SCIENCE

BIOLOGY (CLASS XI-XII)

Biology (Class-XI)

Learning Outcomes	*Sources/ Resources*	*Suggested Activities (to be guided by teachers)*
The learner – differentiates organisms, phenomena and processes based on certain characteristics and salient features such as living and nonliving, acellular, unicellular and multicellular; different groups of organisms, etc. – identifies and classifies organisms based on certain characteristics / salient features systematically in more scientific and organised manner; such as five kingdom classification, several levels of organisation of classification of Plant and Animal Kingdom, taxonomic categories, etc. – efficiently explains systems, relationships, processes and phenomena, such as, systematic binomial nomenclature of organisms; basis and systems of biological classification and their characteristics; life cycles of various plants and animals; importance of	**NCERT/State Textbook** **All flip textbooks of NCERT are available on the following website** https://epathshala.nic.in//process.php?id=students&type=eTextbooks&ln=en QR codes on the *Textbook of Biology*,Class XI for e-resources E-resource available on NROER National Repository of Open Educational Resources (NROER) https://nroer.gov.in/home/e-library/ *Exemplar Problem – Biology*, Class XI http://ncert.nic.in/ncerts/l/Keep401.pdf http://ncert.nic.in/ncerts/l/Keep402.pdf	**WEEK 1** **Unit I** Diversity in Living World **Chapter 1:** Living World 1. Learners in biology class may be involved using the available resources, such as, textbooks available on e-pathshala, e-resources available on QR codes etc., in making a survey of literature and explore their surroundings and differentiate life forms on the basis of their defining features, such as, growth, reproduction, metabolism, consciousness, etc. 2. Learners may explore videos on YouTube to find out various life forms on the earth to understand diversity in life forms; the biodiversity. 3. Learners may be involved to enlist organisms in their surroundings and may be allowed to surf internet to find out the generic and specific names of the organisms enlisted by them. Later they may be assessed for the importance of naming the plants and how to write the generic and specific names of an organism. 4. Learners may be involved in an activity such as collecting data about any common plants having two species under the same genus, two genera under the same family, and other taxonomic categories and so on to understand the hierarchical arrangement of these taxonomic categories and submit a report. 5. Learners may be involved in an investigatory project on the topic "Taxonomical Aids and their importance" using various resources and make a presentation for five minutes on Zoom or any video conferencing platform.

taxonomical aids, Biodiversity, etc. – draws labelled diagrams,flow charts, concept maps, and graphs,such as, structure of various organisms; life cycles of various plants and animals, systematic classification, etc. – plans and conducts investigations and experimentsto arrive at and verify the facts, principles,phenomena, or to seek answers to queries on their own,with organisms in nature to verify their lifecycle and seek answer to the queries on their own, such as, bryophytes and pteridophytes follow haplo-diplontic life cycle, etc. – applies scientific concepts in dailylife and solving problems,such as, conserving and using medicinal plants or products for maintaining health and wellbeing,etc. – handles laboratory and agricultural tools, and apparatuses, instruments and devices properly for performing activities/ experiments/investigations, such as,developing a kitchen garden/ vertical garden,etc. – draws conclusion from activities/experiments and investigatory projects they perform,	http://ncert.nic.in/ncerts/l/Keep403.pdf http://ncert.nic.in/ncerts/l/Keep404.pdf *Laboratory Manual of Biology*, Class XI http://ncert.nic.in/ncerts/l/kelm301.pdf http://ncert.nic.in/ncerts/l/kelm302.pdf http://ncert.nic.in/ncerts/l/kelm303.pdf NCERT Official – YouTube https://www.youtube.com/channel/UCT0s92hGjqLX6p7qY9BBrSA Live telecast on Swayam Prabha Channel for various concepts of Biology MOOCs at Swayam ITPD package on Biology developed for teachers at Higher Secondary Stage	**WEEK 2** **Chapter 2** Classification of Living Organisms 1. Learners may be encouraged to watch YouTube video on five kingdom classification and draw a concept map in the form of a tree showing all five kingdoms with their characteristic features. 2. Learners may be encouraged to work on computer and using paint and brush they may be encouraged for making colored drawing and painting of different organisms with proper labelling with important features and organise them under five kingdom classification and make an e-book and pdf version of the e-book may be shared with peers. The e-book may later be compiled by all learners of Class XI and kept for reference for all school learners. 3. The learner may be facilitated with the YouTube video links and to surf the internet to collect the information about the acellular and may be encouraged to self-assess with the interactive assessment items. **WEEK 3 AND 4** **Chapter 3:** Plant Kingdom 1. Learners may be encouraged for surfing internet on given topics related to Plant Kingdom, *'Plantae'* in groups and develop a power-point presentation and share with all on google group. After anincubation period of one day teacher may initiate discussion on the given investigatory projects on WhatsApp group where learners will find the opportunity to argue, discuss, share and assess their own thoughts. 2. The learner may be facilitated to make a herbarium of 10 common weed plants in their area. Using herbarium sheets, write their systemic positions and share with peers. 3. Learners must be facilitated to collect five cereals, five pulses, five spices and condiments, three oil yielding and two beverages from their kitchen. With the help of internet, write their

such as, there are a variety of life forms on the earth; a group of organisms likethose under plantae or animalia may have many similar characteristics; etc. – communicates the findings and conclusions effectively,such as, takes part in the discussion over ZOOM platforms or WhatsApp media about characteristics of different phyla under animal kingdom;or methanogens are present in guts of ruminants and they play an important role in biogas production, etc. – exhibits creativity in designing models using eco-friendly resources/preparing charts/paintings/sketching,etc., on different topics, such as, role of plants or animals in environmental conservation or structure of an insect, etc. – exhibits values of honesty, objectivity, rational thinkingand freedom from myth and superstitious beliefs while taking decisions,such as, reports and records experimental data accurately, reveals respect for life by		levels of organisation of classification and prepare a poster under the topic "Plants Products in Daily Life". Discuss and share it with peers. 4. Each Learner may be assigned to draw/trace life cycle of any one plant from any of the five groups under *plantae* and be allowed to discuss the type of alternation of generation of each of the plants. Later all learners relate the presence of the type of alternation of generation in algae, bryophytes, pteridophytes, gymnosperms and angiosperms. 5. Learners may be allowed to plant five indoor plants and conserve them. Take their pictures and make a poster on power point and write their classification using internet. They may be allowed to share their work with peers. **WEEK 4** **Chapter 4:** Animal Kingdom 1. Learners may be divided in 11 groups and each group is allowed to work on 11 different *phyla* of *animalia*. They may be encouraged to record their salient features such as, level of organisation, symmetry, *coelom*, etc., and member animals belonging to that particular *phylum* and put colored pictures from internet with their classification. The report of each group may be presented by the group members using Zoom/Google platform and circulated for review among all 11 groups for comparison with other phyla and comments. Later the learners may be encouraged to draw a concept map of different phyla and share with peers for discussion and improvement. 2. The learner may be called upon at ZOOM/Google platform to debate upon the topic 'Role and Importance of Animals in Biodiversity Conservation', or 'Role of methanogens in biogas production', where all learners are encouraged to share their views. Learners were allowed to work as reporters in each-others' sessions and they may be encouraged to make a brief report.

conserving plants and animals, etc. – makes efforts to conserve environment realising the inter-dependency and inter-relationship in the biotic and abiotic factors of environment, such as, by appreciating conservation of medicinal plants and rearing of pets etc – applies scientific concepts in dailylife and solving problems, such as, by maintaining aquarium, conserving medicinal plants, etc.		The report may be kept in the school library as reading material.

