

**ACTC SCIENCE COACHING CENTRE, 41/1- PWD ROAD, NAGERCOIL 9940847892****ACTC****ADVANCED CHEMISTRY & SCIENCE TUITION CENTRE, NAGERCOIL,  
9940847892.****41/1-PWD ROAD, CHITHAMBARA NAGER JN, CHETTIKULAM DVD BUS STOP, KK DIST 629002**

# **10 SCIENCE**

## **50 DAYS PLAN &**

### **28 Days QUESTION PAPER**

# **PUBLIC EXAM 2024**

**AIM: CENTUM MARKS****2023-24 X (ANNUAL REVISION TEST Time table)****DON'T STRESS!****DO YOUR BEST !!****FORGET THE REST!!!****Share, subscribe, comment, Like @ our You Tube channel:****ACTC Educare**

ART	DATE	DAY	LESSON	QUESTION MARK	Max. MARKS	MARKS	SIGN
ANNUAL REVISION EXAM-2024							
1			1	FULL	50		
2			2	FULL	50		
3			3	FULL	50		
4			4	FULL	50		
5			5	FULL	50		
6			6	FULL	50		
7			7	FULL	50		
8			8	FULL	50		
9			9	FULL	50		
10			10	FULL	50		

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11			11	FULL	50		
12			12	FULL	50		
13	16-01-24	TUESDAY	13	FULL	50		
14	18-01-24	THURSDAY	14	FULL	50		
15	20-01-24	SATURDAY	15	FULL	50		
16	21-01-24	SUNDAY	16	FULL	50		
17	23-01-24	TUESDAY	17	FULL	50		
18	25-01-24	THURSDAY	18	FULL	50		
19	27-01-24	SATURDAY	19	FULL	50		
20	28-01-24	SUNDAY	20	FULL	50		
21	30-01-24	TUESDAY	21	FULL	50		
22	01-02-24	THURSDAY	22,23	FULL	50		
23	03-02-24	SATURDAY	1-6	PROBLEM	50		
24	04-02-24	SUNDAY	7-11	PROBLEM	50		
25	06-02-24	TUESDAY	12-23	DIAGRAM	50		
26	08-02-24	THURSDAY	7-11	CHEMISTRY EQU	100		
27	10-02-24	SATURDAY	1-3	2 MARK S/A	50		
28	11-02-24	SUNDAY	4-6	2 MARK S/A	50		
29	13-02-24	TUESDAY	7-9	2 MARK S/A	50		
30	15-02-24	THURSDAY	10-12	2 MARK S/A	50		
31	17-02-24	SATURDAY	13-15	2 MARK S/A	50		
32	18-02-24	SUNDAY	16-18	2 MARK S/A	50		
33	20-02-24	TUESDAY	19-23	2 MARK S/A	50		
34	22-02-24	THURSDAY	1-6	DETAIL	50		
35	24-02-24	SATURDAY	7-11	DETAIL	50		
36	25-02-24	SUNDAY	12-17	DETAIL	50		
37	27-02-24	TUESDAY	18-23	DETAIL	50		
38	29-02-24	THURSDAY	1-11	ONE MARK	50		
39	02-03-24	SATURDAY	12-23	ONE MARK	50		
40	03-03-24	SUNDAY	PHYSICS	MODEL EXAM 2 HOURS	75		
41	05-03-24	TUESDAY	CHEMISTRY	MODEL EXAM 2 HOURS	75		
42	07-03-24	THURSDAY	BIOLOGY	MODEL EXAM 2 HOURS	75		
43	09-03-24	SATURDAY	FULL PORTION	MODEL EXAM 2 HOURS	114		
44	10-03-24	SUNDAY	FULL PORTION	MODEL EXAM 2 HOURS	114		

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45	12-03-24	TUESDAY	FULL PORTION	MODEL EXAM 2 HOURS	114		
46	14-03-24	THURSDAY	FULL PORTION	MODEL EXAM 2 HOURS	114		
47	16-03-24	SATURDAY	FULL PORTION	MODEL EXAM 2 HOURS	114		
48	17-03-24	SUNDAY	FULL PORTION	MODEL EXAM 2 HOURS	75		
49	19-03-24	TUESDAY	FULL PORTION	MODEL EXAM 2 HOURS	75		
50	21-03-24	THURSDAY	FULL PORTION	MODEL EXAM 2 HOURS	75		

**“NO PAIN, NO GAIN”.**

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**ACTC SCIENCE COACHING CENTRE, 41/1- PWD ROAD, NAGERCOIL 9940847892****DAY 1****ART 1****UNIT 1 LAWS OF MOTION****MAX. MARKS:50****ANSWER THE FOLLOWING****20x2=40**

1. What is mechanics? Explain its branches. (2)
2. Define inertia. Give its classification (2)
3. Give any two examples of inertia. (2)
4. Define linear momentum.(3)
5. State Newton's first law. (3)
6. What is meant by force.(3)
7. What are the types of forces? (3)
8. Define resultant force. (3)
9. State Newton's second law of motion.(6)
10. Deduce the equation of a force using Newton's second law of motion. (6)
11. Define 1 newton (N). (6)
12. State Newton's Third law of motion. (7)
13. Give any two examples of Newton's law of motion. (7)
- 14.State Newton's universal law of gravitation. (8)
- 15.Differentiate mass and weight. (10)
- 16.Classify the types of force based on their application.
- 17.State the principle of moments.
- 18.State the universal law of gravitation an derive its mathematical expression.
- 19.Why the apples weight more at poles than at a equator.
- 20.At what height from the centre of the earth surface, the acceleration due to gravity will be  $\frac{1}{4}$  of its value on the surface of the earth.
- 21.A force of 5N on a body produces an acceleration  $5\text{cm s}^{-2}$ . Calculate the mass of the body

**Answer the following****2x5=10**

- 22.Application of Newton's law of gravitation.
23. State Newton's law of motion. (3,6,7)
24. Describe rocket propulsion. (8)

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**ACTC SCIENCE COACHING CENTRE, 41/1- PWD ROAD, NAGERCOIL 9940847892****DAY 2****ART 2****UNIT 2 OPTICS****MAX. MARKS:50****Answer the following****8x2=16**

1. State First law of refraction. (17)
2. State Rayleigh's law of scattering. (18)
3. Why does the sky appear in blue colour? (18)
4. Draw a ray diagram to show the image formed by a convex lens when the object is placed between F and C. (21)
5. What are the applications of concave lenses? (Any two) (22)
6. What are the uses of simple microscope? (26)
7. What are the advantages of telescope? (26)
8. A person with myopia can see objects placed at a distance of 4m. If he wants to see objects at a distance of 20m, what should be the focal length and the power of the concave lens he must wear? (28)
9. A beam of light passing through a diverging lens of focal length 0.3m appear to be focused at a distance 0.2m behind the lens. Find the position of the object. (28)

**Answer the following (Answer any Five)****5x4=20**

10. Explain the properties of light? (16)
11. State second law of refraction. Snell's law (17)
12. Define Tyndall Scattering and Raman scattering. (19)
13. Explain the sign convention of lens. (22)
14. What is the difference between Convex Lens and Concave Lens. (23)
15. Draw structure of the human eye. (24)

