

SCIENCE

(GOVERNMENTAL MODEL QUESTION PAPER)

Time Allowed : 2.30 Hours]

[Maximum Marks : 75

Instruction: Check the question paper for fairness of printing. If there is any lack of fairness, inform the Hall Supervisor immediately.

Note : This question paper contains three Sections.

SECTION – I

(Marks : 15)

Note : i) Answer all the 15 questions.

ii) Choose the correct answer from the four alternatives given in the brackets.

15 x 1 = 15

1. Theory of natural selection was proposed by
(Charles Darwin, Hugo de Vries, Gregor Johann Mendel, Jean Baptise Lamarck)
2. The first vaccine injected into a just born baby is _____.
(Oral polio, DPT, DPT and oral polio, BCG)
3. In sexual reproduction of flowering plants the first event involved in this is _____.
(fertilization, germination, regeneration, pollination)
4. The xylem in the plants are responsible for _____.
(transport of water, transport of food, transport of amino acid, transport of oxygen)
5. _____ green house gas which causes climate change and global warming.
(Hydrogen, oxygen, nitrogen, carbondioxide)
6. The particles in various forms are visible only under ultramicroscope. A solution containing such particles is called _____.
(true solution, colloidal solution, suspension, water)
7. $\text{pH} = -\log_{10}(\text{H}^+)$. The pH of a solution containing hydrogen ion, concentration of 0.001m solution is _____.
(1, 3, 11, 14)
8. Gold does not occur in the combined form. It does not react with air (or) water. It is in _____.
(native state, combined state, mixed state, gaseous state)
9. Second group elements are called _____.
(alkali, alkaline earth metals, transition elements, minor transition elements)

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(10 BIOLOGY)

P.G. ASST. IN BIOLOGY

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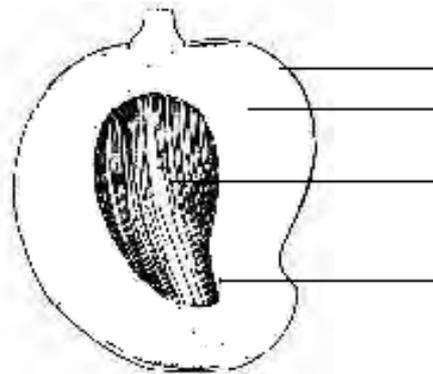
10. IUPAC name of the first member of alkyne is _____.
(ethane, ethyne, ethane, acetylene)
11. The weight of 50 kg person at the surface of earth is _____.
(50N, 35N, 380N, 490N)
12. The potential difference required to pass a current 0.2A in a wire of resistance 20 ohm is _____.
(100V, 4V, 0.01V, 40V)
13. The SI units of electric power is _____.
(Joule, Volt, Watt, Coulomb)
14. An electric current passing through a metallic conductor produces _____ around it.
(heat, light, magnetic field, mechanical force)
15. The Hubble space telescope design with two _____ is known for good imaging performance over a wide field of view.
(plane mirrors, hyperbolic mirrors, concave mirrors, convex mirrors)

SECTION – II**(Marks : 40)****Note : Answer any twenty questions.****20 x 2 = 40**

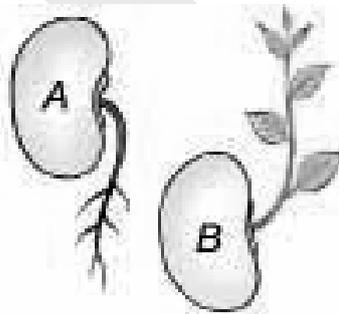
16. Match the following : Diseases with symptoms
- | | | |
|----------------------|---|-----------------------|
| a. Nyctalopia | - | Profuse loss of blood |
| b. Pernicious anemia | - | Bleeding gums |
| c. Scurvy | - | Night blindness |
| d. Haemorrhage | - | Destruction of RBC |
17. Identical twins are syngenic with similar chromosomal contents. Natural clones are those who possess identical chromosomes. Fill up with suitable word given in brackets.
- a. Identical twins are _____ (natural clones, induced clones)
- b. Identical twins are _____ (dissimilar to each other, similar to each other)
18. Human brain and the functions of different parts are given above. Mark (a) and (b)
- a. Seat of smell
- b. Seat of vision



19. Correct the statement if they are wrong.
- a. Alpha cells produce insulin and beta cells produce glucagon.
 - b. Cortisone suppresses the immune response.
 - c. Thymus gland is a lymphoid mass.
 - d. Ovary produces eggs and androgen.
20. Based on relationship fill in the blanks :
- Thyroxine : Personality hormone
- Adrenaline : _____
21. Draw the diagram and label the parts.

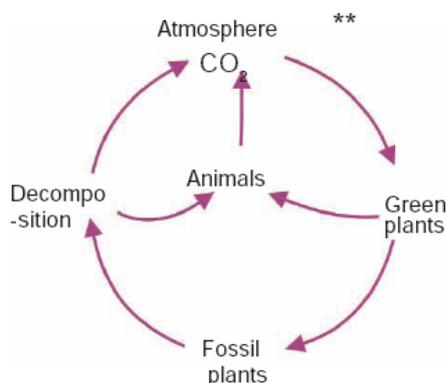


22. Write the three important parts of uriniferous tubules.
23. Observe the diagram



- a. Mention the type of movements shown in Figure A and B.
 - b. How does the movement differ from the movement of mimosa.
24. Based on relationship fill up :
- Whale : Baleen plates , Bat : _____
25. Fill in the blanks :
- | | | | | |
|-----------------|---|--------------------|---|-------------|
| Excretory organ | - | Excretory products | - | Sent out as |
| a. Kidneys | - | _____ | - | _____ |
| b. Lungs | - | _____ | - | _____ |

26.



a. Name the process noted as No. 1 and 3.

b. Define the process 1.

c. Name anyone fossil fuel.

27. A non-renewable resource is a natural resource. If it is replaced by natural process at a rate comparable or faster than its rate of consumption by human.

Read this statement and confirm whether it is correct or incorrect. If it is incorrect statement.

28. Describe : Energy conservation.

29. What are the bio fuels used for transportation?

30. Distinguish between the saturated and unsaturated solution using the data given below at a temperature of 25°C. (NaCl is 36 g)

a. 16 g NaCl in 100 g water

b. 36 g NaCl in 100 g water

31. Find the concentration of solution in terms of weight percent if 20 gram of common salt is dissolved in 50 gram of water.

32. Fill in

Atomicity

Example

a. Monoatomic - _____

b. Diatomic - _____

c. Triatomic - _____

d. Polyatomic - _____

33. Why does the colour of copper sulphate change when an iron nail is kept in it? Justify your answer.

34. The hydroxide ion concentration of a solution is $1.0 \times 10^{-9} \text{m}$. What is the pH of the solution?

35. a. Any metal mixed with mercury is called amalgam. The amalgam used for dental filling is _____.

i. Ag – Sn amalgam ii. Cu – Sn amalgam

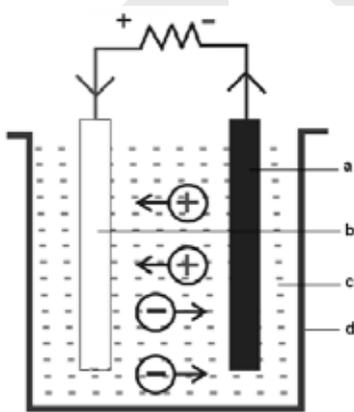
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- b. Metals present in brass are _____ .
(Zn, Cu/Cu, Fe/Fe/, Al/Al, Cu)
36. Iron reacts with cone HCl and Conc. H_2SO_4 acids. But, it does not react with Conc. HNO_3 . Why?
37. Diamond is the hardest allotrope of carbon. Give reason for its hardness.
38. Differentiate mass and weight.
39. Assertion (A) : Liquid nitrogen is the most commonly used element in cryogenics.
Reason (R) : It is not legally purchasable around the world.
- Both (A) and (R) are correct
 - (A) is wrong but (R) is correct.
 - Both (A) and (R) are wrong.
 - (A) is correct but (R) is wrong.
40. Draw this diagram and label the parts.



41. In the list of non conventional sources of energy given below, some of them are wrong. List out the wrong ones.
(wind energy, solar energy, hydro electric power, nuclear energy, tidal energy, wave energy, geothermal energy)
42. Draw the schematic diagram of an electric circuit consisting of a battery of two cells of 1.5 V each, three resistance of 5 ohm and 15 ohm respectively and a plug key, all connected in series.
43. Match the following in the case of a convex lens
- | Position of the object | - | Relative size of the image |
|-------------------------------|---|-----------------------------------|
| a. Beyond 2F | - | infinitive large |
| b. At 2F | - | diminished |
| c. Between F and 2F | - | same size |
| d. At focus F | - | enlarged |

44. A concave lens has focal length of 15 cm. At what distance should the object from the lens be placed, so that it forms an image 10 cm from the lens?

45. Fill in the blanks :

- For a motor : a permanent magnet, then commercial motor _____ .
- Focal length of a lens : meter, then for power of a lens _____ .

SECTION – III (Marks : 20)

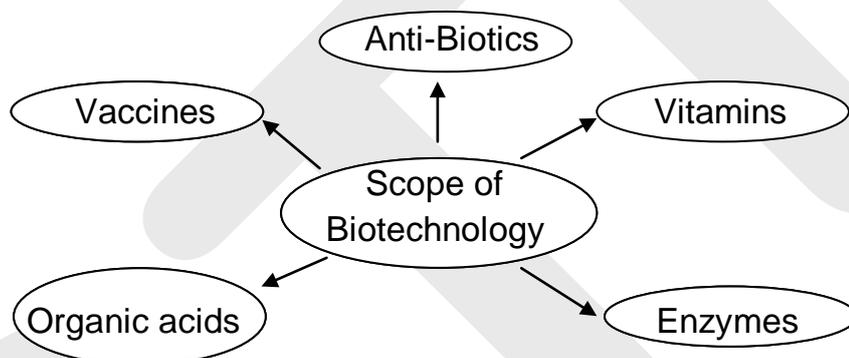
Note : i) Answer any four questions by choosing one question from each part .

ii) Each question carries five marks.

iii) Draw diagram wherever necessary.

PART – I

46. List the recent advances made in bio-technical field through a chart.



47. There is a widespread outbreak of malaria in your area.

- Suggest some controlling measures to the local authorities concerned.
- Pick out the right symptom for malaria.
(chill and shiver and a rise in temperature , diarrhea)

PART - II

48. Write the two events involved in the sexual reproduction flowering plants.

- Discuss the first event and write the types.
- Give the advantages and disadvantages of that event.

49. In your area there is scarcity of water. Due to this the people are affected. So what are the measures to be taken by you to meet out the scarcity of water?

PART - III

50. a. List out the differences between atoms and molecules.

- Find the number of moles in copper containing 12.046×10^{22} molecules.

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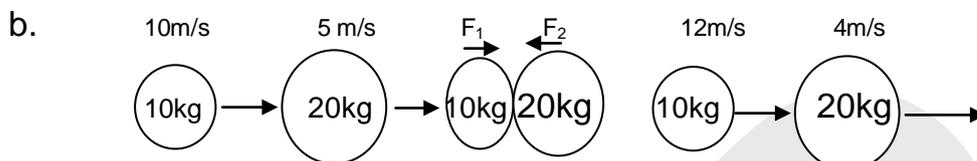
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51. a. Define esterification. Give its chemical reaction.
b. Write any two uses of ethanol.

