

**ACTC SCIENCE COACHING CENTRE, 41/1-PWD ROAD, NAGERCOIL 9940847892**

**PLAN!**

**PREPARE!!**

**PRESENTATION!!!**

## **REDUCED SYLLABUS 10 SCIENCE 2021-22**

### **CLASS 10 SCIENCE QUESTION BANK 2022**

(WITH TEXT BOOK PAGE NUMBER)

**Question Bank from**

➤ **GOVT PUBLIC EXAM PREVIOUS YEAR QUESTION PAPER - SEPTEMBER 2020(S20), SEPTEMBER 2021(S21) .**

- **Text book inside**

#### **QUESTION PATTERN**

**PART –I choose the correct answer**

**1 mark 12x1=12**

**PART- II Answer any seven questions (10)**

**2 mark 7 x2=14 QNo:22 compulsory**

**PART- III Answer any seven questions (10)**

**4 mark 7 x4=28 QNo:32 compulsory**

**PART- IV Answer ALL questions (6)**

**7 mark 3 x7=21 within choice**

**TOTAL 75MARKS**

**75/114**

### **CLASS 10 SCIENCE REDUCED SYLLABUS 2022**

#### **IMPORTANT QUESTION BANK (TEXT BOOK INSIDE)**

**& PREVIOUS YEAR GOVT PUBLIC QUESTIONS**

**SEPTEMBER 2020 & SEPTEMBER 2021**

#### **PHYSICS**

#### **UNIT 1 LAWS OF MOTION**

1. What is mechanics? Explain its branches.(2)
2. Define inertia.(2)
3. What are the types of inertia.(2)
4. Give any two examples of inertia.(2)
5. Define linear momentum.(3)
6. Stat Newton's law of motion. (3,6,7) **S21 7 MARK**
7. State Newton's first law. (3)
8. What is meant by force.(3)
9. What are the types of forces? (3)
10. Define resultant force. (3)
11. State Newton's second law of motion.(6)
12. Deduce the equation of a force using Newton's second law of motion. (6)
13. Define 1 newton (N). (6)
14. State Newton's Third law of motion. (7)
15. Give any two examples of Newton's law of motion.(7)
16. Describe rocket propulsion. (8) **S20 4MARK**
17. State Newton's universal law of gravitation. (8)
18. Differentiate mass and weight. (10) **& Study well book Evaluation.**

**ACTC SCIENCE COACHING CENTRE, 41/1-PWD ROAD, NAGERCOIL 9940847892****PLAN!****PREPARE!!****PRESENTATION!!!****UNIT 2 OPTICS**

1. Explain the properties of light? (16)
2. Define refraction of light. (17)
3. State First law of refraction. (17)
4. State second law of refraction. Snell's law (17)
5. Define dispersion of light. (17)
6. Define lens. (19)
7. What are the types of lens?(basic classification) (19)
8. What is meant by Plano-convex lens? (19)
9. What is meant by Plano-concave lens? (19)
10. Explain images formed due to refraction through a convex and concave lens. (20)
11. Draw formation of images by a convex lens when the **objects is placed at infinity, beyond C, at C, between F and C, Principal focus F, Between the principal focus F and optical centre O**(20)
12. Draw formation of images by a concave lens when the **objects is placed at infinity, Object anywhere on the principal axis at a finite distance**(21,22)
13. What are the applications of convex lenses? (Any two) (21)
14. What are the applications of concave lenses? (Any two) (22) **S21 7 MARK ii**
15. Write Lens formula. (22)
16. Explain sign convention. (22)
17. Draw structure of the human eye.(24)
18. Explain defects in eye? (25)
19. Differentiate the eye defects: Myopia and Hypermetropia. (25) **S21 7 MARK i**
20. 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) **S20 2mark compulsory**

**& Study well book Evaluation.****UNIT 3 THERMAL PHYSICS**

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 Calorie. (34)
7. Define kilocalorie. (34)
8. State Boyle's law & formula (36)
9. State Charles's law & formula (37)
10. State Avogadro's law & formula (37)
11. What is real gas? (37)
12. What is ideal gas? (37)