Biology (Class XII)

Learning Outcomes	*Sources/ Resources*	*Suggested Activities (to be guided by teachers)*
The learner – appreciates limited life span of organisms and therefore the need of the reproduction process for sustenance of a species over a long period of time – comprehends and able to explain the processes of reproduction i.e., asexual and sexual in different organisms – comprehends and able to explain various strategies adopted by different organisms for asexual reproduction, e.g., binary fission, budding, sporulation, vegetative propagation, fragmentation etc. – appreciates the similar fundamental pattern of sexual reproduction in all such organisms where it occurs, in which germ cells of two different organism produces male and female gametes and after	**NCERT/State Textbook** **Theme** Reproduction in Organisms Content discussed in the textbook ✓ Concept of life span of an organism and its sustenance by the process of reproduction ✓ Methods of Reproduction: Asexual and Sexual ✓ Asexual Reproduction: Binary Fission, Encystment, Sporulation, Budding, Gemmule formation, Vegetative propagation (in plants), Fragmentation ✓ Similarity in the pattern of sexual reproduction in organisms: Vegetative and Reproductive phase ✓ Events in Reproductive phase: Pre-fertilisation, Fertilisation and Post Fertilisation Events ✓ Pre-fertilisation Events: Gametogenesis i.e., formation of male and female gametes in male and female reproductive parts or organism ✓ Transfer of gamete and Fertilisation	Remember that for any of the activities or exploration learners must not venture out of their home due to the Covid-19 pandemic. All explorations are to be done at home if materials are available, otherwise online exploration should be done. **WEEK 1** ✓ Explore the life span of different organisms from different sources including textbook of Biology for Class XII (Chapter 1) and other online resources ✓ Compare the lifespan of any organism with its sustenance over a long period of time on earth. You will realise that such sustenance of any organism is possible only by leaving progeny after death. ✓ The strategy adopted by an organism to continue by producing its progeny is called reproduction. ✓ Click and open following links to understand different strategies adopted by organisms for reproduction. ✓ Reproduction methods: https://opentextbc.ca/biology/chapter/24-1-reproduction-methods/; https://samagra.kite.kerala.gov.in/uploads/12/botony/916/1716/12_Ch916_12151/main.html Asexual Reproduction https://ciet.nic.in/swayam_biology03_module01.php **Activity 1:** Prepare list of plants and animals which are capable of reproducing— ✓ Only asexually

fertilisation offspring is produced. – comprehends and appreciates the process of gametogenesis to produce gametes in which number of chromosomes are reduced to half (diploid to haploid) – comprehends and appreciates that fertilisation restores the diploid condition in offspring – appreciates the fact that sexual reproduction brings variability among offspring – comprehends and appreciates that the process of fertilisation may be internal or external with its features and significance – understands different mechanisms of early development i.e., embryogenesis in different organisms mainly plants and animals – understands and explains oviparity and viviparity among animals	✓ Post fertilisation events: Zygote formation, Embryogenesis **Resources** ✓ E-Resources developed by NCERT, which are available on NROER and also embedded in QR Code in textbooks of NCERT. ✓ Live telecast of various science concepts at Swayam Prabha Channel https://www.youtube.com/channel/UCT0s92hGjqLX6p7qY9BBrSA ***Links of resources given below*** ✓ About Reproduction methods: https://opentextbc.ca/biology/chapter/24-1-reproduction-methods/; https://samagra.kite.kerala.gov.in/uploads/12/botony/916/1716/12_Ch916_12151/main.html ✓ Asexual Reproduction: https://ciet.nic.in/swayam_biology03_module01.php ✓ Binary fission in prokaryotes: https://bio.libretexts.org/Bookshelves/Microbiology/Book%3A_Microbiology_(Boundless)/6%3A_Culturing_Microorganisms/6.6%3A_Microbi	✓ Only sexually ✓ Both asexually and sexually ✓ (Also compare the life span of asexually and sexually reproducing organisms) **Activity 2**: Identify various events taking place during asexual reproduction (different methods) and sexual reproduction from the book or other online resources. ✓ Click and open the following links to understand different types of asexual reproduction strategies in different types of organisms: ✓ Binary fission in prokaryotes: https://bio.libretexts.org/Bookshelves/Microbiology/Book%3A_Microbiology_(Boundless)/6%3A_Culturing_Microorganisms/6.6%3A_Microbial_Growth/6.6A%3A_Binary_Fission ✓ Sporulation as reproduction process: https://www.microscopemaster.com/sporulation.html **Activity 3**: Students can grow bread mould or may observe developing mould or fungus on bread pieces left for few days at a humid place. They may observe some of these mould or fungus using their magnifying lenses. Think from where these fungi have appeared. ✓ Vegetative propagation in plants: https://www.sciencelearn.org.nz/resources/1662-vegetative-plant-propagation **Activity 4**: Children can observe some of the potatoes available in their home. They may keep two-three old potatoes at a humid place. After a few days they may observe germinating eye buds and if left for few more days they may even observe growth of roots and shoot. ✓ Fragmentation: https://www.biologyonline.com/dictionary/fragmentation ✓ Study about all asexual reproduction strategies adopted by different plants and animals.

