ANJIT

Educating for Transmission of Civilization

AIIMS-NEET-JEE-ICAR-TECH ACADEMY

Since 2018

Science Half Yearly Paper

Chapter Included___

1. Chemical Reaction & Chemical Equation
2. Acids, Bases & Salts
3. Light Refraction & reflection
4. Electricity
5. Life Process
6. Control and Coordination

Based on New CBSE Pattern

M.M = 80 | Time = 180 min

Class 10th

" If you are not willing to learn,
No one can help you.
If you are determined to learn,
No one, Can stop you. "

If you study to remember, You will forget,
but if you study to understand,
You will remember.

Er. Jitendra Gupta sir

Admission Open for Class 7_12 / NEET / JEE / CET / CUET / PAT / ICAR / B.Sc / M.Sc / Spoken

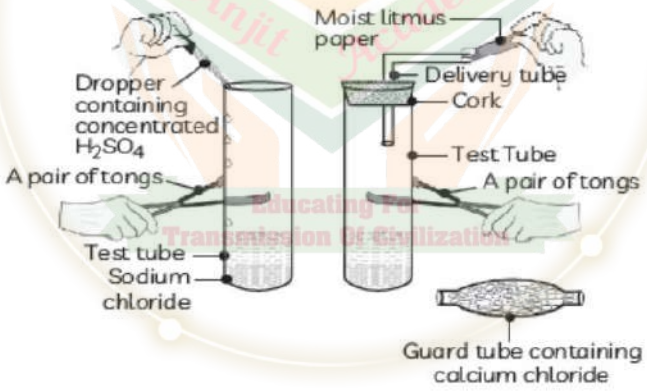
ANJIT'S Sample Paper for Class 10

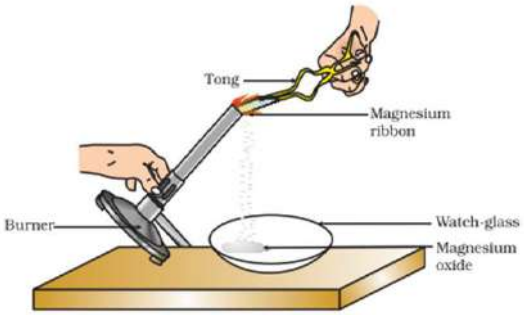
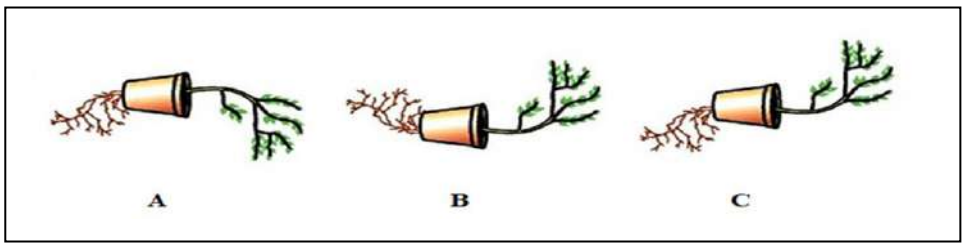
Max. Marks: 80 **Class X** **Time Allowed: 3 hours**

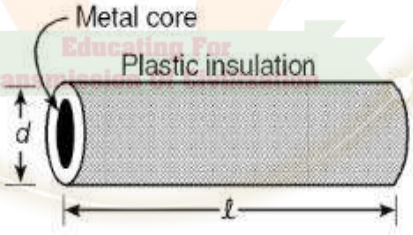
General Instructions:

i. *This question paper consists of 39 questions in 5 sections.*
ii. *All questions are compulsory. However, an internal choice is provided in some questions. A student is expected to attempt only one of these questions.*
iii. ***Section A** consists of 20 objective type questions carrying 1 mark each.*
iv. ***Section B** consists of 6 Very Short questions carrying 02 marks each. Answers to these questions should in the range of 30 to 50 words.*
v. ***Section C** consists of 7 Short Answer type questions carrying 03 marks each. Answers to these questions should in the range of 50 to 80 words*
vi. ***Section D** consists of 3 Long Answer type questions carrying 05 marks each. Answer to these questions should be in the range of 80 to 120 words.*
vii. ***Section E** consists of 3 source-based/case-based units of assessment of 04 marks each with sub-parts.*