**& Study well book Evaluation.**

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1. Define electric current. SI unit of current. (42,43)
2. A charge of 12 coulomb flows through a bulb in 5 second. What is the current through the bulb?(43) **S21 4MARK ii**
3. Define ampere. (43)
4. Symbols of some components of a circuit. (43)
5. Write the symbol for the following component **S21 4MARK i**  
i)ground connection ii)Resistor iii) Light emitting diode iv) A diode
6. Define electric potential & SI unit.(44)
7. Define electric potential difference.(44)
8. Define volt. (44)
9. 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)
10. State Ohm's law.(45)
11. Define resistance of a conductor & SI Unit(45)
12. Calculate the resistance of a conductor through which a current of 2A passes, when the potential difference between its ends is 30V.(46)
13. Define electrical resistivity. (46)
14. Define electrical conductivity.(46)
15. 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)
16. State Joule's law of heating.(50)
17. 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)
18. Define electric power & SI unit(51)
19. What are the factors of consumption of electricity.(51) **& Study well book Evaluation.**

**UNIT 5 ACOUSTICS**

1. Define acoustics? (59)
2. What is a longitudinal wave? (60)
3. Write note on Audible waves. (60)
4. Write note on infrasonic waves. (60)
5. Write note on Ultrasonic waves. (60)
6. Difference between sound and light. (60)
7. Define reflection of sound. (62)
8. State law of reflection (62)
9. Explain the reflection at the boundary of a denser medium. (63)
10. Explain the reflection at the boundary of a rarer medium.(63)
11. Explain the reflection at curved surfaces. (63)
12. Define Echoes.(64)

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13. What are the conditions necessary for hearing echo? (64)
14. What are the application echoes? (64) Medical application **S20 4MARK ii**
15. When a sound wave travels through air, the air particles-----BB(70) **S21 2MARK**  
 a) vibrate along the direction of the wave motion b) vibrate but not in any fixed direction c) vibrate perpendicular to the direction of the wave motion d) do not vibrate
16. i) What is the audible range of frequency? BB 71 **S21 2MARK i**  
 ii) what is the minimum distance needed for an echo? BB 71 **S21 2MARKii**

**UNIT 6 NUCLEAR PHYSICS**

1. Define radioactivity.(75)
2. Define natural radioactivity. (75)
3. Define artificial radioactivity or induced radioactivity (75)
4. Difference between natural radioactivity and artificial radioactivity.(76)
5. Define curie(76)
6. Define Rutherford. (76)
7. Define Becquerel. (76)
8. Define Roentgen(76)
9. Compare the properties of alpha, beta and gamma radiations. (77) **S20 7MARK**
10. Write note on alpha decay.(78)
11. Write note on Beta decay.(78)
12. Write note on Gamma decay.(78)
13. What is meant by Dosimeter.(83)
14. Explain the uses of radioactivity in agriculture, medicine, industries, Archeological research.(83)
15. Write note on permitted range. (83)
16. Write note on prevent measures of radioactivity. (84)
17.  ${}_{92}\text{U}^{235}$  experiences one  $\alpha$ -decay and one  $\beta$ -decay. Find number of neutrons in the final daughter nucleus that is formed. (85) **S21 4MARK compulsory**

**& Study well book Evaluation.****PREPARE WELL PHYSICS PROBLEM QUESTION EXAMPLE, EXERCISE**

**ACTC SCIENCE COACHING CENTRE, 41/1-PWD ROAD, NAGERCOIL 9940847892****PLAN!****PREPARE!!****PRESENTATION!!!****CHEMISTRY****UNIT 7 ATOMS AND MOLECULES**

1. State the findings of modern atomic theory. (91) **S20 7MARKi**
2. Define mass number. (92)
3. Define amu. (92)
4. Define relative atomic mass. (92)
5. Define gram atomic mass. Give an example. (93)
6. Define molecule. (94)
7. Explain classification of molecules. (94)
8. Define atomicity. (94) **S21 4MARK i**
9. Classify the following molecules based on their atomicity. (95)  
Fluorine (F<sub>2</sub>), Carbon dioxide (CO<sub>2</sub>), Phosphorous (P<sub>4</sub>), Sulphur (S<sub>8</sub>), Ammonia (NH<sub>3</sub>), Hydrogen iodide (HI), Sulphuric Acid (H<sub>2</sub>SO<sub>4</sub>), Methane (CH<sub>4</sub>), Glucose (C<sub>6</sub>H<sub>12</sub>O<sub>6</sub>), Carbon monoxide (CO).
10. Differentiate atom and molecule give an example. (96)
11. State Avogadro's law & mathematical expression. Give an example (98) **S21 2MARK compulsory S20 7MARK ii**
12. Explain the application of Avogadro's law. (99)
13. Find the gram molecular mass of the following from the data given: (99)  
(i) H<sub>2</sub>O (ii) CO<sub>2</sub> **S21 4MARK ii** (iii) Ca<sub>3</sub>(PO<sub>4</sub>)<sub>2</sub>
14. Define isotopes. Give an example. (102)
15. Define isotones. Give an example. (102)
16. Define isobars. Give an example. (102) **& Study well book Evaluation.**