	al_Growth/6.6A%3A_Binary_Fission ✓ Sporulation as a reproduction process: https://www.microscopemaster.com/sporulation.html ✓ Vegetative propagation in plants: https://www.sciencelearn.org.nz/resources/1662-vegetative-plant-propagation ✓ Fragmentation: https://www.biologyonline.com/dictionary/fragmentation ✓ Sexual Reproduction: https://www.biologyonline.com/dictionary/sexual-reproduction ✓ Gametogenesis: https://bio.libretexts.org/Bookshelves/Introductory_and_General_Biology/Book%3A_General_Biology_(Boundless)/43%3A_Animal_Reproduction_and_Development/43.3%3A_Human_Reproductive_Anatomy_and_Gametogenesis/43.3C%3A__Gametogenesis_(Spermatogenesis_and_Oogenesis)	Find out whether all such strategies are adopted by all the organisms mentioned in the book or given links or online resources which you could explore. If no, then try to explore the reasons. ✓ Draw neat and labeled diagrams of various asexual reproduction strategies in plants and animals ✓ Communicate with your peers or teacher in case of any query or to share experience and understanding. **WEEK 2** ✓ Study events of sexual reproduction process from your textbook and try to conceptualise the necessity of these events. ✓ Click to open the following links to know more about different gamete formation in unicellular organisms, plants and animals: Sexual Reproduction: https://www.biologyonline.com/dictionary/sexual-reproduction ✓ Now when you have understood the importance of gamete in the process of sexual reproduction, try to explore the part of plants or animals where gametes are produced. **Activity 5**: List names of plants in which flowers are unisexual and bisexual. **Activity 6**: Prepare a list of animals which do not exhibit sexual dimorphism (separate male and female) and explore the process of fertilisation in them. ✓ Correlate the process of gametogenesis and fertilisation with meiotic cell division ✓ Explore the process of embryogenesis and production of offspring in plants and animals. **WEEK 3** ✓ Observe the different parts of any flower available in any plant in
• understands flower as the organ of sexual reproduction and role of its different parts. • explains structure of different parts of androecium and	**Theme** Reproduction in Flowering Plants Content discussed in the textbook ✓ Flower as reproductive structure of angiosperm plants ✓ Structure of stamen,	

gynoecium (male and female parts of the flower) and their functions. • explains different structural variation and arrangement of male and female parts of the flower (androecium and gynoecium) in different flowering plants. • comprehends and appreciates the pre-fertilisation events in male and female parts of the flower. • understands the process of development of microspores (pollen) and megaspores (ovule). • understands and appreciates the process of pollination and appreciate its significance. • appreciates the role of different pollinating agents especially insects. • understands post pollination events, fertilisation, embryogenesis and seed development. • appreciates the role of pre-fertilisation, pollination and	microsporangium and pollen grains ✓ Microsporogenesis ✓ Structure of pollen grain ✓ Structure of pistil, megasporangium and embryo sac ✓ Megasporogenesis ✓ Pollination strategy in flowering plants ✓ Double Fertilization ✓ Endosperm and embryogenesis ✓ Plant seed and fruit ✓ Apomixix and Polyembryony **Resources** ✓ E-Resources developed by NCERT, which are available on NROER and also attached as QR Code in textbooks of NCERT. ✓ Live telecast of various science concepts at *Swayam Prabha* Channel https://www.youtube.com/channel/UCT0s92hGjqLX6p7qY9BBrSA **Online links of resources** ✓ Flower reproductive parts: Fertilisation: https://www.ncbi.nlm.nih.gov/books/NBK26843/ ✓ Reproductive development structure: https://bio.libretexts.org/Bookshelves/Introductory_and_General_Biology/Book%3A_General_Biology_(OpenStax)/6%3A_Plant_Structure_and_Funct	your house, if available. (Please do not venture out of your house premise due to lockdown) ✓ Identify the reproductive parts, i.e., stamen and pistil in the flower ✓ Study about the parts of flowers from different sources including *Textbook of Biology* for Class XII (Chapter 2) and other online resources ✓ Click and open following links to understand the reproductive structure of flower: ✓ Flower reproductive parts—Fertilization: https://www.ncbi.nlm.nih.gov/books/NBK26843/ ✓ Reproductive parts of flower and test items: https://bio.libretexts.org/Bookshelves/Introductory_and_General_Biology/Book%3A_General_Biology_(OpenStax)/6%3A_Plant_Structure_and_Function/32%3A_Plant_Reproduction/32.E%3A_Plant_Reproduction_(Exercises) ✓ Study about the structure of stamen, microsporangium, process of microsporogenesis from Biology Textbook Class XII (Chapter 2) and other resources. **Activity 7**: Draw neat and labeled diagrams of a section of young and mature anther. ✓ Study about the structure of pistil, megasporangium, process of megasporogenesis from the Class XII Biology textbook (Chapter 2) and other resources. **Activity 8:** Draw neat and labelled diagrams of different stages of megaspore and embryo sac. ✓ Online Link: Reproductive development structure: https://bio.libretexts.org/Bookshelves/Introductory_and_General_Biology/Book%3A_General_Biology_(OpenStax)/6%3A_Plant_Structure_and_Function/32%3A_Plant_Reproduction/32.1%3A_Reproductive_Development_and_Stru

post-fertilisation event in artificial hybridisation for crop improvement and parthenocarpy. • understands the structure of fruit and seed. • comprehends and appreciates a few rare methods of reproduction like Apomixis and polyembryony	ion/32%3A_Plant_Reproduction/32.1%3A_Reproductive_Development_and_Structure ✓ Pollination and fertilization: https://courses.lumenlearning.com/biology2xmaster/chapter/pollination-and-fertilization/ ✓ Pollination: https://www.intechopen.com/books/pollination-in-plants/introductory-chapter-pollination ✓ Fertilization, embryogenesis and seed development in plants: http://bio1520.biology.gatech.edu/growth-and-reproduction/plant-reproduction/ ✓ Fertilisation: https://www.ncbi.nlm.nih.gov/books/NBK26843/ ✓ Pollination: https://www.intechopen.com/books/pollination-in-plants/introductory-chapter-pollination ✓ Fertilisation, embryogenesis and seed development in plants: http://bio1520.biology.gatech.edu/growth-and-reproduction/plant-reproduction/	cture ✓ Study the process of pollination in different plants from the Biology textbook and other resources including the following links: ✓ Pollination and fertilisation: https://courses.lumenlearning.com/biology2xmaster/chapter/pollination-and-fertilization/ ✓ Pollination: https://www.intechopen.com/books/pollination-in-plants/introductory-chapter-pollination ✓ Study about different strategies adopted by plants having bisexual flower for cross pollination **Activity 9:** Search different examples of pollination mechanisms and list with example. ✓ List advantages of cross pollination in plants **WEEK 4** ✓ Study about pollen-pistil interaction and post pollination events in flower ✓ Write about the importance of artificial hybridisation for crop improvement and strategy adopted for this ✓ Study about the process of double fertilisation in angiosperm flower in the Biology textbook and other resources including the following link: ✓ Fertilisation, embryogenesis and seed development in plants: http://bio1520.biology.gatech.edu/growth-and-reproduction/plant-reproduction/ ✓ Pollination and fertilisation: https://courses.lumenlearning.com/biology2xmaster/chapter/pollination-and-fertilization/ ✓ Post fertilisation event: ▪ Endosperm development