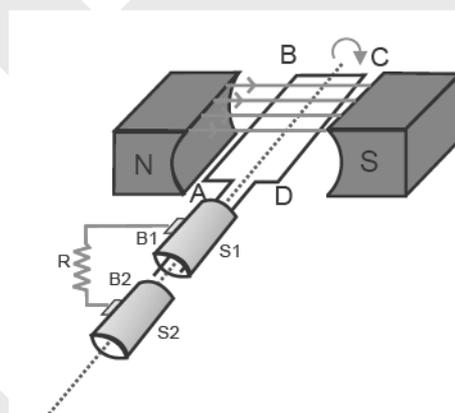
PART – IV

52. a. Newton's first law of motion gives a qualitative definition of force. Justify.



The figure represents two bodies of masses 10 kg and 20 kg and moving with an initial velocity of 10 ms^{-1} and 5 ms^{-1} respectively. They are colliding with each other. After collision they are moving with velocities 12 ms^{-1} and 4 ms^{-1} respectively. If the time of collision be 2 sec, calculate F_1 and F_2 .

53. a. Re-draw the above diagram
b. This diagram represents _____ .
c. Label the parts of the diagram.
d. Write the principle of the device denoted in the diagram.



SCIENCE
(PTA - 1)

Time Allowed : 2½ Hours]

[Maximum Marks : 75

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Note : This question paper contains three Sections.

SECTION – I
(Marks : 15)

Note : i) Answer all the 15 questions.

ii) Choose the correct answer from the four alternatives given in the brackets.

15 x 1 = 15

1. A fruit develops from a single flower with multicarpellary, apocarpous, superior ovary is
(Aggregate fruit, composite fruit, simple fruit, multiple fruit)
2. Which of the following constitute a food chain
(Grass, Wheat and Mango; Grass, goat and Human; Goat, cow and elephant; Grass, fish and goat)
3. Somatic gene therapy does
(affect the sperm, affect the egg, affect the progeny, affect body cell)
4. Pick out the bacterial disease
(Meningitis, Rabies, Tetanus, Small pox)
5. Mammal's main excretory product is
(Ammonia, Uric acid, Urea, Sodium)
6. When sunlight passes through the window of your house, the dust particles scatter the light making the path of the light visible. This phenomenon is called as
(Brownian motion , tyndall effect, Raman Effect , uniform motion)
7. $2\text{KClO}_3 \xrightarrow[\text{MnO}_2]{\Delta} 2\text{KCl} + 3\text{O}_2$ In this chemical reaction MnO_2 acts as
(reactant, product , catalyst, promoter)
8. Number of groups in modern periodic table is _____
(7, 17, 18, 8)
9. An amalgam is an alloy of metal with
(carbon, mercury, hydrogen, gold)
10. The saturated hydrocarbons form homologous series with the general formula $\text{C}_n\text{H}_{2n+2}$. The formula of the second member in this series is
($\text{C}_2\text{H}_2, \text{C}_2\text{H}_6, \text{C}_2\text{H}_4, \text{C}_2\text{H}_8$)
11. An object is placed at 25 c.m. from a convex lens whose focal length is 10 c.m. The image distance is _____
(50 c.m, 16.66 c.m, 6.6 c.m., 10 c.m.)

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12. Mass of an object is 10 Kg. What is its weight on the earth (where $w=mg$, $g=9.8m/s^2$)
(49 N, 25 N, 98 N, 100 N)
13. Four cells each of emf "E" are joined in parallel to form a battery. The equivalent emf of the battery will be _____
(4E, E, E/4, E=0)
14. The symbol for closed switch is _____
($\text{---}(\bullet)\text{---}$, $\text{---}(\)\text{---}$, $\text{---}\downarrow\text{---}$, $\text{---}\uparrow\text{---}$)
15. Electric power can be transmitted over long distance without much loss of energy is an important advantage of _____
(AC,DC,Both AC&DC,None)

SECTION – II

(Marks : 40)

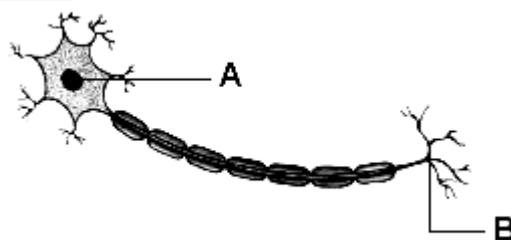
Note : Answer any twenty questions.

20 x 2 = 40

16. Match the following glands with suitable hormone

Glands	Hormone
a. Adrenal cortex	i) Insulin
b. Neurohypophysis	ii) Thyroxin
c. Thyroid	iii) Cortisone
d. Islets of Langerhan	iv) Oxytocin

17. Do you agree with the statement given below. If not, give the correct statements.
- Variation may be defined as the affinities in the characteristics among the individual the species.
 - Evolution is a sudden development from the complex species to simple form Do you agree with the above statements?
18. Copy the diagram of neuron and label the parts A and B



19. **Assertion (A):** The secretions of pituitary gland controls all other endocrine glands.
Reason (R) : It is known as the conductor of endocrine orchestra
- A is correct and R is not giving correct reasoning.
 - A is correct and R is wrong
 - A is wrong and R is correct
 - A is relevant and R is giving correct reasoning

20. You suspect that your friend is suffering from common cold. What are the questions you will ask your friend to confirm the disease?
21. The polar bears have thick skin coat and wooly fur, the ballen whales have ballen plates. Give reasons
22. The diagram shows that internal structure of the human heart. Label the following parts.
- The blood vessal that carries blood to the lungs
 - The blood vessal that carries blood to the different parts of the body.



23. The tearing teeth of carnivorous animals The tusks of an elephant are modified teeth of
24. Draw and label any two parts of the anther.
25. What will happen if all the grass is removed from the grass land eco system?
26. **Assertion A:** All public places need not have adequate sanitation and hygiene facilities.
Reason (R) : There is a greater risk of the spread of diseases such as Hepatitis A, Typhoid, diareha, etc.,
- A is right R is wrong
 - A is wrong R is right
 - R explains A
 - B does not explain A
27. **Assertion A :**Alcohol is made by fermenting the sugar components of plant materials. It can be used as a fuel for vehicles.
Reason (R) : Bio - ethanol is widely used.
- A is false statement R is correct
 - A is correct R is wrong
 - A is correct R is relevant
 - A and R statements not relevant.
28. Read the following the statements and correct them.
- Green diesel is a fossil fuel.
 - Bio - ethanol is widely used in England and Spain

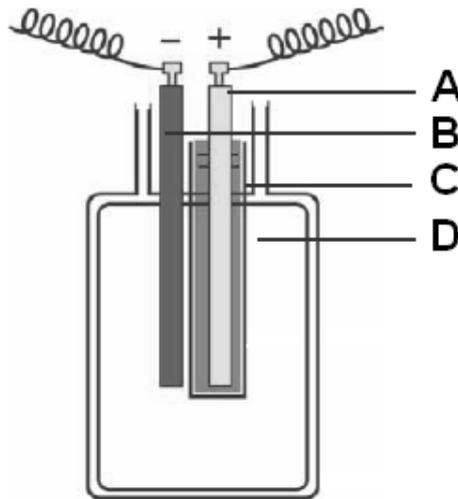
38. Observe the diagram and Write the answer

5N ← ————— ○ ————— → 5N

- a. The resultant of these forces is _____
 b. Does the ball move?

39. "When a gun is fired, it exerts forward forces on the bullet". Why does the gun recoil backwards?

40. Leclanche cell diagram is given below. Label the parts A, B, C, D.

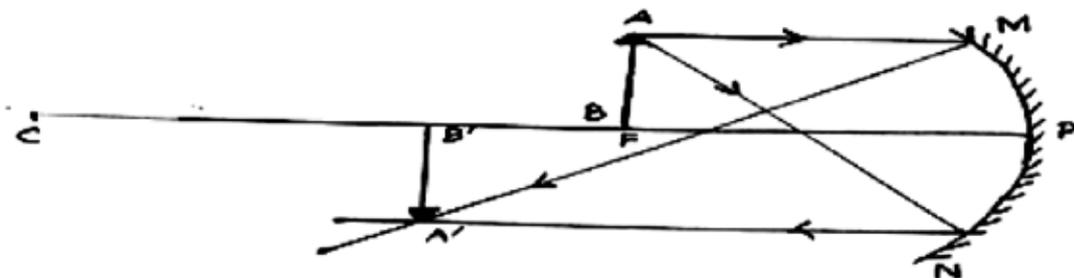


41. Match the following

Components	Symbols
a) Switch (closed)	
b) Battery	
c) Electric bulb	
d) Resistance	

42. Harmful radiations originate from a nuclear reactor. Precautions are taken to see that they do not become a threat to living beings. What are these precautions?

43. The ray diagram shown below is introduced to show how a concave mirror forms an image A' B' of an object A B placed at F.



- a. Identify the mistakes and draw the correct ray diagram.
 b. Write the justification for your corrections

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44. The speed of light in vacuum is 3×10^8 m/s Calculate the speed of light in medium of refractive index $4/3$. [Hint: $\mu = c/v$]
45. Odd one out.
- Myopia, hypermetropia, scurvy, presbyopia
 - Convex mirror, concave mirror, plane mirror, convex lens.

SECTION – III

(Marks : 20)

Note : i) Answer any four questions by choosing one question from each part .

ii) Each question carries five marks.

iii) Draw diagram wherever necessary. (4 x 5 = 20)

PART I

46. a. State any two applications of Bio-sensor in medicines. Somatic genetherapy does not effect the sperm or egg. Give reason.
b. What are the types of gene therapy?
47. a. The transfer of disease causing germ from an infected person to a normal healthy person through air by sneezing, coughing and talking is possible. Is there any other agent that transmits the infectious germs. List the agents or carriers, and the various diseases caused by them.
b. Administering vaccine is to prevent the spread of diseases. Brief the role of MMR and DT vaccine.

PART II

48. Calyx, Corolla are the parts of a flower.
- Give the reproductive parts of a flower
 - State the process involved in sexual reproduction.
 - Fruit is a ripened ovary classify the following fruits.
1. Cotton / Lady's finger 2. Paddy 3. Castor
49. a) Smoke, Smoke everywhere smoke. List the effects of coal smoking.
b) To meet out the water scarcity we need several ways to increase the water supply. Suggest any two ways to manage the crisis.

PART III

50. a. Mole concept is introduced to express the quantity of a substance. If 90 g of water is taken in a beaker. Find the number of moles in it.
b. Atoms and molecules are the building blocks of matter. List out any two differences between them.
51. a. Ethanoic acid reacts with ethanol in the presence of concentrated sulphuric acid.
- Name the organic product formed.
 - Give the name of the reaction.
 - What is the role of sulphuric acid in the above reaction
- b. The structural formula of an organic compound is $\text{CH}_3 - \text{CH}_2 - \text{OH}$
- Write the IUPAC name of this compound
 - Give one use of this compound.

PART IV

52. a. Place the following objects in the correct order from the lowest to the highest momentum. Assume that all the objects are moving at their maximum velocity. Aeroplane, Train, Bus, Car, Cycle.
(Where: Momentum = mass x velocity; $p = mv$)
- b. Which object has more momentum ; a car travelling at 10 km/hr or a baseball pitched at 150 km/hr? Explain your answer.
- c. Newton's third law of motion. For every action there is an equal and opposite reaction. Explain this law, using one illustration.
53. a. Observe the figure and write down the following quantities using Cartesian sign convention.
- The length of the object AB
 - The distance to the image.
 - The focal length of the convex mirror
- b. Observe the figure and answer the following questions
- Why is the magnetic needle deflected?
 - If the direction of current is reversed, what will be the direction of deflection of magnetic needle?

SCIENCE
(PTA - 2)

Time Allowed : 2½ Hours]

[Maximum Marks : 75

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Note : This question paper contains three Sections.

SECTION – I
(Marks : 15)

Note : i) Answer all the 15 questions.

ii) Choose the correct answer from the four alternatives given in the brackets.