**UNIT 8 PERIODIC CLASSIFICATION OF ELEMENTS**

1. State modern periodic law. (107)
2. What is meant by modern periodic table. (107)
3. Explain the features of Periods in modern periodic table. (107)
4. Explain the features of Groups in modern periodic table. (109)
5. Explain the physical properties of metals. (114)
6. Explain the chemical properties of metals. (114)
7. What is an alloy? (119)
8. What is an amalgam? (119)
9. What are reasons for alloying? (119)
10. Write the methods of making alloys. (119)
11. Why alloys as solid solutions. (119)
12. What are the types of alloys? (119)
13. Write the copper alloy and its uses. (119)
14. Write the aluminium alloys and its uses. (119)
15. Write the Iron alloys and its uses. (119)

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16. What is corrosion? (119)

17. Explain methods of preventing corrosion. (120) **S21 4MARK ii (2methods)****& Study well book Evaluation.****UNIT 9 SOLUTIONS**

1. Define solution. (125)

2. Define solute &amp; solvent. (125)

3. Define dissolution. (125)

4. Define binary solution. (125)

5. Define ternary solution. (125)

6. Explain types of solution based on the physical state of the solute and the solvent. (126)  
(Types of binary solutions)

7. What are the types of solution based on the type of solvent. (126)

8. Define aqueous solution and example. (126)

9. Define non-aqueous solution and example. (126)

10. What are the types of solution based on the amount of solute. (126)

11. Define saturated solution and example. (126)

12. Define unsaturated solution and example. (127)

13. Define super saturated solution and example. (127)

14. Define concentrated solution and dilute solution. (127)

15. Define water of crystallization. &amp; hydrated salts (130)

16. Give an example of Hydrated salts. (130)

17. Explain the action of blue vitriol and Epsom salt. (130)

18. Define Hygroscopy. Give an example of hygroscopic substances. (131)

19. Define Deliquescence. Give an example of Deliquescence. (131)

20. Explain hygroscopic substances and deliquescent substances with examples. (131) **S21 7MARK**21. Difference between hygroscopic substances and deliquescence. (131) **& Study well book Evaluation.****UNIT 10 TYPES OF CHEMICAL REACTIONS**

1. What happens during a chemical reaction? (138)

2. Define balanced chemical equation and example. (138)

3. What are types of chemical reactions based on the nature of rearrangements of atoms? (139)

4. Define combination reaction and example. (139)

5. What are classes of combination reaction and Give an example. (139)

6. Define decomposition reaction and example. (140)

7. Define thermal decomposition reaction and example. (Thermolysis reaction) (140) **S21 7MARK i**

8. Define electrolytic decomposition reaction and example. (140)

9. Define photo decomposition reaction and example. (140)

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10. Define single displacement reaction and example. (141) **S20 7MARK i**
11. Explain the types double displacement reaction with examples. (142) **S20 7MARK ii**
12. Differences between combination and decomposition reaction. (142)
13. Define combustion reaction and example. (143)
14. Define precipitation reaction and example. (142)
15. Define Neutralization reaction and example. (142)
16. Define reversible reaction and example. (144)
17. Define irreversible reaction and example. (144)
18. Differences between reversible and irreversible reactions. (145) **S21 7MARK ii**
19. Define ionic product of water & mathematical expression. (148)
20. Define pH an expression of  $pH$  (148)
21. Give pH of vinegar, coffee, Orange, milk of magnesia (148) study all  $pH$  Value. (148)
22. Calculate the pH of 0.01 M  $HNO_3$ ? (150)
23. The hydroxyl ion concentration of a solution is  $1 \times 10^{-9}M$ . What is the  $pOH$  of the solution?
24. A solution has a  $pOH$  of 11.76. What is the pH of this solution? (150)
25. Calculate the pH of 0.001 molar solution of HCl. (150)
26. What would be the pH of an aqueous solution of sulphuric acid which is  $5 \times 10^{-5}$  mol litre<sup>-1</sup> in concentration? (150)
27. Calculate the pH of  $1 \times 10^{-4}$  molar solution of NaOH. (150)
28. Calculate the pH of a solution in which the concentration of the hydrogen ions is  $1.0 \times 10^{-8}$  mol litre<sup>-1</sup>. (151)
29. If the pH of a solution is 4.5, what is its  $pOH$ ? (151) & Study well book Evaluation