		▪ Embryogenesis and formation of embryo in dicot and monocot ✓ Study about seed formation and its type from the Biology textbook and other resources ✓ Write about your understanding on fruits and seeds. **Activity 10:** Prepare a list of edible parts of 20 different types of fruits ✓ Parthenocarpic fruit ✓ Study about formation of seeds without fertilisation (apomixis) ✓ Understand about polyembryony with example ✓ Draw labelled diagrams of different types of seed ✓ Test your understanding by solving problems given in the book entitled, "Exemplar Problem in Biology for Class XII" and solve problems given to test your understanding

CHEMISTRY (CLASSES XI-XII)

Chemistry (Class XI)

Learning Outcomes	*Sources/Resources*	*Suggested Activities (to be guided by teachers)*
The learner • understands and appreciates the contribution of ancient chemistry of India and its role in different spheres of life such as, *Rasayan Shastra, Rastantra, Ras Kriya* or *Rasvidya,* etc. • Identifies and appreciates the modern principles of chemistry in different spheres of life such as weather patterns, functioning of brain and operation of a computer, production in chemical industries, manufacturing fertilisers, alkalis, acids, salts, dyes, polymers, drugs, soaps, detergents, metals, alloys, etc. • explain the characteristics of three states of matter such as solids, liquids and gases • classifies different substances as elements, compounds and mixtures • uses SI Units, symbols, definitions, nomenclature of physical quantities and formulations as per international standards, such as, length (m), mass (kg), etc.	**NCERT/State Textbook** Chemistry Part I **Theme** Some Basic Concepts of Chemistry Contents discussed in the textbook • Importance of chemistry • Nature of matter • Properties of matter and their measurement • Uncertainty in measurement • Laws of chemical combinations • Dalton atomic theory • Atomic and molecular masses • Mole and Molar mass • percentage composition • Stoichiometry and stoichiometric calculations E-Resources developed by NCERT, which are available on NROER and also attached as QR Codes in textbooks of NCERT http://ncert.nic.in/ncerts/1/khepsol.pdfhttps://www.youtube.com/watch?v=DN8SINM9y9U	**WEEK 1** The Learners are told to use textbooks / web resources to explore the following: • Ancient chemistry vs Modern chemistry • Importance of chemistry in everyday life • Issues which affectour environment such as effects of pesticides, acid rain, green houses gases, use of heavy metals, etc. • Compile the report and share with your classmates on Zoom, a Googlegroup or WhatsApp group • Open the given link https://www.youtube.com/watch?v=DN8SINM9y9U https://www.youtube.com/watch?v=lJKT3DSZUd0&list=PL0OtfIH2_0K3dKPkoYY-jTihD9IUi3NXo • Observe the videos and try to solve problems given in your textbook related to these concepts. If you have any doubts, discuss with your friends or teacher. • Solve the various types of questions given in *Exemplar Problems for Class XI Chemistry*, prepared by NCERT, on a daily basis. • Involve yourself in some indoor activities like yoga, meditation, etc. • Get enrolled on the NROER CIET platform, use other e-resources available on NROER, e-pathshala **WEEK 2** Open the given links. These videos discuss so-me basic concepts of

• differentiates between precision and accuracy; • explains various laws of chemical combination such as Law of conservation of mass, Law of multiple proportion etc. • plans and conducts investigations and experiments to arrive at and verify the facts or principles to seek answers to queries on their own, such as, to verify various Laws of Chemical Combinations, etc. • takes initiative to know about scientific discoveries and inventions, such as, Antoine Lavoisier, Joseph Proust, Joseph Louis for discovering various Laws of Chemical Combinations • calculates and appreciates significance of atomic mass, average atomic mass, molecular mass and formula mass, stoichiometric calculations, etc. • handles laboratory apparatus instruments, and devices properly, such as, analytical balance, graduated cylinders, volumetric flask, burette, pipette, etc. • communicates the findings and conclusions effectively (orally and written form) • realises and appreciates the	https://www.youtube.com/watch?v=lJKT3DSZUd0&list=PL0OtfIH2_0K3dKPkoYY-jTihD9IUi3NXo https://www.youtube.com/watch?v=3JhpdUt3CMM https://www.youtube.com/watch?v=40OiAt2t658 https://www.youtube.com/watch?v=sSlObBndH-A&list=PLDAj64x1PE-nVzv4Kn-7uOlRCR7RITsF3 https://www.youtube.com/watch?v=OqUSjzJ_wng https://www.youtube.com/watch?v=bOzArOtRtSY https://www.youtube.com/watch?v=L9JHyT9wvbs https://www.youtube.com/watch?v=hhMO7GPi3VI https://www.youtube.com/watch?v=WPmYlBk_utE	chemistry. https://www.youtube.com/watch?v=3JhpdUt3CMM https://www.youtube.com/watch?v=40OiAt2t658 https://www.youtube.com/watch?v=sSlObBndH-A&list=PLDAj64x1PE-nVzv4Kn-7uOlRCR7RITsF3 https://www.youtube.com/watch?v=OqUSjzJ_wng https://wwwtube.com/watch?v=bOzArOtRtSY https://www.youtube.com/watch?v=L9JHyT9wvbs https://www.youtube.com/watch?v=hhMO7GPi3VI https://www.youtube.com/watch?v=WPmYlBk_utE After watching these videos, read the chapter from your textbook. Try to solve the questions given at the end of the chapter in your notebook. • Try to develop assignments based on the concepts given in the chapter and exchange them with your friends. Discuss the innovative questions developed in this process with your friends. • Prepare some simple activities of your own on mole concept, states of matter, etc. • Identify some homogeneous and heterogeneous mixtures present in your home/ surroundings. • Read and find out more about scientists and their experiments based on chemistry. Prepare the report and share with your friends. You can carry the report to school once it is open. The report can be placed in the library as an example for other learners. • Balance some chemical reactions given in NCERT Textbook. • Try to read some research papers

interface of chemistry with other disciplines, such as Biology, Physics, Mathematics, etc. • applies concepts of chemistry in day-to-daylife while making decisions and solving problems • takes initiatives to know and learn about the newer research, and inventions in Chemistry • appreciates the role and impact of Chemistry and technology towards the improvement of quality of human life. • exhibits values of honesty, objectivity, rational thinking, while sharing experimental results.		which interest you based on these concepts. • Involve yourself in various indoor fitness activities
• understands about the discovery of electron, proton and neutron • takes initiative to learn about the Thomson, Rutherford and Bohr atomic models • understands features of the quantum mechanical model of atom • understands properties of electromagnetic radiations and Planck's quantum theory • explains photoelectric effect and atomic spectra • understands de Broglie relation and Heisenberg uncertainty principle • learns about quantum numbers	**Theme** Structure of Atom Content discussed in the textbook • Sub-atomic particles • Atomic models • Developments leading to the Bohrs atomic model of atom • Bohr model for hydrogen atom • Quantum mechanical model of the atom https://www.youtube.com/watch?v=RhiDeoQYHR0 https://www.youtube.com/watch?v=4dXlkdThEfM https://www.youtube.com/watch?v=VAMMvv7UG3k	**WEEK 3** Learners are told to use the textbook / web resources and try to explore the following: • discovery of electron, proton and neutron • Thomson, Rutherford and Bohr atomic models • quantum mechanical model of atom • electromagnetic radiations and Planck's quantum theory • photoelectric effect and atomic spectra • de Broglie relation and Heisenberg uncertainty principle • quantum numbers • Aufbau principal, Pauli exclusion principle and Hund's rule of maximum multiplicity • write electronic configuration of atoms Open the links which are given