1. Biotechnologically synthesized vitamin _____ is used, to cure pernicious anaemia.
(Vitamin A, Vitamin B, Vitamin B12, Vitamin C)
2. In the following Plasmodium which one cause malignant and fatal.
(Plasmodium vivax, Plasmodium malariae, Plasmodium falciparum, Plasmodium ovale)
3. These are all schizocarpic fruit
(Legume, Follicle, Capsule,; Berry, Hesperidium, Pome; Lomentum, Cremocarp, Regma,; Simple, Aggregate, Composite)
4. The pollen tubes grow towards ovule. This is
(Phototropism, Chemotropism, Hydrotropism, Geotropism)
5. Odd one out
(Plants, Grasshopper, Frog, Tiger)
6. The solubility of Sodium Nitrate in water is
(92 g, 184 g, 95 g, 36 g)
7. On heating the green colour copper carbonate changes into colour resulting in the formation of copper oxide?
(white, black, green, red)
8. The percentage of purity of Gold is calculated for making ornaments.
 $(\frac{24}{22} \times 100, \frac{22}{24} \times 100, \frac{20}{24} \times 100, \frac{18}{24} \times 100,)$
9. Atomic number of Iron is 26. Its electronic configuration is
(2,8,8,2, 2,8,8,4 , 2,8,14,2, 2,8,14,4)
10. Ethanol on oxidation in the presence of alkaline potassium permanganate or acidified potassium dichromate gives the following acid.
(Propanoic acid, Butanoic acid, Methanoic acid, Ethanoic acid)
11. The freezing of biotechnology products like vaccines require the freezing systems.
(Helium, Nitrogen, Ammonia, Chlorine)
12. 1 kwh is equal to
($3.6 \times 10^{-6}J$, 3.6×10^6J , $6.3 \times 10^{-6}J$, 6.3×10^6J)

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13. From the following statements write down that which does not represent ohm's Law.

$$\left(\frac{\text{current}}{\text{potential difference}} = \text{constant}, \frac{\text{potential difference}}{\text{current}} = \text{constant}, \right)$$

$$\text{Current} = \text{resistance} \times \text{potential difference}, \text{Resistance} = \frac{\text{potential difference}}{\text{current}},$$

14. The magnification produced by a mirror is $1/3$, then the type of mirror is (Concave, Convex, Plane, double concave)

15. Magnetic field is a quantity that has (Direction only, Magnitude only, both magnetic and direction, Spin only)

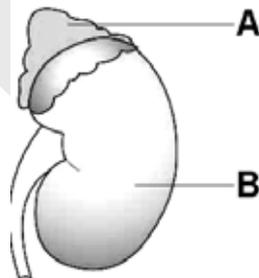
SECTION – II

(Marks : 40)

Note : Answer any twenty questions.

20 x 2 = 40

16. Monoclonal antibodies are the antibodies produced by _____.
Monoclonal antibodies are now used for treatment of _____.
17. Correct the following sentence if it has any mistake.
Fungi are green saprophytic or parasitic plants living on live and decaying organic matter or living organisms.
18. Copy the diagram of Kidney and label the parts A and B



19. Match the following

- | | | |
|-------------------|---|--------------------------------------|
| 1. Fore brain | - | CNS, PNS and ANS |
| 2. Mid brain | - | Pons, cerebellum & medulla oblongata |
| 3. Hind brain | - | cerebrum, thalamus, hypothalamus |
| 4. Nervous system | - | cerebral aqueduct |

20. Find the odd one out from the following.

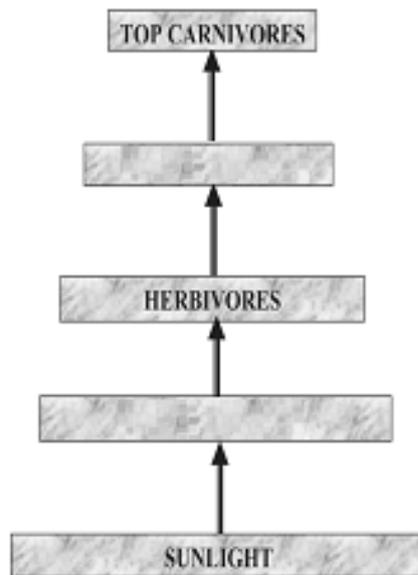
(Goitre, Diabetes, Oestrogen, Dwarfism)

21. Redraw the diagram and label the following parts.

a) Exine b) Tubenucleus



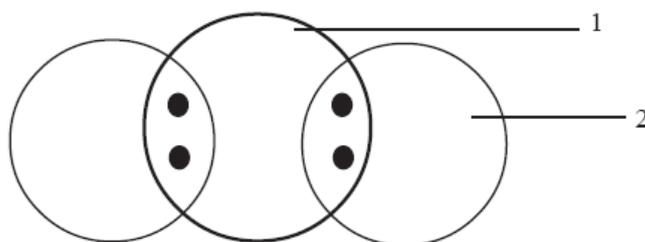
22. Classify the animals according to Tundra, Desert, Freshwater and Marine.
(Indian wild ass, Whales, Platypus, rein deer)
23. Man uses his fore limb to hold an object and to write.
(i) What is the use of fore limb of horse?
(ii) Write the use of fore limb of rat?
24. Imagine reproduction will not happen in human for fifty years. Interpret your answer in one or two sentences.
25. In coelenterates and sponges the excreta diffuse out through the
In Annelids, special kidneys called are evolved to collect excreta from the coelomic cavity.
26. Complete the flow of energy is an Ecosystem.



27. Natural gas is a major feed stock for the production of Ammonia and fertilizer production. Mention some other uses (any two only)
28. Energy management should help the environment by reducing the use of natural resource without polluting environment for the future purpose.
a) Discuss any two importance of energy management
b) write any two ways of saving energy at home
29. Do not iron wet clothes. Give reasons.
30. 2g of Potassium sulphate was dissolved in 12.5ml of water. On cooling, the first crystals appeared at 60°C. What is the solubility of Pottassium shlphate in water at 60°C.
31. Complete the following

Solute	Solvent	Example
Solid	_____	Alloys
Solid	liquid	_____
Solid	gas	_____
Liquid	solid	_____

32. (i) Draw the molecule of water and name the elements



(ii) Name two examples for homoatomic molecules.

33. Spot the error.

(i) A Chemical reaction in which oxidation and reduction take place simultaneously is called double decomposition.

(ii) $\text{Fe} + \text{CuSO}_4 \rightarrow \text{Cu} + \text{FeSO}_4$, identify the type it belongs to.

34. Match the following :

Source		Acid Present
Lemon	-	Lactic acid
Apple	-	Tartaric acid
Grapes	-	Citric acid
Curd	-	Malic acid

35. (i) Modern periodic table is made up of periods and groups. How many periods and groups are there in the periodic table?

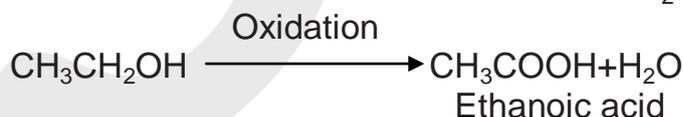
(ii) Name any two strategic metals.

36.



After few days the nails in A are rusted while the nails in B and C are unaffected. Give reasons.

37. Ethanol is oxidized to ethanoic acid with acidified $\text{K}_2\text{Cr}_2\text{O}_7$.



(i) During this reaction identify the colour change involved.

(ii) Mention the use of the above reaction.

38. A bullet of mass 15g is horizontally fired with velocity 100ms^{-1} from a pistol of mass 2kg. What is the recoil velocity of the pistol?

39. Odd one out.

(a) newtonmeter, Kgms^{-1} , gravitation

(b) momentum, force, acceleration, newton

40. The potential difference between the terminals of an electric heater is 60V when it draws a current of 5A from the source. What current will the heater draw if the potential difference is increased to 120V?
41. In a voltaic cell the copper rod is the positive pole and Ammonium chloride is the electrolyte. The carbon rod is the negative pole. Spot the error.
42. Fill in the blanks
 ${}_{92}\text{U}^{235} + {}_0\text{n}^1 \longrightarrow \text{_____} + {}_{36}\text{Kr}^{92} + \text{_____} + 200 \text{ Mev}$
43. Draw ray diagram to show the formation of image by a concave mirror when an object is between P and F.
44. Place the magnetic needle near the north pole of the bar magnet. How does the south pole and the north pole of the needle points?
45. Match the following
- 1) Electric motor - sini/sinr
 - 2) Electric Generator - dioptré
 - 3) Refractive index - converts electrical energy into mechanical energy
 - 4) power of a lens - coverts mechanical energy into electrical energy.

SECTION – III
(Marks : 20)

Note : i) Answer any four questions by choosing one question from each part .

ii) Each question carries five marks.

iii) Draw diagram wherever necessary. (4 x 5 = 20)

PART I

46. Genetic engineering resulted to a new Branch of Science
- (a) Define genetic engineering.
 - (b) What are the benefits of Genetic engineering
 - (c) What are the uses of restriction endonucleases and DNA ligase?
47. T.B. affex lungs and other parts of our body?
- (a) What is the caustive agent of Tuber culos is?
 - (b) Symptoms of Tuberculosis.
 - (c) How to prevent Tuberculosis

PART II

48. (a) Define fertilization
- (b) What are the post fertilization changes?
 - (c) What are Parthenocarpic fruits?
49. Green chemistry is a modern concept, develop in almost in all branches of chemistry.
- (a) What is Green chemistry?
 - (b) What is a global village?
 - (c) List out some products produced by the process of green chemistry.

PART III

50. (i) What are the differences between isotopes and isobars? (2)
(ii) complete the following.
 $2x$ _____ = Relative molecular mass. (1)
(iii) Give examples for triatomic and polyatomic molecules. (2)
51. (a) What is functional group?
(b) Complete the table

Sl.No.	Formula	Common Name	IUPAC Name
1.	$\text{CH}_3\text{CH}_2\text{CH}_3$	Propane	_____
2.	$\text{CH}_3\text{CH}_2\text{CH}=\text{CH}_2$	α Butylene	_____
3.	_____	Dimethyl acetylene	_____
4.	_____	Propionaldehyde	_____

PART IV

52. (a) What are the differences between mass and weight?
(b) Explain balanced and imbalanced forces with an illustration.
53. (a) In Fleming's left hand rule, what are denoted by three fingers?
(b) State any two uses of concave lenses.
(c) A concave lens has focal length of 15cm. At what distance should the object be placed so that it forms an image 10cm from the lens.

SCIENCE
(PTA - 3)

Time Allowed : 2½ Hours]

[Maximum Marks : 75

Instruction : Check the question paper for fairness of printing. If there is any lack of fairness, inform the Hall Supervisor immediately.

Note : This question paper contains three Sections.

SECTION – I
(Marks : 15)

Note : i) Answer all the 15 questions.

ii) Choose the correct answer from the four alternatives given in the brackets.

1. Somatic gene therapy affects _____
(Sperm, egg, progeny, body cell)
2. Pick out the protein deficiency disease
(Typhoid, Malaria, Marasmus, AIDS)
3. The integuments of the Ovule develop into _____
(covary, Seed Coat, Egg, Seed)
4. The autotrophic nutrition required _____
(Co₂ and water, Chlorophyll, Sunlight, all the above)
5. _____ chemical is used in seeding clouds.
(Potassium iodide, Calcium carbonate,
Sulphur di Oxide Ammonium phosphate)
6. Which of the following is a true solution _____
(Milk, Salt in carbon di sulphide, Blood, Sugar solution)
7. The nature of the tooth paste commonly used is _____ in nature
(acidic, basic, neutral, Salty)
8. Bauxite is used to extract aluminium it can be termed as _____
(Ore, Mineral, flux, Slag)
9. Elements of Group 3 to 12 in the long form of periodic table are called.
(representative elements, transition elements,
Inner transition elements, Inert gases)
10. Buckminster fullerene is the allotropic form of _____
(Nitrogen, Carbon, Sulphur, Phosphorous)
11. Metals frozen to low temperature showed more resistance to wear. This is known as _____ .
(cryogenic yielding, cryogenic hardening ,
cryogenic cooling, cryogenic shapping)
12. Kilo watt - hour is the unit of _____
(Potential difference, electric power, electric energym, charge)
13. Einsteins mass energy relation is _____
($E = m$, $E=mc^2$, $E=h\lambda$, $E = 1/2 mc^2$)
14. In Felming's left hand rule, the fore finger represents the direction of

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(magnetic field, current, motion of a conductor, electric field)

15. Eye lens is a _____
(double convex lens, double concave lens,
plano convex lens, plano concave lens)

SECTION – II

(Marks : 40)

Note : Answer any twenty questions.

