

TERM 2
MAR 2016
EXAMS

OSWAAL CBSE CCE QUESTION BANK

with complete solutions

SCIENCE

TERM 2
OCTOBER - MARCH 2016

Class
10

Examination Paper 2015 and
Toppers Answers of March 2014 Exam



SUMMATIVE & FORMATIVE ASSESSMENT

HIGHLIGHTS

- Strictly based on the 'Latest Design of the Question Paper' issued by CBSE for March 2016 Exams
- Questions from all sets of **CBSE (Delhi, Outside Delhi & Foreign)** from 2011 to 2015 Term 2 Examinations
- Summative Assessment Questions as per the latest design - MCQs, VSA, Short & Long Answer Questions, Value Based & HOTS Questions
- Answers of **CBSE Marking Scheme 2011 to 2015** with detailed explanations as per the word limit specified by Board



**FOR TERM 2
March 2016
EXAMS**

OSWAAL

CBSE Continuous and Comprehensive Evaluation (CCE)

QUESTION BANK with complete solutions

SCIENCE

**SUMMATIVE & FORMATIVE
ASSESSMENT**

**Class
10**

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PREFACE

CBSE always believes in Global Trends of Educational Transformation. The CBSE curriculum gets its lead from National Curriculum Framework – 2005 and Right to Free and Compulsory Education Act – 2009. CBSE introduced CCE in the later half of 2009. CCE has been started to improve the quality of Education and was meant to lessen the burden of studies on Students. CCE stands for Continuous & Comprehensive Evaluation. The term 'Continuous' in CCE refers to periodicity and regularity in assessment and the term 'Comprehensive' refers to overall assessment of the learner, in both curricular & co curricular scheme of things.

These **Oswaal CCE Question Banks for Classes IX & X** have been written so as to supplement the need of the students to prepare for these progressive assessments at school during the entire year.

Oswaal CCE Question Bank has been divided into two sections: Summative Assessment (SA) & Formative Assessment (FA). In the Summative section, chapters are arranged 'TOPICWISE' where each topic is explained in detail and covers all typologies of Questions specified by CBSE, with well labelled diagrams and high quality figures/diagrams for fast learning. Answers from CBSE Marking scheme are highlighted in order to specify the correct method of answering questions for attaining maximum marks.

Formative section of the book will assist the students to prepare for the frequent class room based evaluation, both as an individual and as a group activity. The various formative techniques include Quizzes, Chapter assignment, Work sheets, Projects, Seminar, Symposium, Action Plans, etc. These activities have been elaborated by CBSE Board on www.cbse.nic.in. The students can read through all these components while revising a chapter to be always prepared for the surprise FA's in the class.

At last we would like to thank our authors, editors, reviewers and specially students who regularly send us suggestions which helps in continuous improvement of this book and makes this book stand in the category of "One of the Best". Wish you all Happy Learning.

–Publisher

SYLLABUS

Science Class - X For Term II (October-March) COURSE STRUCTURE

| SECOND TERM | Marks : 90 |
|---|------------|
| UNITS | MARKS |
| I. Chemical Substances - Nature and Behaviour | 23 |
| II. World of Living | 30 |
| III. Natural Phenomena | 29 |
| IV. Natural Resources | 08 |
| TOTAL | 90 |

THEME : MATERIALS (25 periods)

Unit I : Chemical Substances - Nature and Behaviour

Carbon compounds : Covalent bonding in carbon compounds. Versatile nature of carbon. Homologous series. Nomenclature of carbon compounds containing functional groups (halogens, alcohol, ketones, aldehydes, alkanes and alkynes), difference between saturated hydrocarbons and unsaturated hydrocarbons. Chemical properties of carbon compounds (combustion, oxidation, addition and substitution reaction). Ethanol and Ethanoic acid (only properties and uses), soaps and detergents.

Periodic classification of elements : Needs for classification, Modern Periodic table, gradation in properties, valency, atomic number, metallic and non-metallic properties.

THEME : THE WORLD OF THE LIVING (30 periods)

Unit II : World of living

Reproduction : Reproduction in animals and plants (asexual and sexual) reproductive health - need and methods of family planning. Safe sex vs HIV/ AIDS. Child bearing and women's health.

Heredity and Evolution : Heredity; Mendel's contribution- Laws for inheritance of traits; Sex determination : brief introduction; Basic concepts of evolution.

THEME : NATURAL PHENOMENA (23 periods)

Unit III : Natural Phenomena

Reflection of light by curved surfaces; Images formed by spherical mirrors, centre of curvature, principal axis, principal focus, focal length, mirror formula (Derivation not required), magnification.