• understands Aufbau principal, Pauli exclusion principle and Hund's rule of maximum multiplicity • takes initiative to know and learn about electronic configuration of atoms • exhibits values of honesty, objectivity, rational thinking, while sharing experimental results.		https://www.youtube.com/watch?v=RhiDeoQYHR0 After watching the video discuss it with friends and teachers online and try to find solutions to your queries. Solve Exemplar problems for Class XI in Chemistry prepared by NCERT and also use E-resources available on NROER and e-pathshala. Try to understand the gas discharge tube, determination of e/m of cathode rays, Millikan's oil drop experiment. Read about Madame Curie, James Chadwick, Thomson, Rutherford and their discoveries **WEEK 4** Open the links which are given here https://www.youtube.com/watch?v=4dXlkdThEfM https://www.youtube.com/watch?v=VAMMvv7UG3k and try to understand the concepts which you have seenin videos. Understand the nature of light and various developments related to it Learn about Black body radiations, Photoelectric effect, dual nature of light and atomic spectrum and solve Exemplar problems for Class XI in Chemistry prepared by NCERT and use E-resources available on NROER and e-pathshala. Involve yourself in various indoor fitness activities.

Chemistry (Class XII)

Learning Outcomes	*Sources/Resources*	*Suggested Activities (to be guided by teachers)*
The learner — describes importance of solid state in daily life — describes general characteristics of solid state; — distinguishes between amorphous and crystalline solids; — classifies crystalline solids on the basis of the nature of binding forces; — defines crystal lattice and unit cell; — distinguish between unit cells of different types of crystal lattices; — explains close packing of particles — describes different types of voids and close packed structures — calculates the packing efficiency of different types of cubic unit cells — correlates the density of a substance with its unit	**WEEK-1** **Link-1** Video Lecture (Episode-1): (Amorphous and crystalline solids, Classification of solids) https://nroer.gov.in/55ab34ff81fccb4f1d806025/file/57cfea6516b51c6b39a806b5 **WEEK-2** **Link-2** Video lecture (Episode 2) (Unit cell and crystal lattice, number of atoms in a unit cell) https://nroer.gov.in/55ab34ff81fccb4f1d806025/page/57cfeac316b51c6b39a806d7 **Link-3** Animation (Crystal lattice and unit cells) https://www.youtube.com/watch?v=VPCDSmoomGk **Link-4** Animation (Number of atoms in unit cells) https://www.youtube.com/watch?v=qAeaHYSX0hs **WEEK-3** **Link-5** Video lecture (Episode-3): (Packing and closed pack structures,	**Unit -1:** Solid State Twelve learning outcomes are expected to be covered in this unit. Remember we are not moving out of our homes due to COVID-19 therefore, we are required to work at home and make the best use of the time available to us . Solid State is the first unit in the textbook of chemistry. It provides insight into the structure of solids.It also tells us how the properties of solids are affected by the arrangement of atoms,molecules and ions involved in the formation of structure of solid.Understanding the topic requires a lot of abstract thinking and concentration. Yoga and pranayam can help in keeping one'sfocus on atopic for a longer time. After understanding the topic, learners may become interested in knowing how can one proceed todevelop materials of required properties. We can plan the time schedule for learning the topic as follows: **WEEK 1** Learners may try to make a list of the solids used at home for various purposes. Now they may think of the property that makes the solids in the list useful for the particular purpose for which these are used. This will make students realise the importance of solids in the daily life. After that they may see the **Video lecture (Link-1)** and classify the solids in the list prepared by them as crystalline and amorphous. After seeing the video, they may go through the text material in the textbook of chemistry for Class XII published by NCERT and read it up to section 1.3. This will help them to classify solids as amorphous and crystalline. They will be able to classify solids on the basis of nature of binding forces. Also, they may make a WhatsApp group with their classmates and discuss the topic learnt. They may make the list of common difficulties and mail it to the teacher or connect her/him through

cell properties; — describes the imperfections in solids and their effect on — Properties correlates the electrical and magnetic properties of solids and their structure	packing efficiency) https://nroer.gov.in/55ab34ff81fccb4f1d806025/page/57cfeb0d16b51c6b39a806f9 **Link-6** Animation (Hexagonal close packed structure) https://www.youtube.com/watch?v=uKpr-9vmgsc **Link-7** Animation (Close packed structures in three dimensions) https://www.youtube.com/watch?v=liwX_lLb2ds **Link-8** Animation (Packing efficiency in crystals) https://www.youtube.com/watch?v=WIcb1WfJvJc **WEEK-4** **Link-9** Video lecture (Episode-4) (Defects and imperfections) https://nroer.gov.in/55ab34ff81fccb4f1d806025/file/57cfeb8516b51c6b39a8071b **Link-10** **Text** A brief on Semiconductors https://nroer.gov.in/55ab34ff81fccb4f1d806025/file/5b4c84cc16b51c01e1912483	WhatsApp or any other mode suggested by her/him to get the solution of their problems. For more clarification of the concepts learnt, they may solve problems related to the concepts learnt using exercise given in the end of chapter. Also, they may solve problems given in the book 'Exemplar Problems' for Class XII, published by NCERT for more clarification of the concepts learnt. **WEEK 2** They may see the links-2, 3 and 4 these links will cover Section 1.4 and Section 1.5 of the textbook. These links will give insight into the concepts of crystal lattice and unit cell, types of unit cells and number of atoms per unit cell in a crystal lattice. Students may prepare the models for different lattice systems. For example they may prepare the model of sodium chloride crystal using beads of two different colours and sizes and the sticks if available or any other material available. This will help them understand the meaning of face centred cubic lattice. In case material for making models is not available, links of Animations will help them understand the concept. They may discuss the concepts learnt with their classmates in the WhatsApp group and may make the list of common difficulties and mail it to the teacher or connect her/him through WhatsApp or any other mode suggested by her/him to get the solution of their problems. For more clarification of the concepts learnt, they may solve problems related to the concepts learnt using exercise given in the end of chapter. Also, they may solve problems given in the book 'Exemplar Problems' for Class XII, published by NCERT for more clarification of the concepts. **WEEK 3** **Links 5,6,7,8** cover Section 1.6, 1.7 and 1.8 of the textbook. Concepts covered are close packing of particles, different types of voids and close packed structures, packing efficiency and calculations involving unit cell dimensions. This will allow learners understand the patterns of packing of