**UNIT 11 CARBON AND ITS COMPOUNDS**

1. Explain General characteristics of organic compounds. (155)
2. Explain classification of organic compounds. (156)
3. What is meant by hydrocarbon? How are classified? (157)
4. Explain Characteristics of hydrocarbons. (158)
5. How to identify saturated and unsaturated compounds. (158)
6. Define functional groups? What is the functional group of alcohols, aldehydes, ketones, carboxylic acids, ester, ether. (158, 159)
7. Define homologous series. Characteristics of homologous series. (159)
8. Write the **structure** of following compounds.  
i) Ethane ii) Heptane iii) propene iv) propanal v) butanone vi) butyne vii) bromopropane viii) butanol ix) propanoic acid x) methoxy methane xi) ethanol xii) furan xiii) cyclopropane xiv) acetaldehyde xv) acetic acid xvi) benzene. (163)
9. Explain manufacture of ethanol. (163)
10. Define fermentation. Give an example. (164)
11. Study all chemical properties of ethanol. (164)
12. Write a reaction which is used for the identification of alcohol. (164) **S20 2MARK**

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- 13.Explain uses of ethanol. (165) **S21 two uses 2MARK**  
 14.Explain uses of organic compounds in daily life. (166) **& Study well book Evaluation**

**BIOLOGY****UNIT 12 PLANT ANATOMY AND PLANT PHYSIOLOGY**

1. What is meant by Tissues? (173)
2. What are tissue system in plants.(173)
3. Explain Tissue system and its functions. ( 174)
4. What are the functions of Dermal tissue system.(174)
5. Write note on ground Tissue system. (174)
6. Explain Vascular Tissue system. (174)
7. Explain Internal structure of Dicot Root (Bean) (175)
8. Explain Internal structure of Dicot Root (sunflower) (176)
9. Differences between Dicot and Monocot root. (177) **S20 4MARK**
- 10.Explain internal structure of Dicot (mango)(178)
- 11.What is meant by plastids.(180)
- 12.What are the types of plastids? (180)
- 13.Explain structure of chloroplast. (180)
- 14.What are the functions of chloroplast.(180)
- 15.Define photosynthesis and Where does photosynthesis occur in cell?(181) **S21 4MARK i**
- 16.Write note on photosynthetic pigments? (181)
- 17.Write note on role of sunlight in photosynthesis. (181)
- 18.What are factors affecting Photosynthesis. (182)
- 19.What is meant by Aerobic respiration.(183)
- 20.Write note on anaerobic respiration. (184)
- 21.Differentiate Aerobic and Anaerobic respiration.(183) **S21 4MARK ii**
- 22.What is Respiratory Quotient. (184) **S21 2MARK & Study well book Evaluation**

**UNIT 14 TRANSPORTATION IN PLANTS AND CIRCULATION IN ANIMALS**

1. Define diffusion.(201)
2. Write note on active transport. (201)
3. Define osmosis. (201)
4. What is meant by plasmolysis & imbibition? (201)
5. Draw and explain root tip with Root Hairs. (201)
6. Write note on Apoplast pathway. (202)
7. Write note on Symplast pathway. (202)
8. Define transpiration pull. (202)
9. What is the importance of Transpiration? (203)
- 10.Write note on Root pressure.(203)
- 11.Write note on uptake of minerals. (203)
- 12.Write note on translocation of mineral ions? (203)
- 13.Write note on Phloem transport. (203)

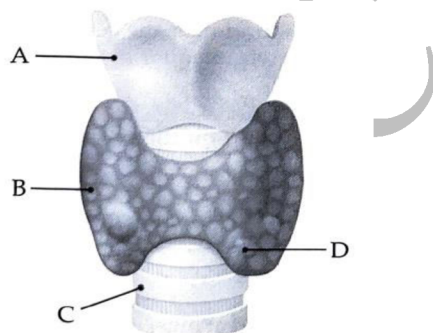


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- PLAN!** **PREPARE!!** **PRESENTATION!!!**
14. Write note on translocation of sugars. (203)
  15. What are components of Blood? (204)
  16. Enumerate the functions of blood? (206) **S21 7MARK i**
  17. Write note on Erythrocytes. (205)
  18. Write note on Leucocytes. (205)
  19. What are the types of Granulocytes? (205)
  20. Explain the functions of blood. (206)
  21. Draw external structure of Human heart and label the parts (207) **S20 4MARKS**
  22. Explain distribution of Antigen and antibody in different blood groups. (212) **& Study well book Evaluation**