Refraction; laws of refraction, refractive index.

Refraction of light by spherical lens; Image formed by spherical lenses; Lens formula (Derivation not required); Magnification. Power of a lens; Functioning of a lens in human eye, defects of vision and their corrections, applications of spherical mirrors and lenses.

Refraction of light through a prism, dispersion of light, scattering of light, applications in daily life.

THEME : NATURAL RESOURCES

(12 periods)

Unit IV : Natural Resources

Conservation of Natural resources : Management of natural resources. Conservation and judicious use of natural resources. Forest and wildlife; Coal and Petroleum conservation. Examples of peoples' participation for conservation of natural resources.

Regional environment : Big dams : advantages and limitations; alternatives, if any. Water harvesting. Sustainability of natural resources.

Our environment : Eco-system, Environmental problems, Ozone depletion, waste production and their solutions. Biodegradable and non-biodegradable substances.

Practicals — Second Term

Practicals should be conducted alongside the concepts taught in theory classes

List of Experiments :

1. To study the following properties of acetic acid (ethanoic acid) :
 - (i) odour
 - (ii) solubility in water
 - (iii) effect on litmus
 - (iv) reaction with sodium bicarbonate
2. To study saponification reaction for preparation of soap.
3. To study the comparative cleaning capacity of a sample of soap in soft and hard water.
4. To determine the focal length of
 - i. Concave mirror,
 - ii. Convex lens,by obtaining the image of a distant object.
5. To trace the path of a ray of light passing through a rectangular glass slab for different angles of incidence. Measure the angle of incidence, angle of refraction, angle of emergence and interpret the result.
6. To study (a) binary fission in *Amoeba*, and (b) budding in *Yeast* with the help of prepared slides.
7. To trace the path of the rays of light through a glass prism.
8. To find the image distance for varying object distances in case of a convex lens and draw corresponding ray diagrams to show the nature of image formed.
9. To study homology and analogy with the help of models / charts of animals and models / charts / specimens of plants.
10. To identify the different parts of an embryo of a dicot seed (Pea, gram or red kidney bean).

Prescribed Books :

- | | | |
|---|---|-------------------|
| • Science - Textbook for class X | — | NCERT Publication |
| • Assessment of Practical Skills in Science - Class X | — | CBSE Publication |
| • Laboratory Manual-Science - Class X | — | NCERT Publication |

IMPROVE YOUR MEMORY

MAKE IT MEANINGFUL

We struggle to retain information when it is unclear or confusing. It is difficult to remember concepts that are not completely understood. Re-summarising and repeating the information to yourself **in your own words** is a great way to make the concept clear and to remember it.

ACTIVE STUDYING

In order to remember or learn a concept, practice active studying. To do this, teach information to your classmates in a study group. Critically analyze material, and come up with questions about what you have learned. This enhances your ability to retain complicated concepts.

PAY ATTENTION

You cannot learn something—that is, encode it into your brain—if you do not pay enough attention to it.

It only takes **8** seconds of intense focus to process a piece of information into your memory.



USE PICTURES

It is easier to remember a picture rather than details from a book or a lesson.

Visualisation is a strategy that can be used to remember information.

To do this, create images in your mind that relate to the concept. Visualising information will imprint it in your mind.



MNEMONIC DEVICES

Use a mnemonic device to remember specific details from your lessons. Mnemonic devices work by relating facts with short phrases, words that rhyme, or anything else an individual is familiar with. Use **acronyms** to remember important details.

Question Paper Design For Science

(CODE NO. 086/090) CLASS X (2015-16)

Time : 3 Hr.

Max. Marks : 90

| Sr. No. | Typology of Questions | Very Short Ans. (VSA) | Short Answer-I | Short Answer-II | Long Answer (LA) | Total Marks | Percentage (%) Weightage |
|---------|---|-----------------------|----------------|-----------------|------------------|-------------|--------------------------|
| | | 1 Mark | 2 Marks | 3 Marks | 5 Marks | | |
| 01. | Remembering - (Knowledge based) Simple recall questions, to know specific facts, terms, concepts, principles, or theories; Identify, define, or recite, information) | 3 | - | 1 | 1 | 11 | 15% |
| 02. | Understanding - (Comprehension - to be familiar with meaning and to understand conceptually, interpret, compare, contrast, explain, paraphrase, or interpret information) | - | 1 | 4 | 1 | 19 | 25% |
| 03. | Application - (Use abstract information in concrete situation, to apply knowledge to new situations; Use given content to interpret a situation, provided an example, or solve a problem) | - | - | 4 | 1 | 17 | 23% |
| 04. | High Order Thinking Skills - (Analysis & Synthesis - Classify, compare, contrast or differentiate between different pieces of information; Organise and/or integrate unique pieces of information from a variety of sources) | - | 2 | - | 1 | 9 | 12% |
| 05. | Inferential and Evaluative - (Appraise, judge, and/or justify the value or worth of a decision or outcome, or to predict outcomes based on values) | - | - | 2+1* | 2 | 19 | 25% |
| | Total (Theory Based Questions) | 3X1=3 | 3X2=6 | 12X3=36 | 6X5=30 | 75 (24) | 100% |
| | Practical Based Questions (PBQs) | 9X1=9 | 3X2=6* | | | 15 (12) | |
| | TOTAL | 12X1=12 | 6X2=12 | 12X3=36 | 6X5=30 | 90 (36) | |