		particles which form different types of lattices. They will be able to locate different types of vacant spaces in the close packing and make them recognise the shape of different vacant spaces in the packing. They will be able to recognise the pattern in which particles are most closely packed. After seeing links students may read the Section 1.6, 1.7 and 1.8 of the textbook. They will be able to solve the problems related to the concepts given in these Sections. Problems given at the end of the Unit in the Textbook of Chemistry may be solved for deep insight into the concepts. Also, problems given in the Book- *Exemplar Problems in Chemistry*, Class XII, published by NCERT may be solved. Learners may discuss the topic with their classmates on WhatsApp. One can use fruits like orange or any other material available with them for making packing patterns to get more clarity of the concepts. They may get solution of Their problems as they did in the first weak. **WEEK 4** **Links 9 and 10** cover sections 1.9 and section1.10 of the textbook. These give insight about the imperfactions left in the crystalls during the process of crystallisation. After going through the links, students will be able to explain the importance of imperfactions in making semiconductors. Learners may discuss the topic with their classmates on WhatsApp and contact the teacher through mode suggested by her to get the solution of their difficulties.

PHYSICS (CLASSES XI-XII)

Physics (Class XI)

Learning Outcomes	*Sources/ Resources*	*Suggested Activities (to be guided by teachers)*
The learner – explains that the disciplinary approach of Physics is a transition from general sciences. – analyses the observations from the surroundings to appreciate the basic conceptual understanding of physics. – promotes process-skills, problem-solving abilities and applications of concepts/content in Physics, useful in real-life situations for making Physics learning more relevant, meaningful and interesting. – explains the fact that the theory and experiments go hand in hand in physics and help each other's progress. – explains domains of interest in physics: macroscopic (classical physics), mesoscopic and microscopic. Also, understands the scope and excitement of physics. – explains the scientific methods for developing the hypothesis, axioms, models and laws. – analyses through examples, the connection between physics, technology and society; and physics-related technological/industrial aspects to cope up with changing demand of society committed to the use of physics, technology and informatics.	**NCERT/State Physics Textbook for Class XI; Part - I** http://ncert.nic.in/textbook/textbook.htm?keph1=0-8 Physics - PheT Simulations https://phet.colorado.edu/en/simulations/category/physics **NCERT Official – YouTube** https://www.youtube.com/channel/UCT0s92hGjqLX6p7qY9BBrSA National Repository of Open Educational Resources (NROER) https://nroer.gov.in/home/e-library/ *Apply filter for Level (Higher Secondary) and Subject (Physics) to view the relevant e-resources.* *Laboratory Manual of Physics*, Class XI, Published by the NCERT http://www.ncert.nic.in/exemplar/labmanuals.html http://ncert.nic.in/ncerts/l/kelm101.pdf http://ncert.nic.in/ncerts/l/kelm102.pdf	**WEEK 1** **Unit I** Physical World and Measurement **Chapter 1** Physical World Using the resources, learners may be asked to explore and learn about 1. Science, Natural Science, Physics, Experiments and Theory in Physics and overlaps of Physics with other natural sciences 2. Scope and excitement of physics; Interrelationship of physics with technology, society and informatics. 3. Nature of fundamental forces; Unification of forces 4. Nature of physical laws ***Project*** Learners may prepare life sketches of prominent physicists. Using the Internetand other reference books. A learner is envisaged as reading about the explanations and demonstrations of some classic experiments in physics. **WEEK 2** **Chapter 2** Units and Measurements Using the resources, learners may be asked to explore and learn about

– explains the fundamental forces in nature – gravitational, electromagnetic, strong and weak nuclear forces; and unification of forces. – explains the nature of fundamental laws such as conservation laws, etc. – uses international system of units (SI Units), symbols, nomenclature of physical quantities and formulations; SI base and derived quantities and their units. – derives methods of measurement of lengths – large as well as small; measurement of mass; and measurement of time. – explains the range of lengths, masses and time intervals. – explains the need of accuracy, precision, errors and uncertainties in measurement; and classify errors. – explains the rules for arithmetic operations with significant figures; rounding off the digits. – derives dimensional formulae and dimensional equations using the dimensions of physical quantities. – applies understanding of dimensional analysis in checking the dimensional consistency of relations and deducing the relations between different physical quantities. – gets acquainted with the Greek alphabet; Common SI prefixes and symbols for multiples and sub-multiples; Important constants; Conversion factors; Mathematical formulae; SI derived units	Bibliography of physics books for additional reading on the topics covered (reference: *Physics, Textbook for Class XI*, Part II, p. 405 – 406, Published by the NCERT http://ncert.nic.in/textbook/textbook.htm?keph2=an-7 A list of 14 websites for downloading textbooks free of charge can be obtained at https://www.ereader-palace.com/14-sites-download-textbooks-free/ Another website for downloading books free of cost is www.pdfdrive.com Textbook contains QR codes and one can access e-resources linked to those QR codes by following step by step guide given at the beginning of textbook.	1. Need of standard units; base and derived units; different unit systems and relationship between corresponding units of different physical quantities; SI system of units; SI base quantities and units (with their definitions as per new IAPAP rules). 2. Measurement of length – large distances (parallax methods) and very small distances (indirect methods); Measurement of mass and time intervals; Range and orders of lengths, masses, and time intervals. 3. Accuracy, precision, certainty and errors in measurements of physical quantities; Systematic, random and least count errors; Absolute, relative and percentage errors; Combination of errors. 4. Significant figures; Rules for arithmetic operations with significant figures; Rounding off digits in measurements (or calculations); Determining the uncertainties in expressing results. 5. Dimensions of physical quantities; Dimensional formulae and dimensional equations; Applications of dimensional analysis. 6. Appendices: The Greek alphabet; Common SI prefixes and symbols for multiples and sub-multiples; Important constants; Conversion factors; SI derived units (expressed in SI base units); SI derived units with special names;