**Answer the following in detail:****2x7=14**

16. Differentiate the eye defects: Myopia and Hypermetropia. (25)
17. Explain the construction and working of a Compound microscope. (26)

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**ACTC SCIENCE COACHING CENTRE, 41/1- PWD ROAD, NAGERCOIL 9940847892****DAY 3****ART 3****UNIT 3 THERMAL PHYSICS****MAX. MARKS:50****Answer the following****14X2=28**

1. Define temperature. (32)
2. Define absolute temperature. (32)
3. Define thermal equilibrium. (33)
4. Define thermal energy. (33)
5. What are the characteristics features of heat energy transfer? (33)
6. Define one Calorie. (34)
7. Define kilocalorie. (34)
8. What is co-efficient of cubical expansion? (35)
9. What is co-efficient of real expansion? (36)
10. Define co-efficient of linear expansion. write its equation.
11. State Boyle's law & (36)
12. State Charles's law & formula (37)
13. State Avogadro's law & formula (37)
14. What is real gas? In which conditions the real gases behaves as ideal gases. State the reasons.(37)
15. State whether the following statements is true or false, justify your answer.
16. Convert 80F temperature into kelvin scale .
17. Electric power lines in electrical post, hang very low in hot summer, why?

**Answer the following****2X4=8**

18. Keeping the temperature as constant four times of its initial pressure. The volume of gas changing from 20cc ( $V_1$ cc) to  $V_2$ cc. find the final volume  $V_2$ .
19. A container of capacity 70ml is filled with a liquid upto 50ml.when it is heated the liquid level falls to 48.5ml and then rises to 51.2ml. find the apparent and real expansion.
20. Difference between Ideal gas and Real gas.

**Answer the following****2X7=14**

21. Explain the experiment of measuring the real and apparent expansion of a liquid with a neat diagram.
22. Derive the ideal gas equation.

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**ACTC SCIENCE COACHING CENTRE, 41/1- PWD ROAD, NAGERCOIL 9940847892****DAY 4****ART 4****UNIT 4 ELECTRICITY****MAX. MARKS:50****Answer the following:****14x2=28**

1. A charge of **12 coulomb** flows through a bulb in 5 second. What is the current through the bulb?(43)
2. Define electric potential & SI unit.(44)
3. Define volt. (44)
4. The work done on moving a charge of 10 C across two points in a circuit is 100J. What is the potential difference between the points?(44)
5. State Ohm's law.(45)
6. Define resistance of a conductor & SI Unit(45)
7. Calculate the resistance of a conductor through which a current of 2A passes, when the potential difference between its ends is 30V.(46)
8. Define electrical resistivity. (46)
9. The resistance of a wire of length 10m is 2 ohm. If the area of cross section of the wire is  $2 \times 10^{-7} \text{ m}^2$ , determine its (i) resistivity (ii) conductance. (47)
10. Three resistors of resistances 5 ohm, 3 ohm and 2 ohm are connected in series with 10V battery. Calculate their effective resistance and the current flowing through the circuit. (48)
11. State Joule's law of heating. (50)
12. An electric heater of resistance 5ohm is connected to an electric source. If a current of 6A flows through the heater, then find the amount of heat produced in 5 minutes. (51)
13. Define electric power& SI unit. (51)
14. What are the advantages of LED TV?(54)
15. Draw a picture of seven segment display for any one alpha numeric number. (53)
16. Calculate the current and resistance of a 100W ,200V electric bulb in an electric circuit. (54)

**Answer the following****2x4=8**

17. Write the symbol for the following component  
i)Ground connection ii)Resistor iii) Light emitting diode iv) A diode
18. Difference between resistivity and conductivity. (46) (BBQ4 56)
19. List the merits of LED bulb. (53)

**Answer the following****2x7=14**

20. With the help of a circuit diagram derive the formula for the resultant resistance of three resistances connected: a) in series and b) in parallel. (48)
21. Explain about domestic electric circuits. (51)
22. a) What is meant by electric current? b) Name and define its unit. c) Which instrument is used to measure the electric current? How should it be connected in a circuit?

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**ACTC SCIENCE COACHING CENTRE, 41/1- PWD ROAD, NAGERCOIL 9940847892****DAY 5****ART 5****UNIT 5 ACOUSTICS****MAX. MARKS:50****ANSWER****THE****FOLLOWING****12x2=24**

1. Write note on Audible waves. (60)A
2. Write note on infrasonic waves. (60)
3. Write note on Ultrasonic waves. (60)
4. At what temperature will the velocity of sound in air be double the velocity of sound in air at 0°C? (61)
5. Define reflection of sound. (62)
6. State law of reflection (62)
7. Why does sound travel faster on a rainy day than on a dry day?
8. Why does an empty vessel produce more sound than a filled one? (71)
9. Explain why the ceilings of concert halls are curved. (71)
10. Mention two cases in which there is no Doppler effect in sound? (71)
11. i) What is the audible range of frequency? BB 71  
ii) What is the minimum distance needed for an echo? BB 71
12. A source producing sound of frequency 90 Hz is approaching a stationary listener with a speed equal to (1/10) of the speed of sound. What will be the frequency heard by the listener?
13. A source producing sound of frequency 500 Hz is moving towards a static listener with velocity of  $30\text{ms}^{-1}$ . The speed of the sound is  $330\text{ms}^{-1}$ . What will be the frequency heard by listener? (67)

**ANSWER THE FOLLOWING****3x4=12**

14. Difference between sound and light. (60)
15. Explain the reflection at the boundary of a denser medium. (63)
16. Explain the reflection at the boundary of a rarer medium. (63)
17. Explain the applications of Doppler effect. (69)

**ANSWER THE FOLLOWING****2x7=14**

18. What do you understand by the term 'ultrasonic vibration'? b) State three uses of ultrasonic vibrations. c) Name three animals which can hear ultrasonic vibrations.



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19. What is an echo? a) State two conditions necessary for hearing an echo. b) What are the medical applications of echo?