NOTE : * One question of 3 marks will be included to assess the values inherent in the texts.

| | | |
|------------------------------|--|----------------------------------|
| Examination Paper | Summative Assessment - II (2014 - 15) Class-X | Science Code : GFUTB86 |
|------------------------------|--|----------------------------------|

Time allowed : 3 hours

Maximum Marks : 90

General Instructions :

- (i) The question paper comprises of two Sections, A and B. You are to attempt both the sections.
- (ii) All questions are compulsory.
- (iii) There is no choice in any of the questions.
- (iv) All questions of Section-A and all questions of Section-B are to be attempted separately.
- (v) Question numbers 1 to 3 in Section-A are one mark questions. These are to be answered in one word or in one sentence.
- (vi) Question numbers 4 to 6 in Section-A are two marks questions. These are to be answered in about 30 words each.
- (vii) Question numbers 7 to 18 in Section-A are three marks questions. These are to be answered in about 50 words each.
- (viii) Question numbers 19 to 24 in Section-A are five marks questions. These are to be answered in about 70 words each.
- (ix) Question numbers 25 to 33 in Section-B are multiple choice questions based on practical skills. Each question is a one mark question. You are to select one most appropriate response out of the four provided to you.
- (x) Question numbers 34 to 36 in Section-B are questions based on practical skills. Each question is a two mark question.

SECTION -A

1. Write the total number of periods in modern periodic table. 1
2. In the human female reproductive system where does fertilization occur ? 1
3. Select the item which is made up of biodegradable material-Plastic bag, leather bag, nylon rope, kettle. 1
4. Briefly describe an activity to find approximate focal length of a Convex lens. 2
5. Burning of fossil fuel is causing great environmental concern. Mention the consequences of combustion of fossil fuels. 2
6. Differentiate between the food habits of organisms belonging to first and second trophic levels. 2
7. Explain the following : 3
 - (i) CH_3COOH is a weak acid.
 - (ii) Propene undergoes addition reaction.
 - (iii) The gas stoves have inlets for air.
8. Write the molecular, electronic and structural formulae of ethyne. 3
9. (a) Predict which of the following elements will form anions and which will form cations ? 3
 - (i) Na
 - (ii) Al

| | | |
|-------------------------|---|----------------|
| SOLVED PAPER | Topper Answers C.B.S.E., 2014 Class-X (Term-2) | SCIENCE |
| | Outside Set-I | |

Time allowed : 3 hours

Max. Marks : 90

| | |
|---------------|-----------|
| Outside Set-I | Code 31/1 |
|---------------|-----------|

General Instructions :

- (i) The Question paper comprises of two Sections, A and B. You are to attempt both the sections.
- (ii) All questions are compulsory.
- (iii) All questions of Sections A and all questions of section B are to be attempted separately.
- (iv) Question numbers 1 to 3 in Section A are one-mark questions. These are to be answered in one word or in one sentence.
- (v) Question numbers 4 to 7 in section A are two-marks questions. These are to be answered in about 30 words each.
- (vi) Question numbers 8 to 19 in Section A are three-marks question. These are to be answered in about 50 words each.
- (vii) Question numbers 20 to 24 in Section A are five-marks questions. These are to be answered in about 70 words each.
- (viii) Question numbers 25 to 42 in Section B are multiple choice questions based on practical skills. Each question is a one-mark question. You are to select one most appropriate response out of the four provided to you.

SECTION A

1. List any two properties of the elements belonging to the first group of the modern periodic table. 1

Ans. 1. Elements belonging to the first group are :
 * Metals [Alkali]
 * Have valency 1

2. What is a gene ? 1

Ans. 2. A gene is the functional unit of DNA, with a specific biological function. One gene is responsible for the synthesis of one protein.