SECTION - A

Q. No	Questions	Marks
1	The change in colour of the moist litmus paper in the given set up is due to  i. presence of acid ii. presence of base iii. presence of $H^+(aq)$ in the solution iv. presence of Litmus which acts as an indicator (a) i and ii (b) Only ii (c) Only iii (d) Only iv.	1
2	In the redox reaction $MnO_2 + 4HCl \rightarrow MnCl_2 + 2H_2O + Cl_2$ (a) MnO_2 is reduced to $MnCl_2$& HCl is oxidized to H_2O (b) MnO_2 is reduced to $MnCl_2$& HCl is oxidized to Cl_2 (c) MnO_2 is oxidized to $MnCl_2$ & HCl is reduced to Cl_2 (d) MnO_2 is oxidized to $MnCl_2$ & HCl is reduced to H_2O	1

3	 Which of the following is the correct observation of the reaction shown in the above set up? (a) Brown powder of Magnesium oxide is formed. (b) Colourless gas which turns lime water milky is evolved. (c) Magnesium ribbon burns with brilliant white light. (d) Reddish brown gas with a smell of burning Sulphur has evolved.	1
4	With the reference to four gases CO_2,CO, Cl_2 and O_2, which one of the options in the table is correct? Option / Acidic oxide / Used in treatment of water / Product of respiration / Product of incomplete combustion (a) / CO / Cl_2 / O_2 / CO (b) / CO_2 / Cl_2 / CO_2 / CO (c) / CO_2 / O_2 / O_2 / CO_2 (d) / CO / O_2 / CO_2 / CO_2	1
5	On placing a copper coin in a test tube containing green ferrous sulphate solution, it will be observed that the ferrous sulphate solution (a) turns blue, and a grey substance is deposited on the copper coin. (b) turns colourless and a grey substance is deposited on the copper coin. (c) turns colourless and a reddish–brown substance is deposited on the copper coin. (d) remains green with no change in the copper coin.	1
6	Anita added a drop each of diluted acetic acid and diluted hydrochloric acid on pH paper and compared the colors. Which of the following is the correct conclusion? (a) pH of acetic acid is more than that of hydrochloric acid. (b) pH of acetic acid is less than that of hydrochloric acid. (c) Acetic acid dissociates completely in aqueous solution. (d) Acetic acid is a strong acid	1
7	Observe the three figures given below. Which of the following depicts tropic movements appropriately?	1
	 (a) B and C (b) A and C (c) B only (d) C only	

8.	Select the group in which all organisms have the same mode of nutrition. A. Cuscuta, yeast, legumes, leeches and tapeworm B. Cactus, ticks, lice, leeches and cow C. Cuscuta, ticks, lice, leeches and tapeworm D. Cactus, grass, lice, lion and tapeworm	1
9.	Which of the following options indicates the products formed after breakdown of the glucose in our muscle cells when there is lack of oxygen? A. Ethanol + carbon dioxide + Energy B. Lactic acid + Energy C. Lactic acid + carbon monoxide + Energy D. Carbon dioxide + Water + Energy	1
10.	Which of the following is a correct combination of function and part of the brain? A. Posture and balance: Cerebrum B. Salivation: Medulla in midbrain C. Hunger: Pons in hindbrain D. Blood pressure: Medulla in hindbrain	1
11.	The blood glucose level in a patient was very high. It may be due to inadequate secretion of: A. growth hormone from pituitary gland B. oestrogen from ovary C. insulin from pituitary gland D. insulin from pancreas	1
12.	 Plastic insulation surrounds a wire having diameter ***d*** and length ***l*** as shown above. A decrease in the resistance of the wire would be produced by an increase in the (a) length l of the wire (b) diameter d of the wire (c) temperature of the wire (d) thickness of the plastic insulation	1
13	Which of the following statement(s) is (are) correct? i. Pyruvate can be converted into ethanol and carbon dioxide by yeast ii. Fermentation takes place in aerobic bacteria iii. Fermentation takes place in mitochondria iv. Fermentation is a form of anaerobic respiration a) (ii) and (iv) b) (ii) and (iii) c) (i) and (iii) d) (i) and (iv)	**[1]**