**ALL THE BEST SCORE CENTUM MARKS****DAY 6****ART 6****UNIT 6 NUCLEAR PHYSICS****MAX. MARKS:50****ANSWER THE FOLLOWING****10x2=20**

1. Define curie.(76)
2. Define Rutherford. (76)
3. Define Becquerel. (76)
4. Define Roentgen(76)
5. Write note on alpha decay.(78)
6. Write note on Beta decay.(78)
7. Write note on Gamma decay.(78)
8. What is meant by Dosimeter.(83)
9. Nuclear fission of a uranium nucleus (U235) as follows (78)  
 ${}_{92}\text{U}^{235} + {}_0\text{n}^1 \rightarrow \text{X} + \text{Y} + 3{}_0\text{n}^1 + \text{Q}(\text{energy})$  find out X and Y
10.  ${}_{92}\text{U}^{235}$  experiences one  $\alpha$ -decay and one  $\beta$ -decay. Find number of neutrons in the final daughter nucleus that is formed. (85)
11. Calculate the amount of energy released when a radioactive substance undergoes fusion and results in a mass defect of 2 kg. (85)

**ANSWER THE FOLLOWING****4 x4= 16**

12. Difference between natural radioactivity and artificial radioactivity.(76)
13. Write the features of nuclear fission and nuclear fusion. (76)
14. Explain atom bomb. (80)
15. Write note on prevent measures of radioactivity. (84)

**ANSWER THE FOLLOWING****2 x7= 14**

16. Compare the properties of alpha, beta and gamma radiations. (77)
17. Explain the uses of radioactivity in agriculture, medicine, industries, Archeological research.(83)
18. What is a nuclear reactor? Explain its essential parts with their functions. (84)

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## CHEMISTRY

**DAY 7****ART 7****UNIT 7 ATOMS AND MOLECULES****MAX. MARKS:50****Answer the following****12x2=24**

1. Define relative atomic mass. (92)
2. Define average atomic mass. (93)
3. Calculating the average atomic mass of carbon, both of its natural isotopes such as carbon-12 and carbon-13 are 98.9% and 1.1% respectively. (93)
4. Define atomicity. (94)
5. State Avogadro's law & mathematical expression. Give an example (98)
6. Give any two examples for hetero diatomic molecule. (95)
7. Find the percentage of Hydrogen and oxygen in water. (98)
8. Calculate the number of moles in 46g of sodium. (100)
9. Find the gram molecular mass of the following from the data given:(99)  
(i)H<sub>2</sub>O (ii) CO<sub>2</sub>
10. Define isotopes. Give an example. (102)
11. Define isotones. Give an example. (102)
12. Define isobars. Give an example. (102)

**Answer the following****3x4=12**

13. List differences between atom and molecules. (96)
14. Define molecule. Explain classification of molecules. (94)
15. Write the applications of "Avogadro's Law". (99)

**Answer the following****2x7=14**

16. State the findings of modern atomic theory. (91)
17. Derive the relation between Relative molecular mass and vapour density. (99)

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**DAY 8****ART 8****UNIT 8 PERIODIC CLASSIFICATION****MAX. MARKS:50****Answer the following****12x2=24**

1. State modern periodic law. (107)
2. Define atomic radius (109)
3. Define ionization energy. (110)
4. Define electron affinity. (111)
5. Electronegativity value of hydrogen is 2.1 and that of sodium is 1. Find out the nature of bonding present in the compound, when hydrogen combines with fluorine and hydrogen combines with sodium. (Electronegativity value of fluorine is 4) **(111)**
6. Define minerals, ore.(112)
7. Explain the chemical properties of metals. (114)
8. Name the acid that renders Aluminium passive. Why? (116)
9. What is an alloy? (119)
10. What is an amalgam? (119)
11. What are reasons for alloying? (119)
12. Write the Iron alloys and its uses. (119)
13. What is rust? Give the equation for formation of rust. (120)

**Answer the following****3x4=12**

14. Write note on Hydraulic method (Gravity separation). (113)
15. Write note on Magnetic separation method. (113)
16. Write note on Froth floatation method. (113)
17. Explain the physical properties of metals. (114)

**Answer the following****2x7=14**

18. Explain the features of Periods in modern periodic table. (107)

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19. What are the ores of copper. Explain extraction of copper from Copper pyrites. (116)
20. What is corrosion? Types of corrosion, Methods of preventing corrosion. (120)

**ALL THE BEST SCORE CENTUM MARKS****DAY 9****ART 9****UNIT 9 SOLUTIONS****MAX. MARKS:50****ANSWER THE FOLLOWING****12X2=24**

1. Define solution, solute & solvent. (125)
2. Define aqueous solution and example. (126)
3. Define non-aqueous solution and example. (126)
4. Define saturated solution and example. (126)
5. Define super saturated solution and example. (127)
6. The aquatic animals live more in cold region why? (128)
7. State Henry's law. (129)
8. Define water of crystallization. & hydrated salts (130)
9. 'A' is a blue coloured crystalline salt. On heating it loses blue colour and to give 'B'. When water is added. 'B' gives back to 'A'. Identify A and B. write the equation. (130)
10. What happens when  $\text{MgSO}_4 \cdot 7\text{H}_2\text{O}$  is heated? Write the appropriate equation. (130)
11. Classify the following substances into deliquescent, hygroscopic. Conc. Sulphuric acid, Copper sulphate penta hydrate, Silica gel, Calcium chloride and Gypsum salt. (131)
12. 1.5g of solute dissolved in 15g of water to form a saturated solution at 298K. Find out the solubility of the solute at a temperature. (131, 132)
13. 3.5 litres of ethanol is present in 15 litres of aqueous solution of ethanol. Calculate volume percent of ethanol solution. (135)
14. Calculate the mass of water required in grams to dissolve 10g of sucrose to produce the mass percentage of 10% of solution. (133 model)

**ANSWER THE FOLLOWING****3X4=12**

15. Explain the types of solution based on the type of solvent. (126)
16. Define Hygroscopy, Deliquescence. Give an example. (131)
17. (a) A solution was prepared by dissolving 25g of sugar in 100g of water. Calculate the mass percentage of solute. (132)
- (b) True or false (If false give the correct statement)
- i) In our daily life, solution of syrups, mouth wash, antiseptic solutions, household disinfectants etc., the concentration of ingredients of solution is expressed as w/w.
- ii) In Ointments, antacids, soaps etc., the concentration of solution is expressed as v/v.



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18. Explain types of solution based on the physical state of the solute and the solvent. (126)  
(Types of binary solutions)
19. Write notes on various factors affecting solubility. (128)

**ALL THE BEST SCORE CENTUM MARKS****DAY 10    ART 10    UNIT 10 TYPES OF CHEMICAL REACTIONS****MAX. MARKS:50****Answer the following****20x2=40**

1. Define combination reaction. With one example for an exothermic combination reaction. (139)
2. Define decomposition reaction and example. (140)
3. Define thermal decomposition reaction and example. (Thermolysis reaction) (140)
4. Define electrolytic decomposition reaction and example. (140)
5. Define photo decomposition reaction and example. (140)
6. Define single displacement reaction and example. (141)
7. Explain the types double displacement reaction with examples. (142)
8. Differences between combination and decomposition reaction. (142)
9. Define combustion reaction and example. (143)
10. Define precipitation reaction and example. (142)
11. Define Neutralization reaction and example. (142)
12. Define ionic product of water & mathematical expression. (148)
13. Define pH an expression of  $pH$  (148)
14. Give pH of vinegar, coffee, Orange, milk of magnesia (148) study all pH Value. (148)
15. Calculate the pH of 0.01 M  $HNO_3$ ? (150)
16. What is the pH of  $1.0 \times 10^{-5}$  molar solution of KOH.
17. Calculate the pH of  $1.0 \times 10^{-4}$  molar solution of  $HNO_3$ . (154)
18. The hydroxyl ion concentration of a solution is  $1 \times 10^{-9}$  M. What is the pH of the solution? (150)
19. The hydroxide ion concentration of a solution is  $1 \times 10^{-11}$  M. What is the pH of the solution? (154) (PTA-5)
20. A solution has a pOH of 11.76. What is the pH of this solution? (150)