3. Give one example each from your daily life where the domestic waste can be effectively reused and recycled. 1

Ans. Old newspapers can be collected and sent to factories to be recycled
 Plastic and glass bottles/jars can be reused to store pickles and other food materials.

4. What is the main difference between sperms and eggs of humans ? Write the importance of this difference. 2

Ans.

| 4 | Sperms | Egg cells |
|---|------------------|----------------------|
| * | Male gamete | Female gamete |
| * | Small and motile | Large and non motile |

| | | |
|-----------------------|--------------------|-----------------------------|
| * Main difference: | X or Y chromosomes | Contains food stores. |
| | | Contains only X chromosome. |

Since female gamete always contains X chromosome, the sex of the child is independent of mother's genes. The chromosome in the male gamete/sperm determines the sex of the child.
[if its X, child will be female, if its Y child will be male]

5. List two possible ways in which a concave mirror can produce a magnified image of an object placed in front of it. State the difference, if any, between these two images. 2

Ans. when the object is placed between pole and focus of concave mirror, magnified, virtual, erect image will be formed behind the mirror. [Case I]

when the object is placed between ~~between~~ centre of curvature and ~~between~~ focus of the concave mirror, enlarged, real, inverted image is formed on a screen. [Case II]

| Real Image [Case II] | Virtual Image [Case I] |
|---------------------------|------------------------------|
| Can be obtained on screen | Cannot be obtained on screen |
| Inverted | Erect |

6. What are decomposers? List two important roles they play in the environment. 2

Ans. Decomposers are micro organisms, especially bacteria & fungi, that break down waste and dead remains of organisms. They convert complex organic substances into simple inorganic molecules, which go into the soil and are once again taken up by plants.

* Decomposers ensure the cyclic movement of matter in nature.

* They prevent pollution and makes sure that the earth is not covered with organic waste.

7. Why is sustainable management of natural resources necessary? Out of the two methods – reuse and recycle – which one would you suggest to practise and why? 2

Ans.

7. Sustainable management encourages all forms of growth that are needed to meet basic human needs, while conserving natural resources for the future generations. It is necessary because, our natural resources are exhaustible, limited and non renewable.

Our resources are being over exploited by the growing population and there is no equitable distribution of resources, as a handful of rich and powerful people are exploiting them to the hilt for short term benefits. So it is necessary.

I would suggest 'reuse', because in this practice no energy is wasted, and segregation of wastes is not necessary. By practising 'reuse' strategy we are also 'reducing' our consumption of resources.

8. What are homologous series of carbon compounds? Write the molecular formula of two consecutive members of homologous series of aldehydes. State which part of these compounds determines their (i) Physical and (ii) chemical properties. 3

Ans. 8. Homologous series are a series of carbon compounds with regularly varying chain lengths and the same functional group. Adjacent compounds differ by CH_2 unit and 14u molecular mass.
 $\text{CH}_3\text{-CHO}$, $\text{CH}_3\text{CH}_2\text{-CHO}$ are two consecutive members of homologous series of aldehydes.
 i The carbon chain length determines physical properties
 ii Functional group determines chemical properties.

9. A carboxylic acid (molecular formula $\text{C}_2\text{H}_4\text{O}_2$) reacts with an alcohol in the presence of an acid catalyst to form a compound 'X'. The alcohol on oxidation with alkaline KMnO_4 followed by acidification gives the same carboxylic acid $\text{C}_2\text{H}_4\text{O}_2$. Write the name and structure of (i) carboxylic acid, (ii) alcohol and (iii) the compound 'X'. 3

Ans. 9 i) $\text{C}_2\text{H}_4\text{O}_2 = \text{CH}_3\text{-COOH}$ - ethanoic acid
 (ii) $\text{C}_2\text{H}_5\text{OH}$ - ethanol
 (iii) 'X' is $\text{CH}_3\text{COOC}_2\text{H}_5$ - ethyl acetate [ethyl ethanoate - ester]

10. The electrons in the atoms of four elements A, B, C and D are distributed in three shells having 1, 3, 5 and 7 electrons in the outermost shell respectively. State the period in which these elements can be placed in the modern periodic table. Write the electronic configuration of the atoms of A and D and the molecular formula of the compound formed when A and D combine. 3

Ans. 10 A, B, C and D belongs to Period 3.