20 x 2 = 40

16. Match the disease and causative agents.

DISEASE	CAUSATIVE AGENTS
Influenza	Human rhino virus
Common cold	H1N1 virus
Tuber culosis	Microsporium
Ring worm	Mycobacterium

17. Correct the answer.

- (a) The eye colour among the human beings are varied as blue, black, brown and green etc., This is called Inter Specific Variation.
(b) The dentition in rabbit and elephant are not the same. This is called as IntraSpecific Variation.

18. Copy the diagram and label any two parts.



19. Rahul forgets his answers, lacks intelligence lacks imagination and reasoning after met an accident. Which area affected to him?

20. Fill in the blanks :

An endocrine gland found in neck is _____(adrenal gland, thyroid gland)

21. This diagram shows the gynoecium of flower Label the following parts.

1. Stigma 2. Ovary



22. Plasma : Fibrinogen
RBC : Carrier of oxygen
WBC : _____
23. Mitral valve is found between _____
(left auricle and left ventricle, right auricle and right ventricle)
24. Master chemists of our body are kidneys justify.
25. Assertion (A) : Green plants do not possess chloroplasts.
Reason (R) Chloroplasts do not carry out photo synthesis
(a) A is correct R is correct (b) A is correct R is wrong
(c) A is wrong R is correct (d) A is wrong R is wrong
26. Which of the following are non-biodegradable?
(Aluminium cans, Hay, Dry twigs, Animal dung, Plastic waste)
27. To interpret what happens in the given situation Hydrogen is found to be a good choice among the alternative fuel, Why?
28. Spot the error in the given statements
(a) Primary treatment is used to remove dissolved and suspended biological matter.
(b) Butane is the Chief component of natural gas.
29. Odd one out
(a) Bio alcohol, green diesel, bioethers, petroleum
(b) Cholera, typhoid, scabies, dysentery
30. Take 10g of Common Salt and dissolve it in 40g of the water. Find the concentration of solution in terms of weight percent.
31. From the table given below, furnish your points of inferences
- | Substance | Solubility at 25°C |
|-----------|--------------------|
| NaCl | 36g |
| NaBr | 95g |
32. From the given examples, form the pair of Isotopes and the pair of Isobars
 ${}_{18}\text{Ar}^{40}$, ${}_{17}\text{Cl}^{35}$, ${}_{20}\text{Ca}^{40}$, ${}_{17}\text{Cl}^{37}$
33. Why does the colour of Copper Sulphate change when an iron nail is kept in it? Justify your answer.
34. Match the following :
- | | |
|----------------------------------|---|
| 1. Displacement reaction | - $\text{CaCO}_3 \rightarrow \text{CaO} + \text{CO}_2$ |
| 2. Double decomposition reaction | - $\text{H}_2\text{S} + \text{Cl}_2 \rightarrow 2\text{HCl} + \text{S}$ |
| 3. Decomposition reaction | - $2\text{H}_2 + \text{O}_2 \rightarrow 2\text{H}_2\text{O}$ |
| 4. Combination reaction | - $\text{NaBr} + \text{AgNO}_3 \rightarrow \text{AgBr} + \text{NaNO}_3$ |
35. Assertion : In thermite welding, aluminium powder and Fe_2O_3 are used.
Reason : Aluminium powder is a strong reducing agent.
(i) Does the reason satisfy the assertion
(ii) Name the process employed for the concentration of oxide ore?
36. (i) Any metal mixed with mercury is called amalgam. Name the amalgam used for dental filling?
(ii) Name the metal used in the process of galvanisation?

37. Complete the following

Formula	IUPAC name
1. _____	Methane
2. $\text{CH}_3\text{CH} = \text{CH}_2$	_____
3. $\text{HC} \equiv \text{CH}$	_____
4. _____	Ethanol

38. Fill in the blanks

(a) Force = mass x acceleration, then Momentum =

(b) Liquid hydrogen is for rocket, then for MRI

39. Spot the error in the given statements.

(a) Two equal and opposite forces whose lines of action coincide are said to constitute a moment in mechanics.

(b) One newton is the force that produces an acceleration of 1ms^{-2} in an object of 1 gram mass.

40. Match the column A with Column B

A	B
1. Current	Volt
2. Electric potential	Ohm
3. Resistance	Watt
4. Electric power	Ampere

41. You are given three resistors of 10Ω , 20Ω , 15Ω connected in parallel with a battery of 2.5V, a key, an ammeter and a voltmeter. Draw the circuit diagram showing the correct connections of all the given components.

42. A 3V torch bulb draws a current 0.6A. Calculate the resistance of the bulb when glowing.

43. Fill in the blanks.

a) For a motor : a permanent magnet, then for a commercial motor :

b) Focal length of a lens : meter, then power of a lens :

44. Assertion : A convex mirrors are commonly used as a rear - view mirrors in vehicle.

Reason : R convex mirror always gives an real image.

(Both A and R are correct, A is correct R is wrong,

A is wrong R is correct, Both A and R are wrong)

45. Pick the odd and one out :

a) Myopia, Migrane, Hypermetropia, Presbyopia

b) Pupil, Iris, Utriculus, Retina

SECTION – III

(Marks : 20)

Note : i) Answer any four questions by choosing one question from each part .

ii) Each question carries five marks.

iii) Draw diagram wherever necessary.

PART I

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46. One of the most fascinating branches in applied embryology is stem cell culture.
- (a) What are stem cells.
 - (b) Name the two kinds of stem cells.
 - (c) Explain the two kinds of stem cells.
47. Kala has delivered a baby.
- (a) Suggest the immunization schedule for the baby in the first six months.
 - (b) What are the diseases that can be cured as per the schedule.

PART II

48. Describe the structure of dicot seed.
49. Classify the following substances :
- (a) Wood, paper, plastic and grasses.
 - (b) Give detailed account on your classification.

PART III

50. (i) Distinguish between atoms and molecules (3)
(ii) Find the gram molecular mass of carbon di oxide [where gram atomic mass of (carbon=12 g, oxygen = 16 g)] (2)
51. (i) Name the enzymes used in manufacture of ethanol from molasses. (2)
(ii) What happens when yeast is added to diluted molasses? (2)
(iii) Write any two evil effects of consuming alcohol. (1)

PART IV

52. (a) Explain inertia with an example
(b) Explain Newton's second law of motion with an example.
53. (a) What is an electric motor?
(b) What is the principle used in an electric motor?
(c) List the factors that enhance power of a commercial motor.

SCIENCE
(PTA - 4)

Time Allowed : 2½ Hours]

[Maximum Marks : 75

Instruction : Check the question paper for fairness of printing. If there is any lack of fairness, inform the Hall Supervisor immediately.

Note : This question paper contains three Sections.

SECTION – I

(Marks : 15)

Note : i) Answer all the 15 questions.

ii) Choose the correct answer from the four alternatives given in the brackets.

1. Diabetes is treated by the biotechnologically produced _____
(Enzyme, Insulin, Vitamins, Vaccine)
2. Pick out the bacterial disease
(Brain fever, Rabies, Tetanus, small pox)
3. Which is the female reproductive part of a flower?
(Calyx, Corolla, Androecium, Gynoecium)
4. In monotropa the special type of root which absorbs nourishment is _____
(Haustoria, Mycorrhizal root, clinging root, Adventitious root)
5. Green house gas which causes climate change and global warming.
(Hydrogen, Oxygen, Nitrogen, Carbon-di-oxide)
6. The value of Avogadro Number is _____
(6.023×10^{22} , 6.023×10^{23} , 6.023×10^{-24} , 6.023×10^{24})
7. $\text{pH} + \text{pOH} = 14$ If the value of pOH of a substance is 3, its pH is _____
(3, 11, 14, 1)
8. Any metal mixed with mercury is called _____
(Alloy, Solution, Amalgam, Salt)
9. To design the body of the aircraft _____ alloys are used.
(Iron, Gold, Silver, Aluminium)
10. The functional group of carboxylic acid is _____
(-OH, -CHO, -C = O -COOH)
11. The momentum of a truck at rest is _____
(very large, very small, zero, infinity)
12. Fuse wire is made up of an alloy of
(Lead and tin, lead and copper, tin and iron, zinc and copper)
13. Voltmeter is used to measure _____
(Potential difference, current, magnetic effect, electrical energy)
14. An electric current through a metallic conductor produces _____
(heat, light, magnetic field, mechanical force)
15. Twinkling of stars is due to _____
(Reflection, dispersion, atmospheric refraction, None of the above)

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SECTION – II**(Marks : 40)****Note : Answer any twenty questions.****20 x 2 = 40**

16. Match the following deficiency disease with suitable vitamins.

Vitamin	Deficiency disease
Vitamin A	Scurvy
Vitamin B	Rickets
Vitamin C	Nyctalopa
Vitamin D	Beri-beri

17. Correct the answer.

(a) Primitive man evolved in Australia.

(b) Theory of natural selection was proposed by Lamarck.

18. Copy the diagram and label the given two parts A and B.

A. Seat of smell

B. Seat of vision

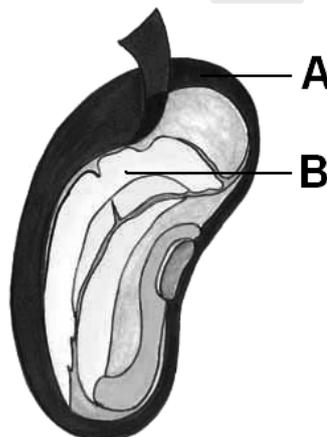


19. Raja's father suffers with diabetic suggest a way to control this problem.

20. Fill in the blanks

The part of the brain which controls emotional reactions in our body is _____ . (Thalamus, Hypothalamus)

21. Label the parts A and B.



22. Based on the relationship, fill up. Whale: Baleen plates, Bat : _____

23. One of the following groups contains a non mammalian animal.

Pick up the group.