14 Match the following with correct response. **[1]**

Column A	Column B
(i) The response of a plant to light	(a) Phototropism
(ii) The response of a plant to gravity	(b) Hydrotropism
(iii) The response of a plant to water	(c) Geotropism
(iv) The response of a plant to chemicals	(d) Chemotropism

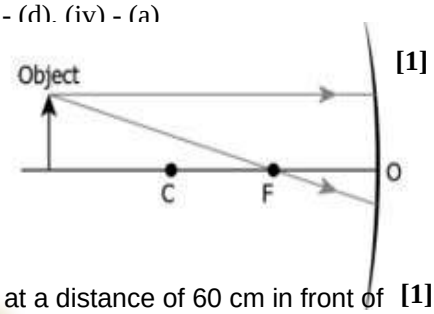
a) (i) - (a), (ii) - (c), (iii) - (b), (iv) - (d)

b) (i) - (d), (ii) - (a), (iii) - (c), (iv) - (b)

c) (i) - (b), (ii) - (d), (iii) - (a), (iv) - (c)

d) (i) - (c), (ii) - (b), (iii) - (d), (iv) - (a)

15. The image shows the path of incident rays to a concave mirror. **[1]**



Where would the reflected rays meet for the image formation to take place?

(a) Behind the mirror

(b) Between F and O

(c) Between C and F

(d) Beyond C

16. A student conducts an experiment using a convex lens. He places the object at a distance of 60 cm in front of the lens and observes that the image is formed at a distance of 30 cm behind the lens. What is the power of the lens? **[1]**

(a) 0.005 dioptre

(b) 0.05 dioptre

(c) 5 dioptre

(d) 50 dioptre

Q. no 17 to 20 are Assertion - Reasoning based questions.

These consist of two statements – Assertion (A) and Reason (R). Answer these questions selecting the appropriate option given below:

(a) Both A and R are true and R is the correct explanation of A

(b) Both A and R are true and R is not the correct explanation of A

(c) A is true but R is false

(d) A is False but R is true

17	Assertion: Silver bromide decomposition is used in black and white photography. Reason: Light provides energy for this exothermic reaction.	1
18	Assertion : Coulomb force and gravitational force follow the same inverse-square law. Reason : Both laws are same in all aspects.	1
19	Assertion (A) : If a graph is plotted between the potential difference and the current flowing, the graph is a straight line passing through the origin. Reason (R) : The current is directly proportional to the potential difference.	1
20	Assertion : Each bulb in a frill of 20 bulbs in series when connected to supply voltage will emit more light than each bulb in frill of 19 bulbs in series when connected to same supply voltage. Reason : Each bulb in a frill of 20 bulbs in series will get less voltage than that in frill of 19 bulbs.	1

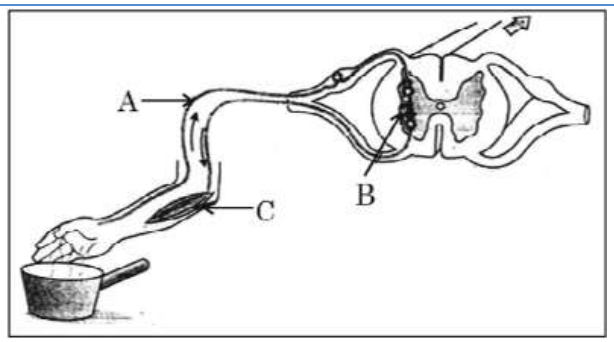
SECTION – B

21. In the given diagram **[2]**

i. Name the parts labelled A, B, and C.

ii. Write the functions of A and C.

iii. Reflex arcs have evolved in animals? Why?



