific variation or among the different genera (B) Intergeneric variation or different species (C) Inter specific variation. <b>Types of Variations</b> <b>a. Somatic Variation</b> - It pertains to body cells and it is not inherited. <b>b. Germinal Variation</b> - It pertains to germ cells or gametes and it is inheritable. It leads to speciation and evolution.	1  1	2										
17.	d) A – Correct R – Not relevant	2	2										
18.	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 20%;">i. Vaccine</td> <td>Microbes</td> </tr> <tr> <td>ii. Natural Gas</td> <td>Fuel</td> </tr> <tr> <td>iii. Citric Acid</td> <td>Organic acids</td> </tr> <tr> <td>iv. Monoclonal Antibodies</td> <td>Medicines</td> </tr> <tr> <td>v. Vitamins</td> <td>Metabolism</td> </tr> </table>	i. Vaccine	Microbes	ii. Natural Gas	Fuel	iii. Citric Acid	Organic acids	iv. Monoclonal Antibodies	Medicines	v. Vitamins	Metabolism	2	2
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ii. Natural Gas	Fuel												
iii. Citric Acid	Organic acids												
iv. Monoclonal Antibodies	Medicines												
v. Vitamins	Metabolism												
19.	Some germs may remain viable outside the body of the hosts and may be transferred indirectly through personal objects used by patients like clothing, bedding, handkerchiefs, towels, toilet articles, utensils and plates. Such contaminated objects are called <b>fomites</b> .	2	2										
20.	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 5%;">N o.</th> <th style="width: 40%;">Night blindness</th> <th style="width: 40%;">Colour blindness</th> </tr> </thead> <tbody> <tr> <td>1.</td> <td>It is a <b>vitamin deficiency disease</b>.</td> <td>It is a <b>hereditary or Genetic disorder</b>.</td> </tr> <tr> <td>2.</td> <td>It is caused due to the deficiency of <b>Vitamin A</b></td> <td>It is caused due to <b>defective or mutated gene</b>.</td> </tr> </tbody> </table>	N o.	Night blindness	Colour blindness	1.	It is a <b>vitamin deficiency disease</b> .	It is a <b>hereditary or Genetic disorder</b> .	2.	It is caused due to the deficiency of <b>Vitamin A</b>	It is caused due to <b>defective or mutated gene</b> .	1  1	2	
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21.	<b>Symptoms of AIDS</b> : Significant weight loss, chronic diarrhoea, prolonged fever, opportunistic infections such as tuberculosis, candidiasis and recurrent herpes zoster (viral) infection.	2	2										
22.	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 40%;">Diseases that are transmitted by houseflies</th> <th style="width: 60%;">Causative pathogens</th> </tr> </thead> <tbody> <tr> <td>1. Amoebic dysentery (Amoebiasis)</td> <td><b>Entamoeba histolytica</b>– a protozoan parasite</td> </tr> <tr> <td>2. Typhoid</td> <td><b>Salmonella typhi</b> – Bacteria</td> </tr> </tbody> </table>	Diseases that are transmitted by houseflies	Causative pathogens	1. Amoebic dysentery (Amoebiasis)	<b>Entamoeba histolytica</b> – a protozoan parasite	2. Typhoid	<b>Salmonella typhi</b> – Bacteria	1  1	2				
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2. Typhoid	<b>Salmonella typhi</b> – Bacteria												
23.	 <p style="text-align: right;">Seat of smell Seat of vision</p>	Diagram 1mark Parts 1 mark	2										
24.	The dorsal portion of the midbrain consists of four hemispherical bodies called <b>corpora quadrigemina</b> .	1	2										