(a) dolphin, walrus, porcupine, rabbit

(b) Elephant, pig, horse, monkey

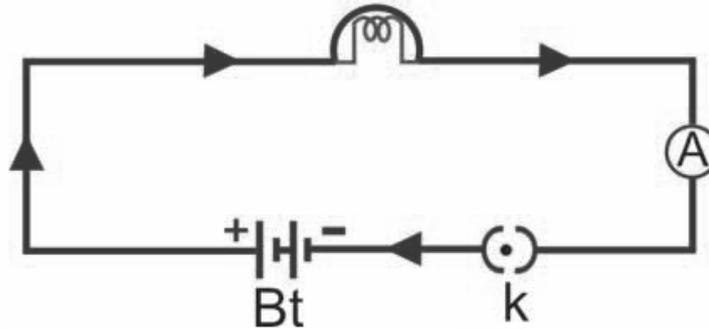
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- (c) deer, cow, buffalo, donkey
(d) dog, cat, crocodile, tiger
24. The blood vessels that carry pure blood from the heart to different parts of the body is _____ (Arteries, veins)
25. Assertion (A) : Chemotropism is the movement of plant parts towards the direction of chemicals.
Reason (R) The roots grow towards soil.
(1) A is correct R is not giving correct reasoning.
(2) A is correct R is wrong
(3) A is wrong R is wrong
(4) A is relevant and R is correct.
26. (a) Which one of the following is an autotroph. (Plants, Cat, Lion, Fish)
(b) What are autotrophs?
27. Hydrogen has the highest mass energy content explain.
28. Find the odd one out.
a. Cold, Dengue fever, Brain fever, Cholera.
b. Coal, Petroleum, natural gas, solar energy.
29. Which of the following is made from vegetable oil and animals fats.
Bio alcohol, Bio diesel, Bio gas
30. Match the following

Solute - solvent	Examples
solid - solid	milk
liquid - liquid	Helium oxygen mixture
Gas - Gas	sugar solutions
solid - liquid	Alloys

31. Solubility of KNO_3 increases with increase in temperature but the solubility of CaO decreases with increase in temperature. Give reasons.
32. Calculate the number of moles in 24.092×10^{22} molecules of water.
33. Powdered calcium carbonate reacts more readily with hydrochloric acid than marble chips. Give reason.
34. Analyse the table and fill up the blanks
- | Indicator | Colour in Acid | Colour in Base |
|-----------------|----------------|----------------|
| Litmus | _____ | Red |
| Phenolphthalein | Colourless | _____ |
35. Assertion (A) : Greenish layer appears on copper vessels if left uncleaned.
Reason (R) :It is due to the formation of a layer of basic copper carbonate.
(i) A and R are correct and relevant to each other.
(ii) A is true but R is not relevant to A.
36. (i) Iron becomes inert when dipped in conc. HNO_3 . Justify your answer.
(ii) What is the percentage of impurities present in blister copper?
37. An organic compound (A) is widely used as a preservative in pickles and has a molecular formula $\text{C}_2\text{H}_4\text{O}_2$. This compound reacts with ethanol to form a sweet smelling compound B.
(i) Identify the compound A and B

- (ii) Name the process and write corresponding chemical equations.
38. Correct the mistakes if any in the following statements.
- (a) One newton is the force that produces an acceleration of 1ms^{-2} in an object of 1 gram mass.
- (b) The physical quantity which is equal to the rate of change of momentum is impulse.
39. The important use of cryogenics is cryogenic fuels. What do you mean by cryogenic fuels.
40. An electric circuit is given below copy and label the parts A, K, Bt



41. Three resistances having the values 5, 10, 30 ohms are connected parallel with each other. Calculate the total circuit resistance.
42. Match the column A with Column B

A	B
Energy Sources	Examples
Fossil fuel	Cow dung
Hydro electric power	Heat
Bio Mass	Coal
Thermal electric power	Water

43. We see rainbow in the sky sometimes after the rain.
- (a) What is a spectrum.
- (b) Write the sequence of colours in a spectrum.
44. Fill in the blanks.
- a) If for myopia concave lens, then, what is for hyper metropia _____ lens.
- b) The focal length of lens is $f(\text{m})$. Then the power of the lens is _____ .
45. Assertion (A) : In traffic signals, red colour light is used to stop vehicles.
Reason (R) : Because red light is having shorter wave length.
(Both A and R are correct, Both A and R are wrong,
A is correct R is wrong, A is wrong R is correct)

SECTION – III

(Marks : 20)

Note : i) Answer any four questions by choosing one question from each part .

ii) Each question carries five marks.

iii) Draw diagram wherever necessary. (4 x 5 = 20)

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PART I

46. Human evolution has a record of changes for the past 15 million years.
- Name the different species of mankind in chronological order from primitive to modern man.
 - When were the primitive caves developed.
 - Narrate the life led by early man like hominids.
47. There is a widespread outbreak of malaria in your area?
- Suggest some controlling measures to the local authorities concerned.
 - Pick out the right symptom for malaria
(Chill and shiver and a rise in temperature / diarrhoea)

PART II

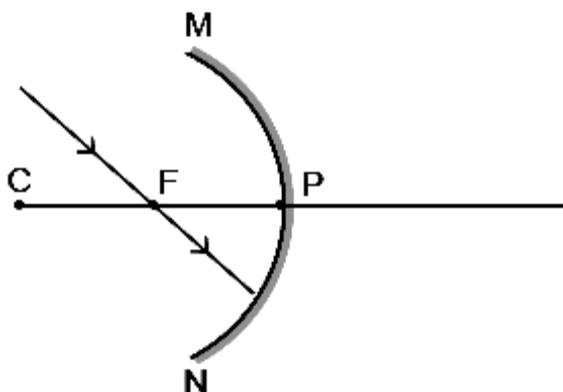
48. Compare aggregate fruit with multiple fruit with suitable examples.
49. Somke, smoke, everywhere smoke.
- Do you agree this situation is good for health.
 - List out the harmful effects of coal burning.

PART III

50. (i) Write down any three postulates of modern atomic theory. (3)
(ii) Write any two applications of Avogadro's Law (2)
51. (i) Homologous series predict the properties of the members of hydrocarbon. Justify, this statement through any three characteristics. (3)
(ii) Give the IUPAC name of the following (2)
(a) formaldehyde (b) Acetone

PART IV

52. (a) Explain Newton's first law of motion with a suitable example.
(b) Mir and ISS space stations have various issues that limit their long-term habitability. Justify it.
53. (i) The ray diagram shown below is introduced to show how a concave mirror forms an image of an object.



- Identify the mistake and draw the correct ray diagram.
 - Write the justification for your corrections.
- (ii) Name the parts of human eye considering the following.
- Dark muscular diaphragm that control the pupil.
 - The screen at where the image is formed by eye lens.

SCIENCE
(PTA - 5)

Time Allowed : 2½ Hours]

[Maximum Marks : 75

Instruction : Check the question paper for fairness of printing. If there is any lack of fairness, inform the Hall Supervisor immediately.

Note : This question paper contains three Sections.

SECTION – I
(Marks : 15)

Note : i) Answer all the 15 questions.

ii) Choose the correct answer from the four alternatives given in the brackets.

1. Theory of natural selection was proposed by _____
(Charles Darwin, Hugo-de-vries, Gregor Johann Mendel, Jean Baptise Lamarck)
2. The most serious form of malaria is caused by Plasmodium _____
(P.Ovale, P.Malariae, P.falciparum, P.Vivax)
3. If a water soaked seed is pressed, a small drop of water comes out through _____
(Stomata, Lenticel, micropyle , radicle)
4. The roots of coconut tree are seen away from the plant. Such kind of movement of root for want of water is _____
(Phototropism, Geotropism, chemo tropism , Hydrotropism)
5. _____ is the chief component of Coal.
(sulphur, Carbon, Hydrogen, Nitrogen)
6. If carbon disulphide is a solvent in a given solution, then the solution is ____
(Aqueous solution, Non-aqueous solution, Standard solution, True solution)
7. $Zn + 2HCl \rightarrow ZnCl_2 + H_2\uparrow$
The above reaction is an example of
(Combination reaction, Double displacement reaction, Displacement reaction, Decomposition reaction)
8. A process employed for the concentration of sulphide ore is _____
(Gravity separation, Froth floatation, Magnetic separation, Chemical method)
9. Modern periodic law states that the physical and chemical properties of elements are the periodic function of their _____
(atomic weight, mass number, atomic number, neutron number)
10. IUPAC name of first member of alkyne is _____
(methane, methyne, ethene, ethyne)
11. The weight of 50 Kg person at the surface of earth is _____
(50 N, 35 N, 380 N, 490 N)

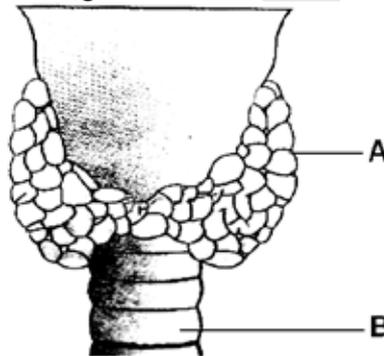
12. The potential difference required to pass a current 0.2 A in a wire of resistance 20 ohm is _____
(100 V, 40 V, 0.1 V, 4V)
13. Fuse is a piece of wire made of an alloy _____
(63% lead 37% tin, 37% lead 63% tin,
65% lead 35% tin, 35% lead 65% tin)
14. The focal length of a concave lens is 2.m then the power of the lens is ____
(0.2D, -0.2D, 0.5 D, -0.5D)
15. The magnification produced by a mirror is $\frac{1}{3}$, then the type of mirror is ____
(Concave, Convex, Plane, all the above)

SECTION – II**(Marks : 40)****Note : Answer any twenty questions.****20 x 2 = 40**

16. Match the followings.
- | | | |
|----------------------|---|---------------|
| a) Garden Pea plant | - | Dolly |
| b) Mono hybrid cross | - | Vaccine |
| c) Edward Jenner | - | 3 : 1 |
| d) Dr. Ian Wilmut | - | Pisum sativum |
17. You suspect that your friend is suffering from Amoebic dysentery. What are the questions you will ask your friend to confirm the disease.
18. Copy the diagram and label any two parts in the given group (cyton, axon, dendron, myelin sheath)



19. Mark A and B in the given diagram



20. a) Unipolar neurons are found in _____
- | | |
|-----------------------------|-------------------------|
| a) Brain | b) Spinal chord |
| c) Embryonic nervous tissue | d) Adult nervous tissue |
- b) In meiosis -1, the pairing of homologous chromosomes take place during stage.
- | | | | |
|--------------|-------------|--------------|--------------|
| a) leptotene | b) Zygotene | c) Pachytene | d) diplotene |
|--------------|-------------|--------------|--------------|

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21. Draw the label any two parts of the monocot seed.



22. Spot the error in the given statement and correct it.

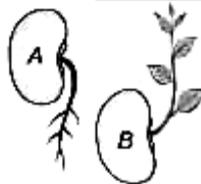
The closure of auriculo ventricular valve of the heart produce “dubb” sound, opening of such valve produce “lubb” sound.

23. Fill up the blanks

a) The heart beat of a normal human is _____ times in a minute. (62, 72)

b) _____ are the only mammals capable of powered flight. (Bat, Kangaroo)

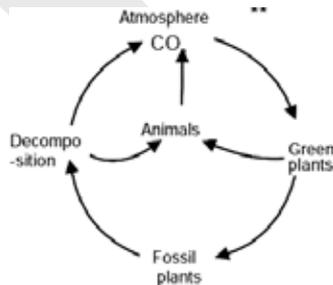
24. Observe the diagram given below.



a) Mention the type of movements shown in figure A and B.

b) How does the movement differ from the movement of mimosa.

25. Answer the followings.



a) Name the processes noted as No.1 and 3.

b) Define the process 1.

26. A non renewable resource is a natural resource. If it is replaced by natural process at a rate comparable or faster than its rate of consumption by humans.

Read this statement and confirm whether it is correct, or incorrect. If it is incorrect give correct statement.

27. “Stagnation of waste water from residential house and industries causes variety of communicable diseases”.

Arise questions related to the above statement.

28. a) Which is a non-renewable resource?

(Coal, petroleum, natural gas, all the above)

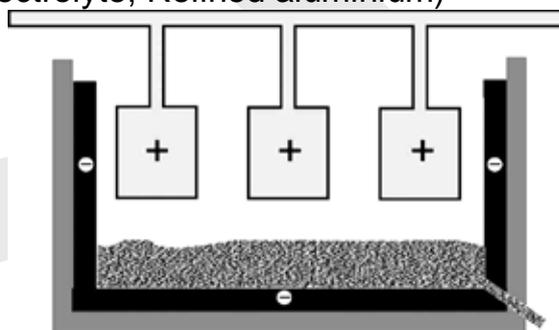
b) is the Chief component of natural gas.