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21. Calculate the pH of  $1 \times 10^{-4}$  molar solution of NaOH. (150)

**Answer the following**

**2x5=10**

22. Differences between reversible and irreversible reactions. (145)

23. Explain the factors influencing the rate of a reaction. (146)

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**DAY 11**

**ART 11**

**UNIT 11 CARBON AND ITS COMPOUNDS**

**MAX. MARKS:50**

**ANSWER THE FOLLOWING**

**15x2=30**

- Classify the following compounds based on the pattern of carbon chain and give their structural formula: i) Propane ii) Benzene iii) Cyclobutane iv) Furan. (156)
- Explain Characteristics of hydrocarbons. (158)
- How to identify saturated and unsaturated compounds. (158)
- Write the functional group and the suffix used for the following class of compounds. (159)

Class Of the Compound	Functional Group	Suffix used
Alcohol		
Aldehyde		
Ketone		
Carboxylic Acid		

5. Applying IUPAC rules, derive the structural formula of the following compounds.

a) Pentanoic acid. b) 2-methyl-butan-2-ol.

6. The molecular formula of an alcohol is  $C_4H_{10}O$ . The locant number of its  $-OH$  group is 2. i) draw its structural formula. ii) Give its IUPAC name. iii) Is it saturated or unsaturated?

**BB**

7. Fill in blanks in the table using IUPAC nomenclature of organic compounds.

Name of The Compound	Structural Formula	Function group present
Propan-2-ol		
Ethanal		
Butanone		
Butanoic acid		

8. Define fermentation. Give an example (164)

9. Compound A is a colourless liquid having burning taste. When the vapour of compound A is passed over heated copper at 573K, it is dehydrogenated to acetaldehyde. What is compound 'A'? What is the role of copper in this chemical reaction? Write the balanced chemical equation of this reaction. (164) **(PTA 6)**

10. Write a reaction which is used for the identification of alcohol. (164)

11. Explain uses of ethanol. (165)

12. Explain uses of ethanoic acid. (165)

13. An organic compound 'A' is widely used as a preservative and has the molecular formula  $C_2H_4O_2$ . The compound reacts with ethanol to form a sweet-smelling compound 'B'. i) Identify the compound 'A'. ii) Write the chemical equation for its reaction with ethanol to form compound 'B'. iii) Name the process. (165)

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- 14.Explain uses of Hydrocarbon in daily life. (166)
- 15.Define soap and explain types of soap. (166)
16. What are the disadvantages of Detergents. (168)
17. Explain why micelles formation take place with a diagram when soap is added to water?  
(

**ANSWER THE FOLLOWING****4X5=20**

- 18.Explain General characteristics of organic compounds. (155)
- 19.Define homologous series. Characteristics of homologous series. (159)
- 20.Explain manufacture of ethanol from molasses. (163)
- 21.Define Detergents and preparation of detergents. (167)
- 22.Explain the mechanism of cleansing action of a soap. (167)
- 23.Differentiate soaps and detergents. (169)

**ALL THE BEST SCORE CENTUM MARKS****DAY 12 ART 12 UNIT 12 PLANT ANATOMY AND PLANT PHYSIOLOGY MAX. MARKS:50****Answer the following****10x2=20**

1. What are the types of tissue system in plants. (173)
2. What are the functions of Dermal tissue system. (174)
3. Write note on ground Tissue system. (174)
4. Differences between Dicot and Monocot root. (177)
5. What are the functions of chloroplast. (180)
6. Define photosynthesis, reaction and where does photosynthesis occur in cell? (181)
7. What are factors affecting Photosynthesis. (182)
8. What are the functions of Mitochondria. (183)
9. Differentiate Aerobic and Anaerobic respiration. (183)
- 10.What is Respiratory Quotient. (184)
11. What is the common step in aerobic and anaerobic pathway?

**Answer the following****6x5=30**

- 12.Explain Tissue system and its functions. (174)
- 13.Explain types of Vascular Tissue system. (174)
14. Explain Internal structure of Dicot Root (Bean) (175)
- 15.Explain Internal structure of Dicot Root (sunflower) (176)
- 16.Difference between Dicot and Monocot stem. (178)
- 17.Explain internal structure of Dicot (mango)(178)

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**DAY 13      ART 13      UNIT 13 Structural Organisation of Animals      MAX. MARKS:40**

## I. Answer in a sentence

10x1=10

1. Give the common name of the Hirudinaria granulosa.
2. How does leech respire?
3. Write the dental formula of rabbit.
4. How many pairs of testes are present in leech?
5. How is diastema formed in rabbit?
6. What organs are attached to the two bronchi?
7. Which organ acts as suction pump in leech?
8. What does CNS stand for?
9. Why is the teeth of rabbit called heterodont?
10. How does leech suck blood from the host?
11. Why are the rings of cartilages found in trachea of rabbit?

## II. Short answer questions

2x2=4

1. Why are the rings of cartilages found in trachea of rabbit?
2. List out the parasitic adaptations in leech.

## III. Long answer questions

3x5=15

1. How is the circulatory system designed in leech to compensate the heart structure?
2. How does locomotion take place in leech?
3. Explain the male reproductive system of rabbit with a labelled diagram.

## IV. Higher Order Thinking Skills (HOTS)

2x3=6

1. Arjun is studying in tenth standard. He was down with fever and went to meet the doctor. As he went to the clinic he saw a patient undergoing treatment for severe leech bite. Being curious,

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Arjun asked the doctor why leech bite was not felt as soon as it attaches to the skin ? What would have been the reply given by the doctor?

2. Shylesh has some pet animals at his home. He has few rabbits too, one day while feeding them he observed something different with the teeth. He asked his grandfather, why is it so? What would have been the explanation of his grandfather?

**V. Value based questions****2x21/2=5**

1. Leeches do not have an elaborate secretion of digestive juices and enzymes - Why?
2. How is the digestive system of rabbit suited for herbivorous mode of feeding?

**ALL THE BEST SCORE CENTUM MARKS****DAY 14****ART 14****MAX. MARKS:50****UNIT 14 TRANSPORTATION IN PLANTS AND CIRCULATION IN ANIMALS****I. Answer in a word or sentence****1x1=1**

1. What is the shape of RBC in human blood?

**II. Short answer questions****10x2=20**

1. What causes the opening and closing of guard cells of stomata during transpiration?
2. What is cohesion?
3. Trace the pathway followed by water molecules from the time it enters a plant root to the time it escapes into the atmosphere from a leaf.
4. What would happen to the leaves of a plant that transpires more water than its absorption in the roots?
5. Describe the structure and working of the human heart.
6. Why is the circulation in man referred to as double circulation?
7. What are heart sounds? How are they produced?
8. What is the importance of valves in the heart?
9. Who discovered Rh factor? Why was it named so?
10. How are arteries and veins structurally different from one another?
11. Why is the Sinoatrial node called the pacemaker of heart?
12. Differentiate between systemic circulation and pulmonary circulation.
13. The complete events of cardiac cycle last for 0.8 sec. What is the timing for each event?