	<b>Functions</b> :It controls and regulates various visual reflexes and optical orientation.	1									
25.	i) Personality hormone - <b>Thyroxine</b> ii) Fight, flight and fright hormones – <b>Adrenalin</b>	1 1	2								
26.	The process of fusion of a male gamete with an egg and the other gamete with a secondary nucleus is known as double fertilization. As the result of double fertilization zygote and endosperm nucleus are formed. First sperm + Egg = Zygote Second sperm + Secondary Nucleus = Endosperm Nucleus.	1  1	2								
27.	The fusion of this nucleus with thesecond male gamete is known as triplefusion. As the result of Endosperm nucleus is formed. Second Male Gamete (n) + Secondary Nucleus (2n) = Endosperm Nucleus (3n)	1  1	2								
28.	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 33%;"><b>a) Autochory</b></td> <td><b>Balsam</b></td> </tr> <tr> <td><b>b) Anemochory</b></td> <td><b>Tridax</b></td> </tr> <tr> <td><b>c) Hydrochory</b></td> <td><b>Lotus</b></td> </tr> <tr> <td><b>d) Zoochory</b></td> <td><b>Xanthiun</b></td> </tr> </table>	<b>a) Autochory</b>	<b>Balsam</b>	<b>b) Anemochory</b>	<b>Tridax</b>	<b>c) Hydrochory</b>	<b>Lotus</b>	<b>d) Zoochory</b>	<b>Xanthiun</b>	½ ½ ½ ½	2
<b>a) Autochory</b>	<b>Balsam</b>										
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<b>c) Hydrochory</b>	<b>Lotus</b>										
<b>d) Zoochory</b>	<b>Xanthiun</b>										
29.	Increase in pressure, <u>increases</u> the ability of gases in liquids.	2	2								
30.	<b>Weight of solute= 10 g</b> <b>Weight of Solvent= 40 g</b>  <b>Weight of the solute</b> <b>Weight percent = ----- × 100</b> <b>Weight of solute + Weight of solvent</b>  $= \frac{10g}{(10 + 40) g} \times 100 = 20\%$	1  ½  ½	2								
31.	R does not explain A	2	2								
32.	<b>i. C<sub>6</sub>H<sub>12</sub>O<sub>6</sub></b> <b>C × 6= 6 ×12 = 72</b> <b>H ×12=1×12 = 12</b> <b>O ×16 =6×16= 96</b>  <b>-----</b> <b>180</b> <b>-----</b> <b>Gram molecular mass of C<sub>6</sub>H<sub>12</sub>O<sub>6</sub> is 180g</b> <b>ii. HNO<sub>3</sub></b> <b>H × 1 = 1×1 = 1</b> <b>N × 1 = 14×1=14</b> <b>O × 16=3×16=48</b>  <b>-----</b> <b>63</b> <b>Therefore, Gram molecular mass of HNO<sub>3</sub> is 63g</b>	½  ½  ½  ½									
33.	<b>(i) Solution:</b> <b>No. of moles = <math>\frac{\text{Number of atoms}}{\text{Avogadro number}}</math></b> $= \frac{12.046 \times 10^{23}}{6.023 \times 10^{23}}$ <b>No. of moles of Cu = 2 moles</b> <b>(ii) Solution: (At. mass of Fe=55.9g)</b> <b>No. of moles = <math>\frac{\text{Given mass}}{\text{atomic mass}}</math></b> $= \frac{27.95g \text{ of Fe}}{55.9}$ <b>No. of moles of Fe = 0.5 mole</b>	1   1	2								
34.	i. HCOOH –Weak Acid or Organic acid, others are Inorganic acid or strong acids ii. Vinegar—Acidic in nature , others are basic.	1  1	2								
35.	i. In fireworks, powdered Mg is used rather than Mg ribbon because powdered Mg has <u>greatersurface area</u> which increases the rate of the reaction. ii. Zn and dil H2SO4 react much more quickly when a few drops of CuSO4 is added because CuSO4 acts as a <u>catalyst</u> which influences the rate of the reaction.	1  1									
36.	i. Small dimensions -----Screw gauge ii Large dimension ----- Scale iii Long distance ----- light year iv Small distance ----- Kilometer	½ ½ ½ ½									
37.	Head scale and pitch scale	2	2								
38.	Handle of a spanner is long, because of turning effect. Turning effect of a force is called moment of force.	½									