(ethane, methane, propane, butane)

29. In order to transport substances from one part of the body to the other, the circulatory system has evolved.
- who discovered the circulation of Blood in man?
 - How many chambers are there in the human heart?
30. You have prepared a saturated solution of sugar at a given temperature. Is it possible to dissolve some more grams of sugar to this solution at the same temperature. Give reason.
31. Match the solution with examples.

Solution	Examples
a) Solid in solid	cloud
b) Solid in gas	Cheese
c) Liquid in gas	Alloys
d) liquid in Solid	Smoke

32. One mole of any substance contains 6.023×10^{23} particles. If 3.0115×10^{23} particles are present in CO_2 . Find the number of moles.
33. The hydroxyl ion concentration of a solution is $1.0 \times 10^{-4}\text{M}$. Find the pH of the solution.
34. Identify the colour of the precipitate :
- When aqueous solution of silver nitrate and sodium chloride are mixed.
 - Name the acid present in curd.
35. "Electrolytic refining method is used to purify copper". – Raise the questions related to the above statement.
36. Give below is the diagram of electrolytic refining of Aluminium. Redraw it and label the parts given below.
(Graphite rods, Electrolyte, Refined aluminium)



37. Denaturation of ethyl alcohol makes it unfit for drinking purposes. – Reason out.
38. Fill in the blanks.
- Force = mass x acceleration then momentum =
 - Liquid hydrogen is for rocket, then for MRI.
39. Correct the mistakes, if any, in the following statements.
- Mass is measured using spring balance and weight is measured using physical balance.
 - In the absence of external balanced forced the total momentum of a system of objects remains unchanged or conserved during collision.

40. Match the components and its symbols.

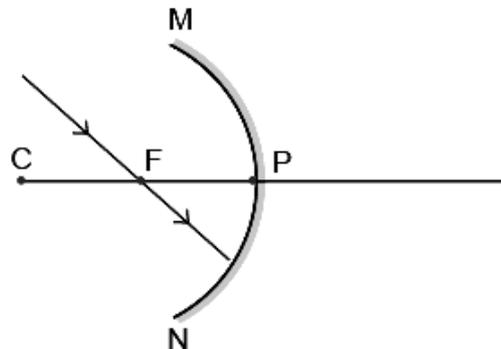
Components	Symbols
a) An electrical cell	
b) Closed plug key	
c) A resistor	
d) A battery	

41. Three resistances having the values 5Ω , 10Ω , 30Ω are connected parallel with each other. Calculate the total circuit resistance.

42. In volta cell the anode is _____ (Iron / Copper) and in Lechlanche cell the cathode is _____. (Zinc / Copper)

43. In traffic signals Red colour light is used to stop vehicles. Give reason.

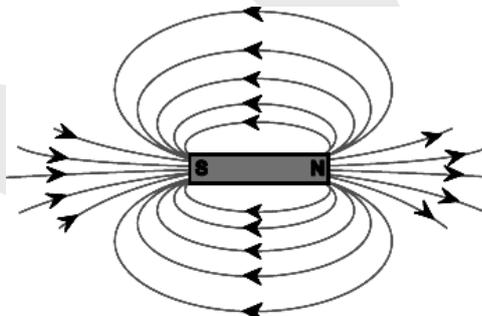
44. The ray diagram shown below is introduced to show how a concave mirror forms an image of an object.



a) Identify the mistake and draw the correct ray diagram.

b) Write your justifications for your corrections.

45.



a) The above diagram represents _____

b) Mention any one property of the above.

SECTION – III

(Marks : 20)

Note : i) Answer any four questions by choosing one question from each part .

ii) Each question carries five marks.

iii) Draw diagram wherever necessary.

(4 x 5 = 20)

PART I

46. a) Write the uses of Bio-sensor and Bio-chips.
 b) Write about science today-Gene therapy.
47. Describe the life cycle of malarial parasite - plasmodium.

PART II

48. a) Fruit is the product of fertilization. Is there any fruit is formed without the act of fertilization.
 b) Represent the classification of fruits in a diagrammatic sketch.
49. a) In your area there is scarcity of water due to this the people are affected. So what are the measures to be taken by you to meet out the scarcity of water.
 b) What is food chain?

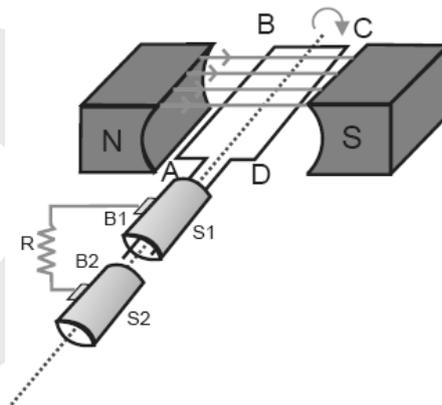
PART III

50. a) Define relative Atomic Mass (Based on carbon scale) (2)
 b) Define – Mole (2)
 c) What is the atomicity of oxygen (1)
51. a) What is the Functional group of alcohol? (1)
 b) Write the Esterification reaction. (2)
 c) Write any two uses of Ethanol . (2)

PART IV

52. a) $F = \frac{Gm_1m_2}{d^2}$ is the mathematical form of Newton's law of gravitation.
 Give the statement of Newton's law of gravitation.
 b) Chandrayaan achieved 95% of its planned objectives. Justify it.

53.



- a) Redraw the above diagram.
 b) This diagram represents _____
 c) Label the parts of the diagram.
 d) Write the principles of the name of the device denoted by this diagram.
 e) Show the method of finding direction of current in this device.

SCIENCE
(MARCH 2012)

Time Allowed : 2½ Hours]

[Maximum Marks : 75

Instruction : Check the question paper for fairness of printing. If there is any lack of fairness, inform the Hall Supervisor immediately.

Note : This question paper contains three Sections.

SECTION – I

(Marks : 15)

Note : i) Answer all the 15 questions.

ii) Choose the correct answer from the four alternatives given in the brackets.

15 x 1 = 15

1. Theory of natural selection was proposed by _____
(Charles Darwin, Hugo de Vries, Gregor Johann Mendel, Jean Baptise Lamarck)
2. The most serious form of malaria is caused by _____
(Plasmodium ovale, Plasmodium malariae, Plasmodium falciparum, Plasmodium vivax)
3. In sexual reproduction
(Fertilization, Germination, Regeneration, Pollination)
4. The process in which metabolic wastes are removed is _____
(Conduction, Excretion, Respiration, all of these)
5. What is called as black gold?
(Hydrocarbons, Coal, Petroleum, Ether)
6. _____ is opaque in nature.
7.
$$\text{Zn} + 2\text{HCl} \longrightarrow \text{ZnCl}_2 + \text{H}_2 \uparrow$$

The above reaction is an example of _____
(Combination reaction, Double displacement reaction, Displacement reaction, Decomposition reaction)
8. Number of periods in modern periodic table is _____
(7, 17, 8, 18)
9. The ore of Aluminium is _____ .
(Haemetite, Magnetite, Bauxite, Siderite)
10. Alkanes have the general formula $\text{C}_n\text{H}_{2n+2}$. The molecular formula of the first hydrocarbon is _____
(CH_4 , C_2H_4 , C_2H_6 , C_2H_2)
11. The freezing of biotechnology products like vaccines requires _____ freezing system.
(Helium, Nitrogen, Ammonia, Chlorine)

S.THIYAGARAJAN, Msc.,B.ed., _____

(10 BIOLOGY)

P.G. ASST. IN BIOLOGY

Cell: 9944664846

12. The potential difference required to pass a current 0.2 A in a wire of resistance 20 ohm is _____
 Note : $V = IR$
 (100 V, 4 V, 0.01 V, 40 V)
13. The symbol of Ammeter is _____
 (V, A, G, I)
14. A device which converts electrical energy into mechanical energy is _____
 (Generator, Motor, Transformer, Power supply)
15. An object is placed 25 cm from a convex lens whose focal length is 10 cm. the image distance is _____
 (50 cm, 16.66 cm, 6.66 cm, 10 cm)

SECTION – II
(Marks : 40)

Note : Answer any twenty questions.

20 x 2 = 40

16. Consider the following statement :
- a. Somatic variation pertains to body cells and it is inherited.
 - b. The genotype of a character is influenced by factors called chromosomes.
- Do you agree with the above statements ? If not, give correct statements.
17. Match the following vitamins with deficiency diseases :

S.No.	Vitamin	Deficiency disease
i)	Vitamin A	Scurvy
ii)	Vitamin B1	Rickets
iii)	Vitamin C	Nyctalopa
iv)	Vitamin D	Beri-beri

18. Copy the diagram of human brain and label the parts A, B :
- a. Seat of smell
 - b. Seat of vision



19. Consider the following statements :

Assertion (A) : Pituitary gland is called as the conductor of endocrine orchestra.

Reason (R) : Some of the endocrine glands are regulated by the pituitary gland.

Now select your answer according to the coding scheme given below:

- A) (A) is correct and (R) is not giving correct reasoning
- B) (A) is correct, but (R) is wrong
- C) (A) is wrong, but (R) is correct
- D) Both (A) and (R) are correct

20. What are the functions of cerebrum?

21. Draw the given diagram of paddy seed and label any two parts :



22. 'Master chemists of our body are kidneys. Give reasons.

23. Fill in the blanks:

- a. Sensitive whiskers are found in _____ .
- b. The tusks of elephants are modified _____ .

24. Draw the given diagram of L.S. of kidney and label the following parts :

- a. Medullary pyramid
- b. Ureter



25. Sugar is converted into alcohol.

- a. From the above statement what kind of process takes place?
- b. Which micro-organism is involved?

26. Study the food chain below. Correct it and convert into a pyramid of energy.

Mulberry → Sparrow → Caterpillar → kite

27. Find out the odd one :

- a. Bio alcohol, green diesel, bio ethers, petroleum
- b. Cholera, typhoid, scabies, dysentery

28. Consider the following statements :
- Assertion (A) : Bio-diesel is made from vegetable oil and animal fats.
Reason (R) : It is also called as bio ethanol
- Both (A) and (R) are correct
 - (A) is correct, but (R) is wrong
 - (A) is correct and (R) is relevant
 - (A) is wrong, but (R) is correct
29. What are the benefits of household waste water recycling systems?
30. You have prepared a saturated solution of sugar. Is it possible to dissolve some more grams of sugar to this solution? Justify your stand.
31. Take 10 g of common salt and dissolve it in 40 g of water. Find the concentration of solution in terms of weight per cent.
32. Analyze the table and fill in the blanks :

Gas	Atomic mass	Molecular mass	Atomicity
Ozone	16	48	---
Nitrogen	14	---	2

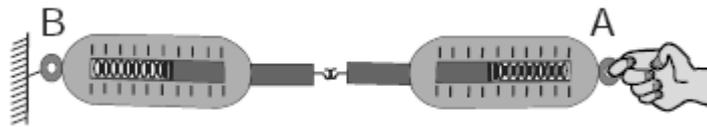
33. Read the redox reaction given below and answer the questions :
- $$\text{CuO} + \text{H}_2 \longrightarrow \text{Cu} + \text{H}_2\text{O}$$
- Conversion of CuO into Cu is called _____ .
 - Conversion of H₂ into H₂O is called _____ .
34. The pH values of certain substances are given below :

Substance	pH value
i) Human blood	7.4
ii) Baking soda	8.2
iii) Vinegar	2.5
iv) Household Ammonia	12

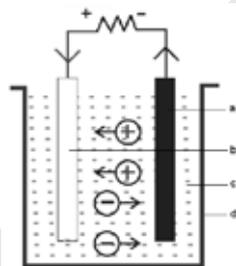
35. Can rusting of iron nail occur in distilled water? Justify your answer.
36. X is a silvery white metal. X reacts with oxygen to form Y. The same compound Y is obtained from the metal X on reaction with Steam, with the liberation of hydrogen gas. Identify X and Y.
37. Match the following :

Compounds	Functional Groups
Alcohol	$>\text{C} + \text{O}$
Aldehyde	- OH
Ketone	- COOH
Carboxylic acid	- CHO

38. Observe the figure and write the answer :



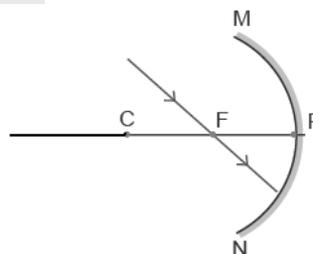
- a. The force which balance A exerts on balance B is called _____ .
 - b. The force of balance B on balance A is called _____ .
39. $F = Gm_1m_2/d^2$ is the mathematical form of Newton's law of gravitation. Then give the statement of Newton's law of gravitation.
40. Voltaic cell diagram is given below. Label the parts marked a, b, c, d.