**IV. Long answer questions****4x5=20**

1. How do plants absorb water? Explain.
2. What is transpiration? Give the importance of transpiration.
3. Why are leucocytes classified as granulocytes and agranulocytes? Name each cell and mention its functions.
4. Differentiate between systole and diastole. Explain the conduction of heart beat.
5. Enumerate the functions of blood.

**V. Higher Order Thinking Skills (HOTS)****3x3=9****E.MUTHUSAMY MSc(Che), MSc(Psy), MEd., MPhil., MA(Eng), MA(T), MA(PA), MA(Soc), BLISc., DMLT.****B. SARANYA MUTHUSAMY BE., BEd., You Tube: ACTC Educare Whatsapp: 9940847892**



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1. When any dry plant material is kept in water, they swell up. Name and define the phenomenon involved in this change.
2. Why are the walls of the left ventricle thicker than the other chambers of the heart?
3. Doctors use stethoscope to hear the sound of the heart. Why?
4. How does the pulmonary artery and pulmonary vein differ in their function when compared to a normal artery and vein?
5. Transpiration is a necessary evil in plants. Explain.

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**DAY 15****ART 15****UNIT: 15. NERVOUS SYSTEM****MAX. MARKS:50****I. Short answer questions****8x2=16**

1. Define stimulus.
2. Name the parts of the hind brain.
3. What are the structures involved in the protection of brain?
4. Give an example for conditioned reflexes.
5. Which acts as a link between the nervous system and endocrine system?
6. Define reflex arc.
7. Name the three types of neurons and find its location.

**II. Differentiate between**

8. Voluntary and involuntary actions.
9. Medullated and non-medullated nerve fibre.

**III. Long answer questions****5x5=25**

1. With a neat labelled diagram explain the structure of a neuron.
2. Illustrate the structure and functions of brain.
3. What will you do if someone pricks your hand with a needle? Elucidate the pathway of response with a neat labelled diagram.
4. Describe the structure of spinal cord.
5. How nerve impulses are transferred from one neuron to next neuron?
6. Classify neurons based on its structure.

**IV. Higher Order Thinking Skills (HOTS)****2x5=10**

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1. 'A' is a cylindrical structure that begins from the lower end of medulla and extend downwards. It is enclosed in bony cage 'B' and covered by membranes 'C'. As many as 'D' pairs of nerves arise from the structure 'A'. (i) What is A? (ii) Name (a) bony cage 'B' and (b) membranes 'C' (iii) How much is D?

2. Our body contains a large number of cells 'L' which are the longest cells in the body. L has long and short branch called as 'M' and 'N' respectively. There is a gap 'O' between two 'L' cells, through which nerve impulse transfer by release of chemical substance 'P'. (i) Name the cells L (ii) What are M and N? (iii) What is the gap O? (iv) Name the chemical substance P.

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**DAY 16      ART 16      UNIT 16: Plant and Animal Hormones      MAX. MARKS:50**

**I. Answer in a word or sentence****8x1=8**

1. Which hormone promotes the production of male flowers in Cucurbits?
2. Write the name of a synthetic auxin.
3. Which hormone induces parthenocarpy in tomatoes?
4. What is the hormone responsible for the secretion of milk in female after child birth?
5. Name the hormones which regulates water and mineral metabolism in man.
6. Which hormone is secreted during emergency situation in man?
7. Which gland secretes digestive enzymes and hormones?
8. Name the endocrine glands associated with kidneys.

**II. Short answer questions****10x2=20**

1. What are synthetic auxins? Give examples.
2. What is bolting? How can it be induced artificially?
3. Bring out any two physiological activities of Abscissic Acid.
4. What will you do to prevent leaf fall and fruit drop in plants? Support your answer with reason.
5. What are chemical messengers?
6. Write the differences between endocrine and exocrine gland.
7. What is the role of parathormone?
8. What are the hormones secreted by posterior lobe of the pituitary gland? Mention the tissues on which they exert their effect
9. Why are thyroid hormones referred as personality hormone?
10. Which hormone requires iodine for its formation? What will happen if intake of iodine in our diet is low?

**III. Long answer questions****4x5=20**

1. (a) Name the gaseous plant hormone. Describe its three different actions in plants. (b) Which hormone is known as stress hormone in plants? Why?

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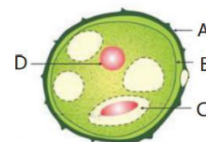
- Describe an experiment which demonstrates that growth stimulating hormone is produced at the tip of coleoptile.
- Write the physiological effects of gibberellins.
- Where are estrogens produced? What is the role of estrogens in the human body?
- What are the conditions which occur due to lack of ADH and insulin? How are the conditions different from one another?

**IV. Higher Order Thinking Skills (HOTS)****1x2=2**

- What would be expected to happen if a. Gibberellin is applied to rice seedlings. b. A rotten fruit gets mixed with unripe fruits. c. When cytokinin is not added to culture medium
- A plant hormone was first discovered in Japan when rice plants were suffering from Bakanae disease caused by *Gibberellafujikoroi*. Based on this information answer the following questions: a. Identify the hormone involved in this process. b. Which property of this hormone causes the disease? c. Give two functions of this hormone.

**ALL THE BEST SCORE CENTUM MARKS****DAY 17 ART 17 UNIT 17: Reproduction in Plants and Animals MAX. MARKS:50****I. Answer in a word or sentence****8x1=8**

- If one pollen grain produces two male gametes, how many pollen grains are needed to fertilize 10 ovules?
- In which part of the flower germination of pollen grains takes place?
- Name two organisms which reproduce through budding.
- Mention the function of endosperm.
- Name the hormone responsible for the vigorous contractions of the uterine muscles.
- What is the enzyme present in acrosome of sperm?
- When is World Menstrual Hygiene Day observed?
- What is the need for contraception?
- Name the part of the human female reproductive system where the following occurs.
  - Fertilization
  - Implantation

**II. Short answer question****13x2=26**

- What will happen if you cut planaria into small fragments?
- Why is vegetative propagation practiced for growing some type of plants?
- How does binary fission differ from multiple fission?
- Define triple fusion.
- Write the characteristics of insect pollinated flowers.
- Name the secondary sex organs in male.
- What is colostrum? How is milk production hormonally regulated?
- How can menstrual hygiene be maintained during menstrual days?
- How does developing embryo gets its nourishment inside the mother's body?
- Identify the parts A, B, C and D.
- Write the events involved in the sexual reproduction of a flowering plant.

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- a) Discuss the first event and write the types.
- b) Mention the advantages and the disadvantages of that event.
- a. Process of sexual reproduction in flowering plants involves:
12. Why are the human testes located outside the abdominal cavity? Name the pouch in which they are present.
13. Luteal phase of the menstrual cycle is also called the secretory phase. Give reason.
14. Why are family planning methods not adopted by all the people of our country?

**III. Long answer questions****2x5=10**

1. With a neat labelled diagram describe the parts of a typical angiospermic ovule.
2. What are the phases of menstrual cycle? Indicate the changes in the ovary and uterus.