22. When a piece of limestone reacts with dilute HCl, a gas X is produced. When gas X is passed through lime water then a white precipitate Y is formed. On passing excess of gas X, the white precipitate dissolves forming a soluble compound Z. **[2]**

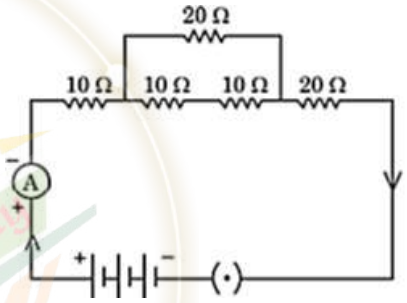
a. What are X, Y and Z?

b. Write equations for the reactions which take place :

i. When limestone reacts with dilute HCl.

ii. When gas X reacts with lime water to form white precipitate Y.

23. Calculate the equivalent resistance of the following electric circuit: **[2]**



24. Draw a diagram of neuron and name and label the part **[2]**

a. where information is acquired,

b. through which information travels as an electric impulse, and

c. where the electric impulse must be converted into a chemical signal for onward transmission.

25. Barium chloride in reaction with ammonium sulphate forms barium sulphate and ammonium chloride. Which type of chemical reaction represents in this reaction? (2)

26. A spherical mirror produces an image of magnification -1 on a screen placed at a distance of 50 cm from the mirror.

(a) Write the type of mirror. (b) Find the distance of the image from the object.

(c) What is the focal length of the mirror? (d) Draw the ray diagram to show the image formation in this case.

SECTION - C

27 On heating blue coloured powder of copper (II) nitrate in a boiling tube, copper oxide (black), oxygen gas and a brown gas X is formed. 3

i. Write a balanced chemical equation of the reaction. ii. Identify the brown gas X evolved.

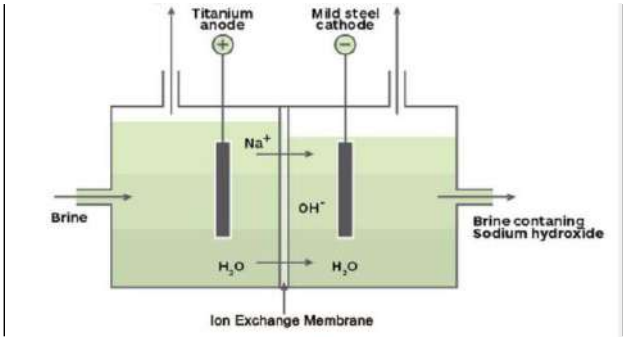
iii. Identify the type of reaction. iv. What could be the pH range of the aqueous solution of the gas X?

28 3

a. Draw a diagram of human alimentary canal and label - gall bladder, pancreas, liver and small intestine on it.

b. Give two reasons to explain why absorption of digested food occurs mainly in the small intestine.

29



3

(a) Identify the gasses evolved at the anode and cathode in the above experimental set up.
(b) Name the process that occurs. Why is it called so?
(c) Illustrate the reaction of the process with the help of a chemical equation.