41. Match the following :

S.No.	Scientist	Invention
i)	Michael Faraday	First battery
ii)	George Simon	Radioactivity
iii)	Volta	Dynamo
iv)	Henry Becquerel	Ohm's law

42. γ -rays are harmful radiations emitted by natural radioactive substances.
- a. Which are other radiations emitted from such substances?
 - b. What is the unit of nuclear radiation?
43. The ray diagram shown below is introduced to show how a concave mirror forms an image of an object :



44. The focal length of a concave lens is 2 m. Calculate the power of the lens.
(Note : $P = 1/f$)
45. Find out the odd one :
- a. Angle of incidence, angle of refraction, angle of emergence, right angle .
 - b. Convex mirror, concave lens, plane mirror, convex lens .

SECTION – III**(Marks : 20)**

Note : i) Answer any four questions by choosing one question from each part .

ii) Each question carries five marks.

iii) Draw diagram wherever necessary. (4 x 5 = 20)

PART – I

46. a. What is Genetic engineering?
b. What are the uses of Genetic engineering?
47. a. Vaccine is to prevent the body from diseases. Suggest the immunization schedule for the baby in the first six months.
b. What are all the diseases that can be prevented as per the schedule?

PART - II

48. Fruit is the product of fertilization. Is there any fruit formed without the act of fertilization?
Represent the classification of fruits in a diagrammatic sketch.
49. Smoke, smoke, everywhere smoke. Do you agree this situation is good for health? List out the harmful effects of coal burning.

PART - III

50. a. Calculate the gram molecular mass of water from the values of gram atomic mass of hydrogen and oxygen.
Gram atomic mass of hydrogen = 1 g
Gram atomic mass of oxygen = 16 g
- b. Modern atomic theory takes up the wave concept, principle of uncertainty and other latest discoveries to give a clear-cut picture about an atom. State any three findings of modern atomic theory.
51. a. Ethanoic acid reacts with ethanol in the presence of concentrated H_2SO_4 .
a. Name the organic product formed.
b. Give the name of the reaction.
c. What is the role of H_2SO_4 in the above reaction?
- b. The molecular formula of an organic compound is CH_3COOH .
a. Write the IUPAC name of this compound.
b. Give one use of this compound.

PART IV

52. a. Newton's first law of motion gives a qualitative definition of force. Justify.
- b. Which would require a greater force for accelerating – a 2 kg of mass at 4 ms^{-2} or a 3 kg of mass at 2 ms^{-2} ?
53. a. What are the defects of eye? How are these rectified?
- b. Observe the figure and answer the following questions :
- What does the given diagram represent?
 - Write the principle of the device denoted in the given diagram.

SCIENCE
(OCTOBER 2012)

Time Allowed : 2½ Hours]

[Maximum Marks : 75

Instruction : Check the question paper for fairness of printing. If there is any lack of fairness, inform the Hall Supervisor immediately.

Note : This question paper contains three Sections.

SECTION – I
(Marks : 15)

Note : i) Answer all the 15 questions.

ii) Choose the correct answer from the four alternatives
given in the brackets.

15 x 1 = 15

1. _____ worked out the first scientific experiment study on heredity.
(Ian Wilmut, Gregor Johan Mendel, Charles Darwin, Lamarck)
2. The viral disease is
(Rabies, Cholera, Malaria, Typhoid)
3. A seed dispersed by wind is called
(Autochory, Anemochory, Hydrochory, Zoochory)
4. The autotrophic nutrition requires
(CO₂ and water, chlorophyll, sunlight, all of these)
5. What is called as 'black gold'?
(Hydrocarbons, coal, petroleum, Ether)
6. The size of particles in true solution is
(10 Å to 1000Å, 1 Å to Å, more than 1000 Å, less than 1000 Å)
7. Metal + Acid → Salt + _____
(Oxygen, Water, Carbon, Hydrogen)
8. _____ are called coinage metals.
((Copper, Silver and gold), (Copper, Bras and Gold), (Copper, Brass and Silver), (Copper, Silver and Aluminium))
9. The molecular formula for Bauxite is
(Al₂ O₃; Al₂ O₃. 5H₂O; Al₂ O₃. 2H₂O; Al₂ O₃. 10H₂O)
10. Buckmainster Fullarence is the allotropic form of
(Nitrogen, Carbon, Oxygen, Sulphur)
11. The weight of 50 kg person at the surface of earth is
(50N, 490 N, 35 N, 380 N)
12. The unit of electric current is
(ampere, volt, watt, kilo-watt)

13. The energy produced when 1 kg of a substance is fully converted into energy is
($9 \times 10^{16} \text{J}$, $9 \times 10^8 \text{J}$, $18 \times 10^8 \text{J}$, $18 \times 10^{16} \text{J}$)
14. The field of view is maximum for
(plane mirror, concave mirror, convex mirror, spherical mirror)
15. An electric current through a metallic conductor produces _____ around it.
(heat, light, magnetic field, mechanical force)

SECTION – II**(Marks : 40)****Note : Answer any twenty questions.****20 x 2 = 40**

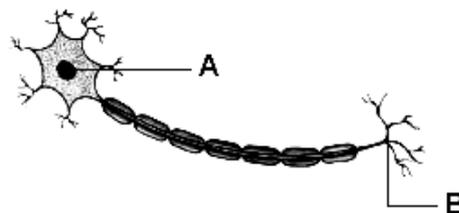
16. Match the following vitamins with deficiency diseases :

Vitamin	Deficiency disease
a) Vitamin A	- Rickets
b) Vitamin B1	- Nyctalopia
c) Vitamin C	- Haemorrhage
d) Vitamin D	- Pellagra

17. Do you agree with the following statements? If not, give correct statements:

- a) Primitive man evolved in Australia.
- b) Between 7500-1000 years the modern *Homo sapiens*.

18. Copy the diagram of neuron and label the parts A and B



19. Consider the following statements :

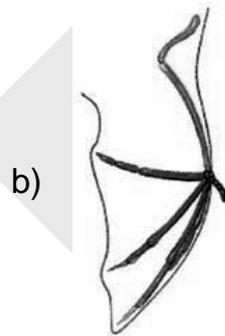
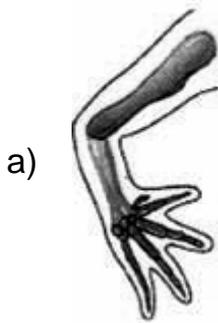
Assertion (A) : Pituitary gland is called as the conductor of endocrine orchestra.

Reason (R) : Some of the endocrine glands are regulated by the pituitary gland.

Now select your answer according to the coding scheme given below:

- A) Both (A) and (R) are correct and (R) is given correct reasoning of (A)
- B) (A) is correct, but (R) is wrong
- C) (A) is wrong, but (R) is correct
- D) (A) is correct and (R) is not giving correct reasoning

20. Thyroid gland secretes a hormone called thyroxine. Give any two functions of this hormone.
21. In Balsam plant the seeds fall off away from the mother plant.
a) Is the statement correct or incorrect?
b) Give reason.
22. Based on the modifications make the parts:
a) _____ : tusk of elephant
b) _____ : quills of porcupine.
23. Identify the forelimbs of vertebrates.

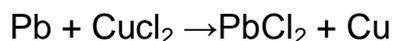


24. Which organ is known as 'Master chemist'? Why?
25. Why should we eat?
26. Pick the odd one out:
a) Plant, grasshopper, frog, tiger, snake
b) Anaimalai, Point Calimere, Vedanthangal, Mundanthurai
27. Name any four Bio-fuels.
28. Consider the following statements:
Assertion (A): Waste water is not used in agriculture.
Reason (R): It contains water minerals, nutrients and its disposal is often expensive.
A) (A) is correct, but (R) is wrong
B) (A) is wrong, but (R) is correct
C) Both (A) and (R) are wrong
D) Both (A) and (R) are correct.
29. Common salt dissolves in water easily. Give reason.
30. Find the concentration of a solution in terms of weight per cent if 20 g salt is dissolved in 50 g of water.

31. Analyse the table and fill in the blanks:

	Substance	Mass	No. of moles
a)	Al	81 g	---
b)	Fe	---	0.5

32. a) Identify the type of the following reaction to which it belongs:



b) Can copper displace zinc or lead from their salt solution? Give reason.

33. The hydroxyl ion concentration of a solution is 1.0×10^{-9} M. what is the pH of the Solution?

34. Fill in the blanks:

a) On passing steam over red hot iron _____ is formed with hydrogen.

(FeO, Fe₂O₃, FeO₄, FeCO₃)

b) The components of Duralumin are

(Al, Mg, Mn, Cu / Al, Mn, Zn, C)

35. X is a silvery white metal. X reacts with oxygen to form Y. The same compound is obtained from the metal on reaction with steam with the liberation of hydrogen gas. Identify X and Y.

36. Match the following:

a) Ethene - C₃H₄

b) Ethane - C₃H₆

c) Propyne - C₂H₄

d) Propene - C₂H₆

37. Fill in the blanks:

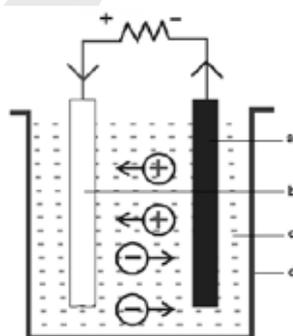
The space stations _____ and _____ have been monolithic.

(Salyut, Mir, ISS, Skylab)

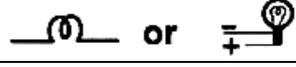
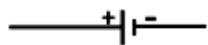
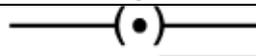
38. To every action there is equal and opposite reaction. Explain action and reaction with an example.

39. Volta cell diagram is given below:

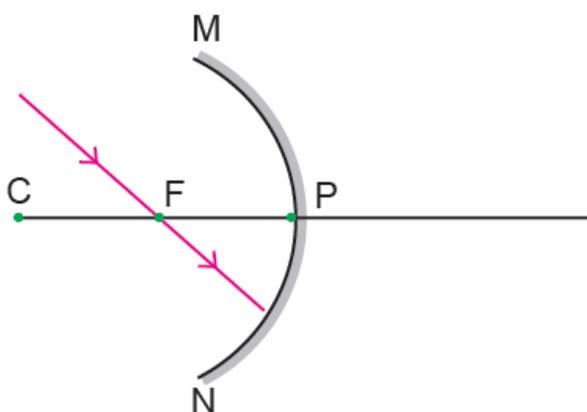
Label the parts.



40. Match the following :

	COMPONENTS	SYMBOLS
a)	Plug key or switch (closed)	
b)	A wire joint	
c)	Electric bulb	
d)	Electric cell	

41. Good source of energy should possess some special characteristics. List them.
42. The ray diagram shown below is introduction to show how a concave mirror forms an image of an object.
- a) Identify the mistake and draw the correct ray diagram.
- b) Write the justification for your corrections.