**IV. Higher Order Thinking Skills (HOTS)****2x3=6**

1. In angiosperms the pollen germinates to produce pollen tube that carries two gametes. What is the purpose of carrying two gametes when single gamete can fertilize the egg?
2. Why menstrual cycle does not take place before puberty and during pregnancy?

**ALL THE BEST SCORE CENTUM MARKS****DAY 18****ART 18****UNIT 18 Heredity****MAX. MARKS:50****I. Answer in a sentence****5x1=5**

1. What is a cross in which inheritance of two pairs of contrasting characters are studied?
2. Name the conditions when both the alleles are identical?
3. A garden pea plant produces axial white flowers. Another of the same species produced terminal violet flowers. Identify the dominant trait?
4. What is the name given to the segments of DNA, which are responsible for the inheritance of a particular character?
5. Name the bond which binds the nucleotides in a DNA.

**II. Short answers questions****10x2=20**

1. Why did Mendel select pea plant for his experiments?
2. What do you understand by the term phenotype and genotype?
3. What are allosomes?
4. What are Okazaki fragments?
5. Why is euploidy considered to be advantageous to both plants and animals?
6. A pure tall plant (TT) is crossed with pure dwarf plant (tt), what would be the F<sub>1</sub> and F<sub>2</sub> generations? Explain.
7. Explain the structure of a chromosome.
8. Label the parts of the DNA in the diagram given below. Explain the structure briefly.
9. Write note on Significance of DNA.
10. State the application of DNA Fingerprinting technique.

**III. Long answer questions****3x5=15**

1. Explain with an example the inheritance of dihybrid cross. How is it different from monohybrid cross?
2. How is the structure of DNA organised? What is the biological significance of DNA?
3. The sex of the new born child is a matter of chance and neither of the parents may be considered responsible for it. What would be the possible fusion of gametes to determine the sex of the child?

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**IV. Higher Order Thinking Skills (HOTS)****3x3=9**

1. Flowers of the garden pea are bisexual and self-pollinated. Therefore, it is difficult to perform hybridization experiment by crossing a particular pistil with the specific pollen grains. How Mendel made it possible in his monohybrid and dihybrid crosses?
2. Pure-bred tall pea plants are first crossed with pure-bred dwarf pea plants. The pea plants obtained in  $F_1$  generation are then cross-bred to produce  $F_2$  generation of pea plants. a. What do the plants of  $F_1$  generation look like? b. What is the ratio of tall plants to dwarf plants in  $F_2$  generation? c. Which type of plants were missing in  $F_1$  generation but reappeared in  $F_2$  generation?
3. Kavitha gave birth to a female baby. Her family members say that she can give birth to only female babies because of her family history. Is the statement given by her family members true. Justify your answer.

**V. Value based question****1x1=1**

1. Under which conditions does the law of independent assortment hold good and why?

**ALL THE BEST SCORE CENTUM MARKS****DAY 19 ART 19 UNIT 19 ORIGIN AND EVOLUTION OF LIFE MAX. MARKS:50****I. Answer In A Word Or Sentence:****3x1=3**

1. A human hand, a front leg of a cat, a front flipper of a whale and a bat's wing look dissimilar and adapted for different functions. What is the name given to these organs?
2. Which organism is considered to be the fossil bird?
3. What is the study of fossils called?

**II. Short Answers Questions:****2x2=4**

4. What is Evolution. (276)
5. Why is Archaeopteryx considered to be a connecting link?

**III. Long Answer Questions:****6x5=30**

6. Natural selection is a driving force for evolution – How?
7. How do you differentiate homologous organs from analogous organs?
8. How does fossilization occur in plants?
9. The degenerated wing of a Kiwi is an acquired character. Why is it an acquired character?
10. Define Ethnobotany, aspects and write its importance.
11. How can you determine the age of the fossils?

**IV. Higher Order Thinking Skills (HOTS):****3x4=12**

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12. Arun was playing in the garden. Suddenly he saw a dragon fly sitting on a plant. He observed the wings of it. He thought it looked similar to a wing of a crow. Is he correct? Give reason for your answer.

13. Imprints of fossils tell us about evolution – How?

14. Octopus, cockroach and frog all have eyes. Can we group these animals together to establish a common evolutionary origin. Justify your answer.

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**DAY 20 ART 20 UNIT 20 BREEDING AND BIOTECHNOLOGY**

**MAX. MARKS:50**

**I. Answer In a Sentence:**

**8x1=8**

1. Give the name of wheat variety having higher dietary fibre and protein.
2. Semi-dwarf varieties were introduced in rice. This was made possible by the presence of dwarfing gene in rice. Name this dwarfing gene.
3. Define genetic engineering.
4. Name the types of stem cells.
5. What are transgenic organisms?
6. State the importance of Biofertilizer.

**II. Short Answer Questions:**

**7x2=14**

1. Discuss the method of breeding for disease resistance.
2. Name three improved characteristics of wheat that helped India to achieve high productivity.
3. Name two maize hybrids rich in amino acid Lysine.
4. Distinguish between a) Somatic gene therapy and germ line gene therapy.  
b) Undifferentiated cells and differentiated cells.  
a) Somatic gene therapy and germ line gene therapy.
5. State the applications of DNA finger printing technique.

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6. How are stem cells useful in regenerative process?

7. Differentiate between out breeding and inbreeding.

**III. Long Answer Questions:****4x5=20**

1. What are the effects of hybrid vigour in animals?

2. Describe mutation breeding with an example.

3. Biofortification may help in removing hidden hunger. How?

4. With a neat labeled diagram explain the techniques involved in gene cloning.

5. Discuss the importance of Biotechnology in the field of medicine.

**IV. Higher Order Thinking Skills (Hots):****4x2=8**

1. A breeder wishes to incorporate desirable characters into the crop plants. Prepare a list of characters he will incorporate.

2. Organic farming is better than Green Revolution. Give reasons

3. Polyploids are characterized by gigantism. Justify your answer.

4. 'p' is a gene required for the synthesis of vitamin A. It is integrated with genome of 'Q' to produce genetically modified plant 'R'. i) What is P, Q and R? ii) State the importance of 'R' in India.

**DAY 21****ART 21****UNIT 21 Health and Diseases****MAX. MARKS:50****I. Answer in a sentence****6x1=6**

1. What are psychotropic drugs?

2. Mention the diseases caused by tobacco smoke.

3. What are the contributing factors for Obesity?

4. What is adult onset diabetes?

5. What is metastasis?

6. How does insulin deficiency occur?

**II. Short answer questions****5x2=10**

1. What are the various routes by which transmission of human immuno deficiency virus takes place?

2. How is a cancer cell different from a normal cell?

3. Differentiate between Type-1 and Type-2 diabetes mellitus

4. Why is a dietary restriction recommended for an obese individual?

5. What precautions can be taken for preventing heart diseases?

**III. Long answer questions****2x5=10**

1. Suggest measures to overcome the problems of an alcoholic.

2. Changes in lifestyle is a risk factor for occurrence of cardiovascular diseases. Can it be modified? If yes, suggest measures for prevention.