	Moment of force=Force X perpendicular distance. ( $F \times d$ ) Larger the perpendicular distance, less is the force required to turn the body. Therefore, the spanner is provided with a long handle.	1 $\frac{1}{2}$											
39.	<b>Newton's law of Gravitation :</b> Every object in the universe attract every other object with a force which is directly proportional to the product of their masses and inversely proportional to the square of the distance between them.	2	2										
40.	1. The law of conservation of momentum 2. Newton's third law of motion	1 1	2										
41.	<table border="1" style="width:100%"> <thead> <tr> <th style="width:50%">MASS</th> <th style="width:50%">WEIGHT</th> </tr> </thead> <tbody> <tr> <td>1. Fundamental quantity.</td> <td>1. Derived quantity.</td> </tr> <tr> <td>2. It is the amount of matter contained in a body.</td> <td>2. It is the gravitational pull acting on the body.</td> </tr> <tr> <td>3. Its unit is kilogram.</td> <td>3. Its unit is newton.</td> </tr> <tr> <td>4. Remains the same.</td> <td>4. Varies from place to place.</td> </tr> </tbody> </table>	MASS	WEIGHT	1. Fundamental quantity.	1. Derived quantity.	2. It is the amount of matter contained in a body.	2. It is the gravitational pull acting on the body.	3. Its unit is kilogram.	3. Its unit is newton.	4. Remains the same.	4. Varies from place to place.	$\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$	2
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42.	i potential difference - Volt ii Current - Ampere iii Charge - Coulomb iv Resistance - Ohm	$\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$	2										
43.	Lead and Tin, Low melting point	1 1	2										
44.	<b>Solution:</b> <b>Mass = <math>m = 1 \text{ kg}</math></b> <b>Velocity of light = <math>c = 3 \times 10^8 \text{ m s}^{-1}</math></b> <b>Energy produced = <math>E = mc^2</math></b> <b><math>E = 1 \times (3 \times 10^8)^2</math></b> <b><math>E = 9 \times 10^{16} \text{ J}</math></b>	$\frac{1}{2}$ $\frac{1}{2}$  1											
45.	1) Some well known alternative fuels such as bio-diesel, bio-alcohol, fuel cells, hydrogen and non-fossil natural gas can be used. 2) Solar energy , wind energy, ocean thermal energy and Bio- mass can be also used.	1  1	2										

SECTION – III ( 20 MARKS)

Q.No.	Answer	Division of mark	Total mark
46.	<p><b><u>Life cycle of malarial parasite – Plasmodium:</u></b></p> <p>1.The sexual stage of Plasmodium takes place in female Anopheles mosquito whereas the asexual stage occurs in man.</p> <p>2.When a female Anopheles mosquito bites an infected person, these parasites enter the mosquito and undergo further development in the body of the mosquito.</p> <p>3.The parasites multiply within the body of the mosquito to form sporozoites that are stored in the salivary glands of the mosquito.</p> <p>4.When these mosquitoes bite a healthy person, the sporozoites (the infectious stage) are introduced into his body.</p> <p>5.They multiply within the liver cells first and enter the Red Blood Cells(RBC) of man, resulting in the rupture of RBC.</p> <p>6.This results in the release of toxic substance called haemozoin which is responsible for the chill and high fever, recurring every three to four days.</p>	5	5
47.	<p>Describe the structure of a neuron with the help of a neat, 3adical diagram, <b>Ans : <u>The structure of a neuron :</u></b></p>  <p>Nerve cells or neurons are the structural and functional units of the nervous system. The Human Brain is made up of about 86 billion neurons and many</p>	1	5