(expressed in SI base units); SI derived units with special names; Guidelines for using symbols for physical quantities, chemical elements and nuclides; Guidelines for using symbols for SI units etc.; Dimensional formulae of physical quantities. – explains motion as change in position with time. – differentiates between distance and displacement; speed and velocity; rectilinear and curvilinear motions; kinematics and dynamics; inertial and non-inertial frames of references; average, relative, and instantaneous velocity and speed etc. – derives (graphically) kinematic equations for uniformly accelerated motion – explains elementary calculus (both differential and integral) that is required to describe motion. – plans and conducts investigations and experiments to arrive at and verify the equations of motion of bodies under uniformly accelerated motions. – handles tools and laboratory apparatus properly; measures physical quantities using appropriate apparatus, instruments, and devices, such as, scales, balances, watches, etc. (optional) – analyses and interprets data, graphs, and figures, and draws conclusion about the state of motion, speed (and velocity),		Guidelines for using symbols for physical quantities, chemical elements and nuclides; Guidelines for using symbols for SI units etc.; Dimensional formulae of physical quantities. 7. Revision, doubt clearing and practice solving problems ***Project*** Learners may be given the suggestion to measure astronomical distances, such as, the distance between earth and an identified star etc., using the parallax method. Learners may be advised to look at the BIPM/IAPAP website to prepare a chart on the definitions of SI base units. Using vernier callipers/screw gauze/spherometer learners may perform activities and experiments to measure small lengths and radius of curvature, etc. (optional) **WEEKS 3 AND 4** **Unit II** Kinematics **Chapter 2** Motion in a Straight Line Learners may be asked to make observations about their surroundings and use the following resources to learn about: 1. State of motion; Frames of reference; Position,

acceleration (uniform and non-uniform), distances (and displacements) covered, etc. **Learning Outcomes cut across different themes** ***The learner*** – communicates the findings and conclusions effectively. – applies concepts of physics in dailylife while making decisions and solving problems. – takes initiatives to learn about the newer research, discoveries and inventions in Physics. – realises and appreciates the interface of Physics with other disciplines, such as with Chemistry as various materials. – develops positive scientific attitude, and appreciates the role and impact of Physics and technology towards the improvement of quality of life and human welfare – exhibits values of honesty, objectivity, rational thinking, and freedom from myth and superstitious beliefs while taking decisions, respect for life, etc.		path length and displacement 2. Elements of Calculus (Appendix 3.1) 3. Mathematical Formulae (Appendix A5 placed at the end of textbook) 4. Average velocity and average speed 5. Instantaneous velocity and instantaneous speed 6. Acceleration; Solving problems; and discussion on learners' doubts 7. Kinematic equations for uniformly accelerated motion – graphical method; 8. Free fall; Reaction time; and Relative velocity 9. Solving problems ***Project*** Ask children to calculate their own reaction time.

Physics (Class XII)

Learning Outcomes	***Sources/ Resources***	***Suggestive Activities (to be guided by teachers)***
The learner • explains processes and phenomena with the understanding of the relationship between nature and matter on scientific basis, such as, force between charges, electric field and potential due to charges; force on charges in an electric field. • derives formulae, equations, and laws, such as, torque on a dipole in uniform electric field, effective capacitance of combination of capacitors in series and in parallel, energy stored in a capacitor. • plans and conducts investigations and experiments to arrive at and verify the facts, principles, phenomena, or to seek answers to queries on their own, such as, to estimate the charge induced on each one of the two identical Styrofoam balls	The following list of resources is suggestive. In addition to these, the teachers may curate more resources from internet for sharing with their Learners. • *Physics, Textbook* for Class XII, Part I, Published by NCERT – http://ncert.nic.in/textbook/textbook.htm?leph1=1-8 – http://ncert.nic.in/textbook/textbook.htm?leph1=2-8 • Many web links are given in the side margins of the above-mentioned textbook. These may also be accessed. • In addition, thetextbook contains QR codes and one can access e-resources linked to those QR codes by following step by step guide given at the beginning of textbook. The links of those e-resources are	**WEEK 1** **Unit I:** Electrostatics **Chapter 1:** Electric Charges and Fields • Using Gmail group as well as a WhatsApp group of all learners in the class, the teacher may encourage the learners to attempt to explore and understand the following concepts on their own, using the textbook and the web resources— – electric charges; conservation of charge, – Coulomb's law - force between twopoint charges, – forces between multiple charges; superposition principle, continuous charge distribution, – electric field, electric field due to a point charge, – electric field lines, electric flux • The learners may be facilitated to use PhET interactive simulations to explore the concepts of static electricity, electric charges and fields. They can also observe how changing the sign and magnitude of the charges and the distance between them affects the electrostatic force. • Learners should also attempt to solve concept-based problems given in the resources on a daily basis (in-text examples, exercises at the end of the chapter in textbook, and in Exemplar problems) • The learners may do an Investigatory Project 'To estimate the charge induced on each one of the two identical Styrofoam (or pith) balls suspended in a vertical plane by making use of Coulomb's law' and share their findings with each other. • The learners may collect information from internet and explain in their own words for 'How did the scientist Coulomb arrive at the inverse square law?'

suspended in a vertical plane.analyses and interprets data, graphs, and figures, and draws conclusion, such as, field due to a uniformly charged thin spherical shell is zero at all points inside the shell. • communicates the findings and conclusions effectively. • uses SI Units, symbols, nomenclature of physical quantities and formulations as per international standards, such as, coulomb (C), farad (F). • applies concepts of physics in dailylife while decision-making and solving problems, such as, if a certain capacitance is required in a circuit across a certain potential difference then suggesting a possible arrangement using minimum number of capacitors of given capacity which can withstand a given potential difference. • exhibits creativity and out-of–the-box thinking in solving problems, such as, will a	given below also – https://www.youutube.com/watch?v=FpzlZq_wDL4 – https://nroer.gov.in/55ab34ff81fccb4f1d806025/file/5b20ab8616b51c01f44555f0 – https://h5p.org/h5p/embed/181155 – https://www.youutube.com/watch?v=GDvecCS6UXk – https://www.easel.ly/index/embedFrame/easel/6186012 • Exemplar Problems – Physics, Class XII, Published by NCERT – http://ncert.nic.in/ncerts/l/leep101.pdf – http://ncert.nic.in/ncerts/l/leep102.pdf • Laboratory Manual of Physics, Class XII, Published by NCERT – http://ncert.nic.in/ncerts/l/lelm314.pdf • Physics - PhET Simulations – https://phet.colorado.edu/en/simulation/balloons-and-static-electricity – https://phet.colorado.edu/en/simulation/charges-and-fields	• Using the ideas given at the suggested web link, the learners may make toys using ordinary throw away stuff at home to further explore science concepts and deepen their understanding • The learners may be encouraged to enroll in MOOCs on Swayam portal for Physics Class XII developed by NCERT. • Using desktop, laptop, tablet or mobile handset, the teacher may develop videos in regional language as per the context of learners, each video corresponding to roughly one period of the school timetable. These videos may be shared with the learners, one video per day. (In Physics at higher secondary level, lots of figures and mathematical equations are involved, and hence, for developing the videos, the teacher may develop power point presentations superimposed with her/his voice explaining the concepts. Or if the teacher happens to have a white board at home, she/he may record a video of her/him explaining on the white board, the way she/he does in the class). • Then the learners can post their doubts on the group the same day by a certain time fixed by the teacher. Some time may be allocated for the Learners clear any doubts amongst them by interacting with each other via online group discussion. The teacher may also be part of this to ensure that the discussion remains on track. • Finally, the teacher can have a face to face interaction with learners via Skype facilitating the clarification of doubts. • If it is possible to connect to all the learners simultaneously for a longer duration via skype, the teacher may also take a live class online. • All through this the teacher should be continuously assessing learners' learning progress while motivating and keeping their morale up. **WEEK 2** **Unit I:** Electrostatics **Chapter 1:** Electric Charges and Fields (contd.) • Following the same approach as of the first week, the teacher may facilitate the