**IV. Higher Order Thinking Skills (HOTS)****4x3=12**

1. What is the role of fat in the cause of atherosclerosis?

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2. Eating junk food and consuming soft drinks results in health problems like obesity, still children prefer. What are the suggestions you would give to avoid children eating junk food/ consumption of soft drinks?
3. Regular physical exercise is advisable for normal functioning of human body. What are the advantages of practising exercise in daily life?
4. A leading weekly magazine has recently published a survey analysis which says that number of AIDS patient in the country is increasing day by day. The report says that the awareness among the people about AIDS is still very poor. You are discussing the magazine report in your class and a team of your class decides to help people to fight against the dreadful disease.
  - a) What problem you face when trying to educate the people in your village near by your school?
  - b) How do you overcome the problem?

**V. Value based questions****4x3=12**

1. Once a person starts taking drugs or alcohol it is difficult to get rid of the habit. Why?
2. Men addicted to tobacco lead to oxygen deficiency in their body. What could be the possible reason?
3. Name any three foods that are to be avoided and included in the diet of a diabetic patient. Why should it be followed?
4. How can informational efforts change people's HIV knowledge and behaviour?

**ALL THE BEST SCORE CENTUM MARKS****DAY 22****ART 22****unit 22, 23****MAX. MARKS:50****UNIT 22: Environmental Management****UNIT 23: Visual communication****I. Answer in a sentence****10x1=10**

1. What will happen if trees are cut down?
2. What would happen if the habitat of wild animals is disturbed?
3. What are the agents of soil erosion?
4. Why fossil fuels are to be conserved?
5. Solar energy is a renewable energy. How?
6. How are e-wastes generated?
7. What is Scratch?
8. Write a short note on editor and its types?
9. What is Stage?
10. What is Sprite?

**II. Short answer questions****4x2=8**

1. What is the importance of rainwater harvesting?

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2. What are the advantages of using biogas?
3. What are the environmental effect caused by sewage?
4. What are the consequences of deforestation?

**III. Long answer questions****6x5=30**

1. How does rainwater harvesting structures recharge ground water?
2. How will you prevent soil erosion?
3. What are the sources of solid wastes? How are solid wastes managed?
4. Enumerate the importance of forest.
5. What are the consequences of soil erosion?
6. Why is the management of forest and wildlife resource considered as a challenging task?

**IV. Higher Order Thinking Skills (HOTS)****1x2=2**

1. Although coal and petroleum are produced by degradation of biomass, yet we need to conserve them. Why?
2. What are the objectives for replacing non-conventional energy resources from conventional energy resources?

**ALL THE BEST SCORE CENTUM MARKS****DAY 23****ART 23****Physics UNIT 1 to 6****2MARKS****MAX. MARKS:50****Answer the following 25x2=50**

1. Give any two examples of inertia.
2. Define linear momentum.
3. State Newton's law.
4. Classify the types of force based on their application. (3)
5. Differentiate mass and weight.
6. What is meant by Plano-concave lens? (19)
7. Write Lens formula. (22)
8. A person with myopia can see objects placed at a distance of 4m. If he wants to see objects at a distance of 20m, what should be the focal length and the power of the concave lens he must wear? (28)
9. What are the causes of Myopia. (30)
10. Define kilocalorie. (34)
11. State Boyle's law & formula (36)
12. State Charles's law & formula (37)
13. State Avogadro's law & formula (37)
14. Define ampere. (43)
15. Define electric current. SI unit of current. (42,43)

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16. Define electric potential & SI unit.(44)
17. Define electric potential difference.(44)
18. Define volt. (44)
19. A charge of **12 coulomb** flows through a bulb in 5 second. What is the current through the bulb? (43)
20. The work done on moving a charge of 10 C across two points in a circuit is 100J. What is the potential difference between the points?(44)
21. State Ohm's law.(45)
22. Define reflection of sound. (62)
23. State law of reflection (62)
24. Define Echoes.(64)
25. Write note on Gamma decay.(78)
26. What is meant by Dosimeter.(83)

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**DAY 24     ART 24     CHEMISTRY DETAILS UNIT 7 to 11     4MARKS     MAX. MARKS:60**

1. State Avogadro's law & mathematical expression. Explain Application of Avogadro law.
2. Write main postulates of modern atomic theory.
3. Write note on Froth floatation process.
4. What are the physical properties of metals.
5. Difference between reversible reaction and irreversible reaction.
6. General characteristics of organic compounds.
7. Characteristics of homologous series.
8. Give the balanced chemical equation of the following reactions:
  - (i) Neutralization of NaOH with ethanoic acid.
  - (ii) Evolution of carbon dioxide by the action of ethanoic acid with  $\text{NaHCO}_3$ .
  - (iii) Oxidation of ethanol by acidified potassium dichromate.
  - (iv) Combustion of ethanol.
9. Explain the relationship between vapour density and relative molecular mass.
10. Explain features of periods.

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11. Difference between soap and detergent.
12. Explain the factors of affecting solubility.
13. Explain extraction of Aluminium from its ore.
14. Explain extraction of Iron from its ore.
15. What is corrosion? Types of corrosion, Methods of preventing corrosion. (120)
16. Explain manufacture of ethanol from Molasses.

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**DAY 25**

**ART 25**

**BIOLOGY**

**MAX. MARKS:60**

**Answer the following**

**15x2=30**

1. Name the three basic tissue system in flowering plants.
2. What is photosynthesis and where in a cell does it occur?
3. Write the reaction for photosynthesis?
4. Describe the structure and working of the human heart.
5. What is the importance of valves in the heart?
6. What are chemical messengers?
7. Write the differences between endocrine and exocrine gland.
8. What is the role of parathormone?
9. Define triple fusion.
10. Write the characteristics of insect pollinated flowers.
11. Explain the structure of a chromosome.
12. Label the parts of the DNA in the diagram given below. Explain the structure briefly.
13. Write note on theory special creation.

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14. Differentiate between out breeding and inbreeding.

15. Explain water energy.

16. Explain Tidal energy.

**Answer in detail** **6x5=30**

17. Differentiate the following a) Monocot root and Dicot root b) Aerobic and Anaerobic respiration

18. Enumerate the functions of blood.

19. Write the physiological effects of gibberellins.

20. With a neat labelled diagram describe the parts of a typical angiospermic ovule.

21. How is the structure of DNA organised? What is the biological significance of DNA?

22. Natural selection is a driving force for evolution – How?

23. Describe mutation breeding with an example.

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**DAY 26 ART 26**

**CHEMISTRY**

**MAX. MARKS:75**

**MODEL EXAM -2024**

**SCIENCE- CHEMISTRY**

**I. Choose the best answer.**

**12x1=12**

- In the nucleus of  ${}_{20}\text{Ca}^{40}$ , there are
  - 20 protons and 40 neutrons
  - 20 protons and 20 neutrons
  - 20 protons and 40 electrons
  - 40 protons and 20 electrons
- The gram molecular mass of oxygen molecule is
  - 16 g
  - 18 g
  - 32 g
  - 17 g
- \_\_\_\_\_ group contains the member of halogen family.
  - 17<sup>th</sup>
  - 15<sup>th</sup>
  - 18<sup>th</sup>
  - 16<sup>th</sup>
- In the alumino thermic process the role of Al is \_\_\_\_\_.
  - oxidizing agent
  - reducing agent
  - hydrogenating agent
  - sulphurising agent
- The process of coating the surface of metal with a thin layer of zinc is called \_\_\_\_\_.
  - painting
  - thinning
  - galvanization
  - electroplating
- When pressure is increased at constant temperature the solubility of gases in liquid \_\_\_\_\_

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- a. No change                      b. increases                      c. decreases                      d. no reaction

7. Solubility of NaCl in 100 ml water is 36 g. If 25 g of salt is dissolved in 100 ml of water how much more salt is required for saturation \_\_\_\_\_.