	<p>more neuroglial cells (more than 86 billion). A nerve cell is a microscopic structure consisting of three major parts namely, cell body, dendrites and axon.</p> <p><b><u>I.Cell body</u></b> The cell structure is irregular in shape or polyhedral. It is also called cyton. Cell body contains cytoplasm with typical cell organelles and certain granular bodies called Nissle's granules. Nissle's granules are a group of ribosomes for protein synthesis.</p> <p><b><u>II.Dendrites</u></b> Dendrites or Dendrons are short fibres which branch repeatedly and protrude out of the cell body. Dendrites transmit electrical impulses towards the cyton.</p> <p><b><u>III.Axon</u></b> One of the fibres arising from the cell body is very long with a branched distal end and it is called Axon. The distal branch of the axon terminates in bulb-like structures called synaptic knob filled with chemicals called neuro transmitters. The cytoplasm of the axon is known as axoplasm. The axon which is covered by a myelin sheath is formed of many layers of Schwann cells. The outermost layer of Schwann cells is called Neurilemma. The gaps left by the myelin sheath are called Nodes of Ranvier. Neurilemma is discontinuous at Nodes of Ranvier. The myelin sheath ensures rapid transmission of electric impulses.</p>	1	
48.	<p><b><u>Structure of Dicot seed (Bean)</u></b></p> <p>1.The seed is bulky, oval and slightly indented on one side. 2.On this side, there is a short longitudinal, whitish ridge called the raphae. 3.At one end of the raphae, there is a minute opening known as germ pore or micropyle. 4.If a water-soaked seed is pressed gently, a small drop of water along with air bubbles will come out through the micropyle. 5.The embryo is enclosed by the seedcoat. 6.It consists of cotyledons attached to the primary axis which has a rudimentary root portion called the radicle and a rudimentary stem portion known as plumule. 7.The tip of the radicle projects outside, and is nearer to the micropyle. 8.The plumule is placed between the two cotyledons and consists of a shoot axis and a small bud having two tiny folded leaves.</p> <p><b>6. Describe the structure of a monocot seed.</b></p>	2	5
49.	<p><b><u>Environmental effects of coal burning</u></b></p> <p>1. Generation of waste products which contain mercury, uranium, thorium, arsenic and other heavy metals, which are harmful to human health and environment. 2. Sulphur particles present in the coal causes acid rain. 3. Interference with ground water and water table levels. 4. Contamination of land and water bodies. 5. Dust pollution. 6. Release of CO<sub>2</sub>, a green house gas, causing climate change and global warming. 7. Coal is the largest contributor to the man-made increase of CO<sub>2</sub> in the air.</p>	4	5
50.	<p><b><u>Avogadro's Law:</u></b> Equal volumes of all gases under the same conditions of temperature and pressure contain an equal number of molecules.</p> <p><b><u>Applications of Avogadro's Law</u></b></p> <p>1. It is used to determine the atomicity of gases. 2. It is helpful in determining the molecular formula of gaseous compounds. 3. It establishes the relationship between the vapour density and molecular</p>	1	5