43. The focal length of a concave lens is 4 m. Calculate the power of the lens (Note: $P = 1/f$)
44. Correct the mistakes. If any, in the following statements:
- a) Magnetic field is a quantity that has magnitude only.
- b) The magnetic lines emerge from the south pole and merge at the north pole.

SECTION – III

(Marks: 20)

Note: i) Answer any four questions by choosing one question from each part.

ii) Each question carries five marks.

iii) Draw diagram wherever necessary.

(4 x 5 = 20)

PART – I

45. a. Define Genetic engineering?
b. What are the benefits of Genetic engineering?

S.THIYAGARAJAN, Msc.,B.ed., _____

(10 BIOLOGY)

P.G. ASST. IN BIOLOGY

Cell: 9944664846

46. Write a detailed note on Malaria disease.

PART - II

47. Describe the structure of a dicot seed with a neat diagram.

48. a) What is green chemistry?

c) Write any two principles of green chemistry.

d) Mention some of the products produced by the process of green chemistry.

PART - III

49. a. State any three findings of modern atomic theory.

b. Write down any two applications of Avogadro's law.

50. a. An organic compound *A* is widely used as a preservative in pickles and has a molecular formula $C_2H_4O_2$. This compound reacts with ethanol to form a sweet smelling compound *B*.

i) Identify the compounds (*A*) and (*B*)

ii) Name the process and write the corresponding chemical equation.

b) Write the common name and IUPAC name for the following:

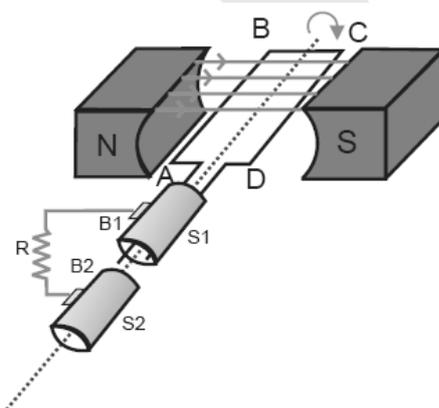
i) $CH_3CH_2COCH_3$

ii) $HCOOH$

51. a) Tabulate the differences between mass and weight.

b) What are the uses of cryogenic techniques?

52.



a) Copy the diagram of an AC generator and label the parts.

b) What is an alternating current?

c) Write the principle of the above device.

d) What are the differences between alternating current and direct current?

SCIENCE
(JUNE 2012)

Time Allowed : 2½ Hours]

[Maximum Marks : 75

Instruction : Check the question paper for fairness of printing. If there is any lack of fairness, inform the Hall Supervisor immediately.

Note : This question paper contains three Sections.

SECTION – I
(Marks : 15)

Note : i) Answer all the 15 questions.

ii) Choose the correct answer from the four alternatives given in the brackets.

15 x 1 = 15

1. _____ is alternate expression of same gene.
(Alleles, Variateion, Speciation, Gene, Allelomorph)
2. An example for protozoan infecting our intestine is _____.
(Plasmodium vivax, Entamoeba histolytica, Trypanosoma gambiense, Taenia solium)
3. The fertilized ovary is a fruit. The fruit develops from a single flower with multicarpellary. Apocarpous superior ovary is _____.
(aggregate fruit, composite fruit, simple fruit, multiple fruit)
4. The xylem in the plants are responsible for _____.
(transport of water, transport of food, transport of amino acid, transport of oxygen)
5. What is called as black gold?
(Hydrocarbons, Coal, Petroleum, Ether)
6. The mixture of gases used by deep sea divers is _____.
(Helium-Oxygen, Oxygen-Nitrogen, Helium-Neon, Neon-Oxygen)
7. For human blood the pH range is _____ to _____.
(4.5 -5.6, 6.5-7.5, 7.35-7.45, 4.4-5.5)
8. First period contains only two elements, one is hydrogen and the other is _____.
(Nitrogen, Oxygen, Helium, Neon)
9. Bauxite is the ore of _____.
(Aluminium, Sodium, Copper, Iron)
10. IUPAC name of the first member of alkyne is _____.
(ethane, ethyne, ethane, acetylene)
11. The freezing of biotechnology products like vaccines requires _____ freezing systems.
(helium, nitrogen, ammonia, chlorine)

S.THIYAGARAJAN, Msc.,B.ed., _____

(10 BIOLOGY)

P.G. ASST. IN BIOLOGY

Cell: 9944664846

12. Kilowatt-hour is the unit of _____.
(potential difference, electric power, electric energy, electric charge)
13. The main source of bio-mass energy is _____.
(coal, heat energy, thermal energy, cow-dung)
14. An electric current passing through a metallic conductor produces _____ around it.
(heat, light, magnetic field, mechanical force)
15. The defect myopia can be corrected by using a _____.
(convex lens, concave lens, concave mirror, convex mirror)

SECTION – II

(Marks : 40)

Note : Answer any twenty questions.

20 x 2 = 40

16. Name the variation in the following cases :
The eye colour among the human beings are varied as blue, black, brown, green, etc.
 - a. This is called as _____ variation.
The dentition in rabbit and elephant are not the same.
 - b. This is called as _____ variation.
17. Ramya is suffering from bleeding gum and loosening teeth. On a diagnosis it was found to have been caused by vitamin deficiency. Suggest Ramya the kind of vitamin that is lacking in her food and you're your friend the name of deficiency disease that she suffers from.
 - a. Vitamins
 - b. Deficiency diseases and
 - c. Symptoms, Match them properly.

A Vitamins	B Deficiency diseaseS	C Symptoms
Vitamin A	Rickets	Defective calcification of bones
Vitamin B1	Scurvy	Nervous disorder
Vitamin C	Beri-beri	Bleeding gum
Vitamin D	Nyctalopa	Night blindness

18. Copy the diagram and label any two parts in the group given.
(cyton, axon, dendron, endplate)



19. Correct the statements if they are wrong :
- Alpha cells produce insulin and beta cells produce glucagon.
 - Ovary produces eggs and androgen.
20. Copy the diagram and mark (A) and (B) in the parts of the brain corresponding with the functions :
- Seat of smell
 - Seat of vision



21. In balsam plant the seeds fall off far away from the mother plant.
- Is the statement correct or incorrect?
 - Give reason.
22. Copy the diagram and label any four parts with heading.



23. Fill the tabular column :

EXCRETORY ORGAN	EXCRETORY PRODUCTS	SENT OUT AS
Lungs	Carbondioxide and water vapour	–
Skin	–	Sweat

24. What are the four compositions of circulatory system of man?
25. Match the methods of nutrition of special organs with suitable examples :

Autotrophs	Mycorrhiza	Cuscutta
Parasites	Chlorophyll	Monotropa
Saprophytes	Haustoria	Hibiscus

26. Name the plants which are used in the production of bio-plastic.
27. Write any four liquid bio-fuels used for transportation.

28. Match the suitable renewable and non-renewable sources :

SOURCES	A	B	C
Renewable	Coal	Wind	Petroleum
Non-renewable	Hydrogen	Natural gas	Solar energy

29. Pick out the suitable appliances to conserve the electric energy :

Fluorescent bulbs, copper choke, solar water heater, electric water heater, tungsten bulbs, electronic choke.

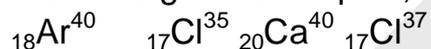
30. Take 10 g of common salt and dissolve it in 40 g of water. Find the concentration of solution in terms of weight per cent.

31. Distinguish between the saturated and unsaturated solutions using the data given below at a temperature of 25°C.

a. 16 g NaCl in 100 g of water.

b. 36 g NaCl in 100 g of water.

32. From the given examples, form the pair of isotopes and the pair of isobars.



33. What type of chemical reaction takes place when

a. Limestone is heated?

b. A magnesium ribbon is burnt in air?

34. On strong heating, crystals of lead nitrate produce _____ gas and the colour of gas is _____

35. Consider the following statements :

Assertion (A) : Greenish layer appears on copper vessels if left uncleaned.

Reason (R) : It is due to the formation of layer of basic copper carbonate.

Choose the correct option :

a. Assertion (A) and Reason (R) are correct and relevant to each other.

b. Assertion (A) is true, but Reason (R) is not relevant to the Assertion (A).

36. Can rusting of iron nail occurs in distilled water ? Justify your answer.

37. Write the common names and IUPAC names of the following :

a. CH_3COOH_3

b. CH_3COOH

38. Fill in the blanks :

a. Force = Mass x Acceleration, then momentum = _____

b. Liquid hydrogen is for rocket, then _____ for MRI.

39. Correct the mistakes, if any in the following statements :

- One Newton is the force that produces an acceleration of 1 ms^{-2} in an object of 1 gram mass.
- Action and reaction is always acting on the same body.

40. Match the components with symbols :

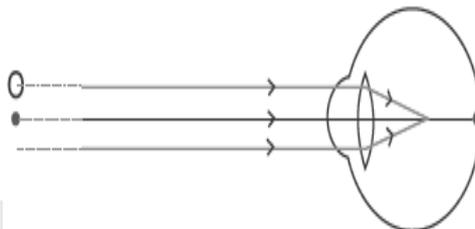
S.NO.	COMPONENTS	SYMBOLS
1.	A wire joint	
2.	Plug key or switch (open)	
3.	A resistor	
4.	An electric cell	

41. Radium and polonium were discovered by _____ and _____ .
(Marie Curie, Pierre Curie, Watson, Otto Hahn)

42. Correct the mistakes, if any in the following statements :

- A good source of energy would be one which would do a small amount of work per unit volume of mass.
- Any source of energy we use to do work is consumed and can be used again.

43.



- _____ defect of eye.
- _____ lens is used to correct the defect.

44. A convex mirror used for rear-view on an automobile has a radius of curvature of 3 m. If a bus is located at 5 m from this mirror. Find the position and nature of the image.

45. Find out the odd one :

- Angle of incidence, angle of refraction, angle of emergence, right angle.
- Convex mirror, concave lens, plane mirror, convex lens.

SECTION – III
(Marks : 20)

Note : i) Answer any four questions by choosing one question from each part .

ii) Each question carries five marks.

iii) Draw diagram wherever necessary. (4 x 5 = 20)

PART – I

46. a. What is bio-sensor?
b. State any four applications of bio-sensor in medicines.
47. Kala has delivered a baby.
a. Suggest the immunization schedule for the baby in the first six months.
b. What are all the diseases that can be prevented as per the schedule?

PART - II

48. Describe the structure of dicot seed.
Draw diagram of dicot seed and label the parts.
49. a. What is global village?
b. What is the use of global village?
c. What are the technologies used in global village?

PART - III

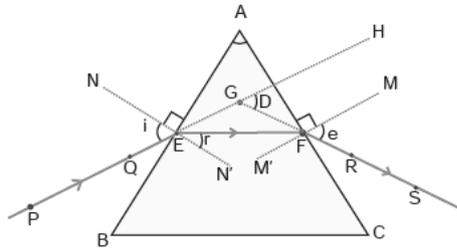
50. a. If 90 g of water is taken in a beaker, find the number of moles in it.
b. Atoms and molecules are the building blocks of matter. List out any three differences between them.
51. Ethanoic acid reacts with carbonates and bicarbonates.
a. Write the balanced equation.
b. Give three uses of ethanoic acid.

PART – IV

52. a. Newton's third law of motion :
For every action there is an equal and opposite reaction. Explain this law using one illustration.
- b. $F = Gm_1 m_2 / d^2$ is the mathematical form of Newton's law of gravitation. Give the statement of Newton's law of gravitation.

53. a. Label the following, in the following diagram :

- i) Incident ray
- ii) Refracted ray
- iii) Emergent ray
- iv) Angle of deviation



b. The refractive index of diamond is 2.42. What is the meaning of this statement in relation to speed of light?