30. Calculate the resistance of a metal wire of length 2m and area of cross section 1.55×10^{6} m², if the resistivity of the metal be 2.8×10^{-8} Ωm. 3

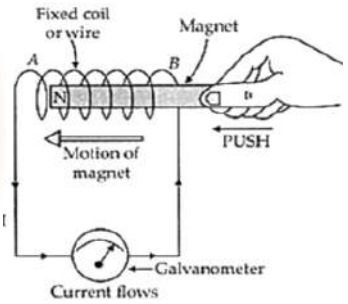
31. A wire has a resistance of 16 Ω. It is melted and drawn into a wire of half its original length. Calculate the resistance of the new wire. What is the percentage change in its resistance? 3

32 Differentiate between binary fission and multiple fission giving one example for each. **[3]**

33 A current-carrying wire produces a magnetic field around it. The phenomena in which an electromotive force and current (if the conductor is in the form of a closed circuit) is induced by changing magnetic field (or by passing magnetic field lines) through it is called electromagnetic induction. **[3]**

i. What is the condition of electromagnetic induction?

ii. An induced emf is produced when a magnet is plunged into a coil. The magnitude of induced emf does not depend?



SECTION - D

34. a. Name the hormone secreted by (i) Pituitary, and (ii) Thyroid stating one main function of each. Name the disorder a person is likely to suffer from due to the deficiency of the above mentioned hormones. **[5]**

b. How is the timing and amount of hormone released regulated? Explain with an example.

35. In an industrial process used for the manufacture of sodium hydroxide, a gas **A** is formed as a by-product. The gas **A** reacts with lime water to give a compound **B** which is used as a bleaching agent in the chemical industry. Identify **A** and **B**. Also give the chemical equations of the reactions involved. **[5]**

OR

Explain chlor-alkali process and write balanced chemical equations for the reactions that occur. Name the gases obtained at the anode and cathode respectively. Mention two uses each of the two gases obtained in the above process.

34. An electric lamp, whose resistance is 20 Ω, and a conductor of 4 Ω resistance are connected to a 6 V battery. Draw the circuit diagram. Calculate (a) the total resistance of the circuit, and (b) the current through the circuit. **[2]**

OR

The rest position of the needles in a milliammeter and voltmeter, not in use, are as shown in Figure A. When a student uses these instruments in his experiment, the readings of the needles are in the positions shown in Figure B. Determine the correct values of current and voltage the student should use in his calculations. **[3]**

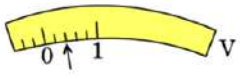
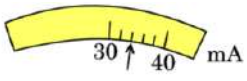


Figure A



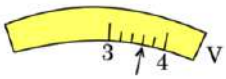


Figure B

SECTION - E

28. i. Name the disorder which a person is likely to suffer from due to the following: **[4]**

I. Over-secretion of growth hormone

II. Deficiency of oestrogen in females

III. Less secretion of thyroxine

Also name the gland that secretes each of the hormones mentioned above.

ii. How is the timing and amount of hormone released regulated? Explain with the help of an example.

28. **Read the following text carefully and answer the questions that follow:** **[4]**

Salts play a very important role in our daily life. Sodium chloride which is known as common salt is used almost in every kitchen. Baking soda is also a salt used in faster cooking as well as in baking industry. The family of salts is classified on the basis of cations and anions present in them.

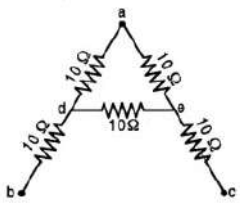
a. Identify the acid and base from which Sodium chloride is formed. **(1)**

b. Find the cation and the anion present in Calcium sulphate. **(1)**

c. "Sodium chloride and washing soda both belong to the same family of salts." Justify this statement. **(1)**

d. Define the term pH scale. Name the salt obtained by the reaction of Potassium hydroxide and Sulphuric acid and give the pH value of its aqueous solution. **(2)**

39. A letter 'A' consists of a uniform wire of resistance 1 ohm cm^{-1}. The side of the letter are each 20 cm long and the cross-piece in the middle is 10 cm long while apex angle is 60^{o}. Find the resistance of the letter between the two ends of the legs. **[4]**



With Best wishes

Scan me for Result