Electronic configuration:

| A | | | D | | |
|------------------------------|---|---|------------------------------|---|---|
| K | L | M | K' | L | M |
| 2 | 8 | 1 | 2 | 8 | 7 |
| Atomic no. 11 valency : 1 | | | Atomic no. 17 valency : 1 | | |

when A and D combines:



AD

11. Study the following table in which positions of six elements A, B, C, D, E and F are shown as they are in the modern periodic table: 3

| Period ↓ | Group → | | | | | | | | |
|----------|---------|---|------|----|----|----|----|----|----|
| | 1 | 2 | 3-12 | 13 | 14 | 15 | 16 | 17 | 18 |
| 2 | A | | | | | B | | | C |
| 3 | | | | D | E | | | | F |

On the basis of the above table, answer the following questions :

- (i) Name the element which forms only covalent compounds.
- (ii) Name the element which is a metal with valency three.
- (iii) Name the element which is a non-metal with valency three.
- (iv) Out of D and E, which is bigger in size and why ?
- (v) Write the common name for the family to which the elements C and F belong.

Ans.

- i E
- ii D
- iii B
- iv D is bigger in size than E, because the net nuclear charge in E is higher, so the shells are closely held together than in D.
- v C and F belongs to Inert Gases / Zero Group Elements.

12. Explain the process of regeneration in *Planaria*. How is this process different from reproduction ? 3

Ans.

12. *Planaria* is a fully differentiated multi cellular organism which has the ability to grow into a new individual if it is cut up or broken into pieces. Each piece grows into a new individual. This is due to the regenerative cells which are present in its body. These cells grow, proliferate and gives rise to a mass of cells. From this mass of cells different types of and tissues will develop. This process takes place in an organized sequence called development.
- This process is different from reproduction as most organisms would not depend on being cut up in order to reproduce.

13. What is placenta ? State its function in human female.

3

Ans.

13. Placenta is a tissue made of blood that develops around the growing embryo in the uterus.
- * The placenta has blood spaces on the mother's side, and finger like projections called villi on the embryo's side.
 - * The villi are richly supplied with blood vessels.
 - * The nutrients and food from the mother's blood reaches the embryo through the villi which has a large surface area.
 - * Wastes generated by the embryo are absorbed by the placenta and released into the mother's blood.
 - * Placenta is necessary for the normal and healthy development of the embryo.

14. With the help of suitable examples, explain why certain traits cannot be passed on to the next generation. What are such traits called ?

3

Ans.

14. Certain traits cannot be passed on to the next generation. Such traits develop through experiences during the lifetime of an individual. They do not make any changes in the DNA or germ plasma. They make

changes in only the non reproductive cells of the body. They are non inheritable.

For eg. Rohan knows to play the guitar because he went for guitar classes for a few years.

But his son doesn't know to play the guitar because he hasn't gone for training, even though his father can!

Eg: A group of beetles are healthy and well developed due to availability of food resources.

However its progeny lived during a famine, where very little food was available, so they were thin.

Even though, parent population was healthy, the progeny was not, because of environmental factors.

* They are called acquired traits.

15. "A trait may be inherited, but may not be expressed". Justify this statement with the help of a suitable example. 3

Ans. 15. In the sexual mode of reproduction, both the parent contribute an equal amount of genetic material to the child. The DNA of the child is influenced by the DNA of the parents. So each trait contains two versions in the child: maternal version and paternal version. However which trait is expressed, depends on the parentage.

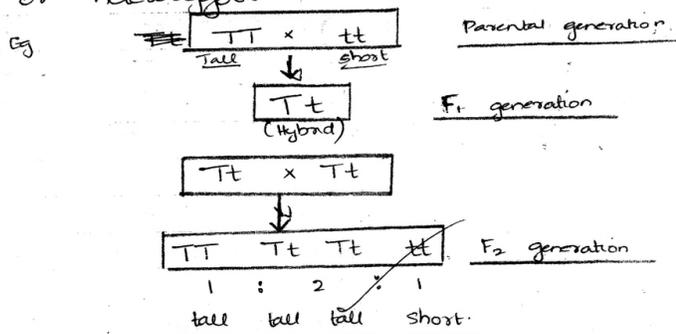
Example

In Mendel's experiment, he cross bred two pure lying pea plants. One was purely dominant tall and the other purely recessive short.

He found that all the progeny were tall. No one was medium or short. So he supposed that tallness trait was inherited.

But when he cross bred two plants of F₁ generation, it was found that 75% were tall and 25% short. Out of this 25% was pure dominant tall, 50% were hybrids and 25% pure recessive short. So he understood that both traits were inherited but only one was expressed in each plant. So which trait expresses itself

depends on whether the versions are dominant, recessive or heterozygous.



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