**UNIT 16 PLANT AND ANIMAL HORMONES**

1. What is meant by plant Hormones? (229)
2. What are types of plant Hormones? (230)
3. How Auxins are classified. (230)
4. Explain physiological effects of Auxins. (230)
5. Explain physiological effects of Cytokinins. (231)
6. Name the gaseous plant hormone. Mention any three of its physiological effects in plants. (232) **S21 4MARK** (Explain physiological effects of Ethylene. (232))
7. State Endocrinology. (233)
8. What are the endocrine glands? (233)
9. What are the hormones secreted by anterior pituitary gland? (233)
10. Explain the functions of thyroid hormones. (235)
11. Functions of Insulin (236)
12. Identify the parts A, B, C and D in the given diagram. (234) **S20 2MARK**



13. Functions of Glucocorticoids. (237)
14. Functions of Testosterone. (238)
15. Functions of Thymosin. (238)
16. Functions of Progesterone. (238)

**& Study well book Evaluation****UNIT 17 REPRODUCTION IN PLANTS AND ANIMALS**

1. Write note on androecium. (245)
2. Write note on Gynoecium. (246)

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3. What is meant by micropyle. (246)
4. What is pollination.(246) **S21 4MARK i**
5. State the importance of pollination. (247) **S21 4MARK ii**
6. Write note on self-pollination. (246)
7. Advantages of self-pollination. (246)
8. Disadvantages of self-pollination. (247)
9. What is meant by cross pollination? (247)
10. Advantages of cross-pollination. (247)
11. Disadvantages of cross-pollination. (247)
12. Explain the process of Fertilization in plants. (248)
13. Draw and label the parts of a sperm. (250) **S21 2MARK**
14. Draw the structure of Ovum. (250)
15. Explain menstrual cycle – process of ovulation.(251)
16. Explain personal Hygiene, Body Hygiene, toilet hygiene, Menstrual and Napkin Hygiene(255) **& Study well book Evaluation**

**UNIT 18 GENETICS**

1. Define genetics. (261)
2. Why did Mendel select pea plant for his experiments? (262)
3. Monohybrid cross- Inheritance of one gene. (262)
4. Dihybrid Cross- Inheritance of two genes and Law of Independent Assortment (263)
5. Explain Mendel's laws. (264)
6. Define Chromosomes & explain structure of chromosome. (265) **S21 4MARK**
7. Define diploid, haploid(266)
8. Explain structure of DNA. (266)
9. Explain Watson and Crick model of DNA(266)
10. State the application of DNA Fingerprinting technique. (267) **S20 2MARK**

Any 2 Points

2x1=2

- ❖ Used in forensic applications the crime investigation such as identifying the culprit.
- ❖ It is used for paternity testing in case of disputes.
- ❖ It helps in the study of genetic diversity of population, evolution and speciation.

**Ans:**

11. What is meant by DNA Replication.(268)
12. Write note on Significance of DNA. (268) **S20 7MARK i**
13. Explain Sex Determination in Human. (269) **& Study well book Evaluation**

**19. ORIGIN AND EVOLUTION OF LIFE**

1. Explain Theories on origin of life. (274)
2. What is Evolution. (276) **S21 2MARK**
3. Explain Use and Disuse theory (or) Lamarckism.(277)
4. Explain Darwinism or Theory of natural selection(277)
5. Define, aspects, Importance Ethnobotany.(281) **S20 4MARKS**  
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1. Write note on Green Revolution. (286)
2. Explain Methods of Plant Breeding for Crop Improvement. (288)
3. Write note on Animal Breeding, Inbreeding, out breeding.
4. Write note on Heterosis. (291)
5. Explain Biotechnology in Medicine. (293) **S21 4MARK**
6. Explain Gene Therapy. (293) **S20 4MARK**

**& Study well book Evaluation****21. HEALTH AND DISEASES**

1. Child Abuse, Sexual Abuse, Child Sexual Abuse. (301)
2. Explain Approaches for protection of an abused child.(302) **S20 7MARKiii**
3. Write note on Drug De-addiction. (303)
4. Explain Smoking Hazards and effects of Tobacco.(304)
5. Explain Harmful effects of alcohol to health. (304)
6. Suggest measures to overcome the problems of an alcoholics.(305) **S21 7MARK i**
7. Explain Obesity, Prevention and control of obesity. (305) **S21 7MARK ii**
8. Explain Preventive measures for cancer. (309)
9. How is cancer cell different from normal cell? **S21 2MARK**
10. Explain Symptoms and treatment of AIDS. (310)
11. Explain Prevention and control of AIDS. (310) **& Study well book Evaluation**

**ALL THE BEST****DON'T STRESS !****DO YOUR BEST !!****FORGET THE REST!!!****WE WISH U ALL THE BEST SCORE CENTUM****ACTC****SCIENCE COACHING CENTRE****ADVANCED CHEMISTRY TUITION CENTRE**

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