	<p>mass of a gas.</p> <p>4. It gives the value of molar volume of gases at STP. Molar Volume of a gas at STP=22.4 lit (or) 22400 cm<sup>3</sup> .</p> <p>5. It explains Gay Lussac's Law effectively.</p>	3 (Any 3)	
51.	<p>i. Redox reaction is a chemical reaction in which both reduction and oxidation reaction takes place simultaneously</p> <p>ii. Reducing agent is Copper Sulphate and Oxidizing agent is Zinc.</p> <p>iii. Oxidation: <math>Zn \rightarrow Zn^{2+} + 2e^-</math> (lose of e-) Reduction <math>Cu^{2+} + 2e^- \rightarrow Cu</math> (gain of e-)</p> <p>iv. <math>Zn \rightarrow Zn^{2+} + 2e^-</math> <math>CuSO_4 + 2e^- \rightarrow Cu + SO_4^{2-}</math> <math>Zn + CuSO_4 \rightarrow ZnSO_4 + Cu</math></p>	1 1 1 2	5
52.	<p>i) a. A space station is an artificial structure designed for humans to live and work in outerspace for a period of time.</p> <p>b. Space stations are used to study the effects of long-space flight on the human body.</p> <p>c. It provides platforms for greater number and length of scientific studies than available on other space vehicles.</p> <p>d. Space stations have been used for both military and civilian purposes.</p> <p>ii) Every object in the universe attracts every other object with a force which is directly proportional to the product of their masses and inversely proportional to the square of the distance between them</p> $F \propto \frac{m_1 m_2}{d^2}$ $F = \frac{G m_1 m_2}{d^2}$ <p>Where G is Universal gravitation constant = <math>6.673 \times 10^{-11} \text{ Nm}^2 \text{ Kg}^{-2}</math> <math>m_1</math> &amp; <math>m_2</math> are the masses of two bodies d is the distance</p>	1 1 1 1 1	5
53.	<p><i>Power P = 2160W</i></p> <p><i>Current I = 9A</i></p> <p><i>i) Voltage drop <math>V = \frac{P}{I} = \frac{2160}{9} = 240 \text{ V}</math></i></p> <p><i>ii) Usual household voltage is 220V. Hence voltage drop is greater than usual household voltage.</i></p> <p><i>iii) Since resistance of the air conditioner is constant, when it is connected to supply line of 120V, Current decreases by half</i></p> <p><i>ie) I=4.5A Hence AC will not operate.</i></p>	1 1 1 1 1	5

PREPARED BY

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PHYSICS CHEMISTRY : MRS.C.SAGAYARANI

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Number

**SSLC QUARTERLY EXAMINATION 2018-19**

Time Allowed : 2.30 Hours]

**SCIENCE**

[Max. Marks : 75

- INSTRUCTION : 1. Check the question paper for fairness of printing. If there is any lack of fairness, inform the Hall Supervisor immediately.  
2. Use blue or black ink to write and underline pencil to draw diagrams.

**Section - I**

Note : 1. Answer all the fifteen questions.

15 x 1 = 15

2. Choose the correct answer from the alternatives given in the brackets

- In persons suffering from insulin – dependent diabetes, \_\_\_\_\_ the cells of pancreas are regenerated.  
a) Alpha                      b) Beta                      c) Gamma                      d) Delta
- The first vaccine injected into a just born baby is \_\_\_\_\_.  
a) Oral polio                      b) DPT                      c) DPT and Oral polio                      d) BCG
- Anemophily occurs in \_\_\_\_\_.  
a) Vallisneria                      b) Grass                      c) Coconut                      d) Datura
- The endocrine gland related to the immune system is \_\_\_\_\_.  
a) Thyroid                      b) Thymus                      c) Adrenal                      d) pineal
- The important event of meiosis is the crossing over. It occurs during \_\_\_\_\_.  
a) Leptotene                      b) pachytene                      c) diplotene                      d) Zygotene
- Excess production of somatotrophic hormone in children leads to \_\_\_\_\_.  
a) dwarfism                      b) acromegaly                      c) gigantism                      d) scurvy
- \_\_\_\_\_ have equal number of neutrons.  
a) Isobars                      b) Isotones                      c) Isotopes                      d) none
- From the given examples, form the pair of isotopes and the pair of isotones.  
( ${}_1\text{H}^1$ ,  ${}_6\text{C}^{13}$ ,  ${}_1\text{H}^2$ ,  ${}_7\text{N}^{14}$ )
- Chemical volcano is an example of \_\_\_\_\_. (combination reaction/ decomposition reaction)
- The hydroxide ion concentration of a solution is 0.001M. The  $P_{\text{OH}}$  of the solution is \_\_\_\_\_.  
a) 4                      b) 5                      c) 3                      d) 11
- One light year is equal to \_\_\_\_\_.  
a)  $9.467 \times 10^{15}$  m                      b)  $9.467 \times 10^{15}$  cm                      c)  $9.467 \times 10^{15}$  km                      d)  $9.467 \times 10^{15}$  nm
- Based on the food chain, pick out the odd one out  
(plants → grosshopper → frog → tiger → snake)
- \_\_\_\_\_ is commonly used and allows for the lowest attainable temperature.  
a) liquid hydrogen                      b) liquid helium                      c) hydrogen gas                      d) helium gas
- The electric potential difference between two points in an electric circuit is measured by using  
a) watt-hour meter                      b) ammeter                      c) voltmeter                      d) galvanometer
- In Ocean thermal energy plant, the volatile liquid like \_\_\_\_\_ is used.  
a) Helium                      b) ammonia                      c) water                      d) hydrogen