- a. 12g                      b. 11g                      c. 16g                      d. 20g

8. The pH of a solution is 3. Its  $[OH^-]$  concentration is

- a.  $1 \times 10^{-3} M$                       b. 3 M                      c.  $1 \times 10^{-11} M$                       d. 11 M

9. Powdered  $CaCO_3$  reacts more rapidly than flaky  $CaCO_3$  because of \_\_\_\_\_.

- a. large surface area                      b. high pressure                      c. high concentration                      d. high temperature

10. TFM in soaps represents \_\_\_\_\_ content in soap

- a. mineral                      b. vitamin                      c. fatty acid                      d. carbohydrate

11. Which of the following statements is wrong about detergents?

- a. It is a sodium salt of long chain fatty acids                      b. It is sodium salts of sulphonic acids  
c. The ionic part in a detergent is  $-SO_3^- Na^+$                       d. It is effective even in hard water.

12. The organic acid present in Vinegar is ----- acid.

- a) Methanoic                      b) Ethanoic                      c) propanoic                      d) Butanoic

**Answer the following (any 7)**

**Q.NO: 22 Compulsory**

**7x2=14**

13. Define isotopes.

14. Calculate the average atomic mass of an element which exist as a mixture of 50% isotope having a mass of 9 amu, and 50% of another isotope having a mass of 10 amu.

15. Write the differences between atoms and Molecules.

16. State modern periodic law

17. Write the differences between minerals and ores.

18. Define super saturated solution and example.

19. Define solubility and example.

20. Define rate of a reaction. (145)

21. Define pH scale.

22. Name the simplest ketone and give its structural formula.

**Answer the following (any 7)**

**Q.NO: 32 Compulsory**

**7x4=28**

23. Hall process.

24. Application of Avogadro law.

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25. Write main postulates of modern atomic theory.
26. Write note on Froth floatation process.
27. What are the physical properties of metals.
28. Difference between hygroscopic substances and deliquescence.
29. Difference between reversible reaction and irreversible reaction.
30. General characteristics of organic compounds.
31. Characteristics of homologous series.
32. Give the balanced chemical equation of the following reactions:

(i) Neutralization of NaOH with ethanoic acid.

(ii) Evolution of carbon dioxide by the action of ethanoic acid with  $\text{NaHCO}_3$ .

(iii) Oxidation of ethanol by acidified potassium dichromate.

(iv) Combustion of ethanol.

**Answer following in detail (any 3)**

**3x7=21**

33. Explain the relationship between vapour density and relative molecular mass.
34. Explain features of periods.
35. Difference between soap and detergent.
36. Explain the factors of affecting solubility.
37. Explain extraction of copper from its ore.

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**DAY 27      ART 27****PHYSICS****MAX. MARKS:60****Answer the following      20x2=40**

1. Give any two examples of inertia.
2. Define linear momentum.
3. State Newton's law.
4. Differentiate mass and weight.
5. What is meant by Plano-concave lens? (19)
6. Write Lens formula. (22)
7. What are the causes of Myopia. (30)
8. Define kilocalorie. (34)
9. State Boyle's law & formula (36)
10. State Charles's law & formula (37)
11. State Avogadro's law & formula (37)
12. Define ampere. (43)
13. Define electric potential & SI unit. (44)
14. Define electric potential difference. (44)
15. Define volt. (44)
16. The work done on moving a charge of 10 C across two points in a circuit is 100J. What is the potential difference between the points? (44)

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17. State Ohm's law.(45)
18. Define reflection of sound. (62)
19. State law of reflection (62)
20. Define Echoes.(64)
21. Write note on Gamma decay.(78)
22. What is meant by Dosimeter.(83)

**Answer the following 4x5=20**

23. Deduce the equation of a force using Newton's second law of motion.
24. Explain the properties of light? (any 5) (16)
25. Draw structure of the human eye.(24)
26. Difference between sound and light. (60)
27. Difference between natural radioactivity and artificial radioactivity.

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**DAY 28      ART 28**

**BIOLOGY**

**MAX. MARKS:90**

**Answer the following**

**25x2=50**

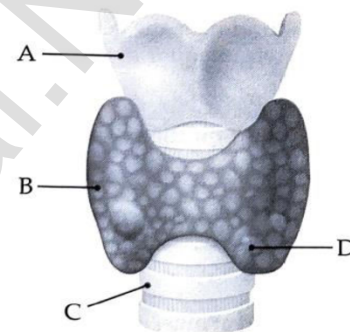
1. Define photosynthesis, reaction and where does photosynthesis occur in cell? (181)
2. What are factors affecting Photosynthesis. (182)
3. Differentiate Aerobic and Anaerobic respiration. (183)
4. What is Respiratory Quotient. (184)
5. Draw the structure of a dicot root and label the parts.
6. Why are the rings of cartilages found in trachea of rabbit?
7. Define transpiration pull. (202)
8. What is the importance of Transpiration? (203)
9. Draw the picture of Granulocytes.
10. What is the importance of valves in the heart?
11. With a neat labeled diagram explain the structure of a neuron.
12. What are Synthetic Auxins? Give examples.
13. Why are thyroid hormones referred as personality hormones?

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14. Identify the parts A, B, C and D in the given diagram. (234)
15. What is pollination. (246)
16. State the importance of pollination. (247)
17. Draw the structure of pollen grains and label the parts.
18. Draw and label the parts of a sperm. (250)
19. Define triple fusion.
20. Name the secondary sex organs in male.
21. Write a note on UTI.
22. Why did Mendel select pea plant for his experiments? (262)
23. What do you understand by the term phenotype and genotype?
24. State the application of DNA Fingerprinting technique. (267)
25. What is Evolution. (276)
26. What is stage?

**Answer****the****following****10x4=40**

27. Differences between Dicot and Monocot root. (177)
28. Enumerate the functions of blood? (206)
29. Draw external structure of Human heart and label the parts (207)
30. Name the three types of neurons and find its location.
31. Name the gaseous plant hormone. Mention any three of its physiological effects in plants. (232)
32. Define Chromosomes & explain structure of chromosome. (265)
33. Define, aspects, Importance Ethnobotany. (281)
34. Explain Biotechnology in Medicine. (293)
35. Explain Gene Therapy. (293)
36. Explain Obesity, Prevention and control of obesity. (305)



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