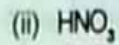
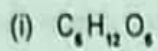




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32. Find gram molecular mass of the following (Hint: atomic mass of

C=12, H=1, O=16, N=14)



33. Calculate the number of moles in

i)  $12.046 \times 10^{23}$  atoms of copper

ii) 27.95g of iron

34. Pick out Odd one out and give reason

(i) HCl,  $HNO_3$ ,  $H_2SO_4$ , HCOOH

(ii) Blood, Baking Soda, Vinegar, Household Ammonia

35. Suggest a reason for each observation

i) In fireworks, powdered magnesium is used rather than magnesium ribbon.

ii) Zinc and dilute  $H_2SO_4$  react much more quickly when a few drops of copper sulphate solutions are added.

36. Match the following.

i) Small dimensions - kilometer

ii) Large dimensions - screw gauge

iii) Long distance - scale

iv) Small distance - light year

- Altimeter

37. Fill up.

i) Vernier caliper: Vernier scale and main scale,

Screw gauge: \_\_\_\_\_ and \_\_\_\_\_.

38. Why does a spanner have a long handle?

39. State Newton's law of Gravitation

40. Write two principles that are used in rocket propulsion.

41. Write the differences between mass and weight

42. Match the following.

i) Potential difference - Coulomb

ii) Current - Volt

iii) Charge - Ohm

iv) Resistance - Newton

- Ampere

43. Fuse wire made up of an alloy of \_\_\_\_\_ which has high resistance and \_\_\_\_\_.
44. Calculate the energy produced when 1kg of substance is fully converted into energy.
45. What measures would you suggest to minimize environmental pollution caused by burning of fossil fuel?

SECTION III - (Marks : 20)

- Note : (i) Answer any four questions by choosing one question from each part. 4x5 = 20
- (ii) Draw diagrams wherever necessary.

PART - I

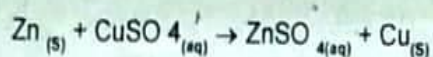
46. Describe the life cycle of plasmodium in man.
47. Describe the structure of neuron with the help of neat, labeled diagram

PART - II

48. Describe the structure of a dicot seed.
49. List out the harmful effects of burning coal.

PART - III

50. State the Avogadro's law. List out its applications.
51. When zinc and copper (II) sulphate are heated together, the following redox reaction occurs:



- i) What does the word redox stand for?
- ii) In the above reaction a) which one is the reducing agent? b) Which one is the oxidising agent?
- iii) Show how electrons are transferred in the reaction.
- iv) Write the ionic equation for the redox reaction.

PART - IV

52. i) Space stations are used to study the effects of long space flight on the human body. Justify.
- ii)  $F = Gm_1m_2 / d^2$  is the mathematical form of Newton's Law of gravitation, G – gravitational constant,  $m_1, m_2$  are the masses of two bodies separated by a distance d, then give the statement of Newton's law of gravitation.
53. Raman's air conditioner consumes 2160 W of power, when a current of 9.0 A passes through it.
- i) What is the voltage drop when the air conditioner is running?
- ii) How does this compare to the usual household voltage?
- iii) What would happen if Raman tried connecting his air conditioner to a 120V line?