man get an electric shock if he touches the large aluminium sheet fixed outside his house on the top of a two-metre-high insulating slab? • takes initiative to learn about the newer research, discoveries and inventions in Physics, such as, research on the possibility of static electricity charging electronic devices. • recognises different processes used in Physics-related industrial and technological applications, such as, using electrostatic shielding in protecting sensitive instruments from outside electrical influences. • realises and appreciates the interface of Physics with other disciplines, such as with Chemistry as various materials give rise to interesting properties in the presence or absence of electric field. • develops positive scientific attitude, and appreciates the role and impact of Physics and technology	– https://phet.colorado.edu/en/simulation/coulombs-law – https://phet.colorado.edu/en/simulation/capacitor-lab-basics – https://phet.colorado.edu/en/simulation/legacy/capacitor-lab • National Repository of Open Educational Resources (NROER) https://nroer.gov.in/home/e-library/ Apply filter for level (higher secondary) and Subject (Physics) to view the relevant e-resources. • MOOCs at Swayam https://swayam.gov.in/nd2_nce19_sc07/preview • NCERT Official – YouTube channel https://www.youtube.com/channel/UCT0s92hGjqLX6p7qY9BBrSA • Arvind Gupta Toys http://www.arvindguptatoys.com/electricity-magnetism.php	learners' attempt to explore and understand— – Electric dipole, electric field due to a dipole, – Torque on a dipole in uniform electric field, – Continuous Charge distributions, Statement of Gauss' theorem, – Applications of Gauss' Law to find field due to infinitely long straight uniformly charged wire and uniformly charged infinite plane sheet, – Uniformly charged thin spherical shell (field inside and outside) • Using PhET interactive simulations, the learners may arrange positive and negative charges in space and view the resulting electric field. They may also create models of electric dipole. • Learners should also attempt to solve concept-based problems given in the resources on a daily basis. • The learners may be encouraged to read up (using internet) on the ongoing research on the possibility of static electricity charging electronic devices. They may then have an online discussion amongst themselves. **WEEK 3** **Unit I:** Electrostatics **Chapter 2:** Electrostatic Potential and Capacitance • Following the same approach as of the first week, the teacher may facilitate the learners' attempt to explore and understand the following— – electric potential, potential difference, electric potential due to a point charge; – electric potential due to an electric dipole – electric potential due to a system of charges, – equipotential surfaces, relation between field and potential, – electrical potential energy of a system of charges, – potential energy of a single charge and of a system of two charges in an external field;

towards the improvement of quality of life and human welfare. • exhibits values of honesty, objectivity, rational thinking, and freedom from myth and superstitious beliefs while taking decisions, respect for life, etc.		• The learners may plot equipotential lines and discover their relationship to the electric field using PhET interactive simulations • The learners should also attempt to solve problems given in the resources on a daily basis • The learners may collect information about 'Faraday cage' from internet. They may then develop a theoretical idea for an innovative application of Faraday cage in daily life. **WEEK 4** **Unit I:** Electrostatics **Chapter 2:** Electrostatic Potential and Capacitance (contd.) • Following the same approach as of the first week, the teacher may facilitate the learners' attempt to understand the following— – potential energy of electric dipole, in an external field; – electrostatics of conductors; – dielectrics and electric polarisation, capacitors and capacitance, – capacitance of a parallel plate capacitor with and without dielectric medium between the plates; – combination of capacitors in series and in parallel, energy stored in a capacitor; • Using PhET interactive simulations, the learners can explore how a capacitor works. They can change the size of the plates and the distance between them; add a dielectric to see how it affects capacitance. They can also change the voltage and see charges build up on the plates. • Learners should also attempt to solve problems given in the resources on a daily basis • Learners may be encouraged to find out where capacitors are used in daily life and for what purpose, by collecting information from internet.

MATHEMATICS (CLASSES XI-XII)

Mathematics (Class XI)

Learning Outcomes	*Sources/ Resources*	*Suggested Activities (to be guided by teachers)*
The learner • develops the idea of Set from the earlier learnt concepts in Number System, geometry, etc. • identifies relations between different sets.	**NCERT Textbook (NCERT Textbook for Class XI)** **Theme 1**-Sets **Theme-2** Relations and Functions **E-resources-** Link for textbook/ Laboratory Manual/Exemplar problem book— ncert.nic.in – publications---PDF (I to XII); ncert.nic.in – publications---Exemplar problems; ncert.nic.in – publications---science laboratory manuals (Other mentioned at the bottom)	**WEEK 1** • The discussion about sets can begin by asking learners to send lists of collections of objects around them, for example, on a table, in a room, etc. The meaning of well-defined collections can then be discussed. • Collections that do not form sets may also be discussed, such as, collection of best mathematicians in the world. • The discussion may now shift to collections of mathematical objects like collection of Natural numbers, collection of shapes with three/four sides, solutions of equations, collection of big numbers etc. Learners should be motivated to generate many such collections. The concept of Set can then evolve after getting online responses from Learners. • Formal symbolism related to sets can then be discussed. For e.g. set of Natural numbers is denoted by N, etc. **WEEK 2** • Different Sets may be formed, and Learners may be encouraged to observe the relationships between these sets. They may search and send those sets whose elements are also present in another set. For example, all elements of N (natural numbers) are present in W (whole numbers), etc. The concept of subsets and related notions can then be discussed. Use of Venn diagrams for visual representations of sets can be explored and discussed. • Learners may be encouraged to refer to the e-resources available on NROER related to sets. • The learners may be motivated to extend the analogy of operating upon numbers by way of different operations to that of operating on sets by way of their union, intersections, etc. • Teachers may encourage Learners to attempt exercises and circulate among other Learners. The group members may discuss the questions through emails/mobiles and get their queries resolved.

		• Activities (Activity 1 to 4) relevant to Sets from the Laboratory Manual of Class XI, available online may be done by the learners and shared with the other learners. After every activity they should write what they learnt from that activity. • Exemplar Problem Book which is available on the NCERT website can be used to solve and discuss more problems for getting a better idea of the concept of Sets and their applications. • Assessment of Learners can be done by observing their responses. Appropriate feedback can then be given. **WEEK 3** • Learners may be asked to send a list of relations that they observe in their day-to-day life. For e.g. Relation between mother and children, relation between teacher and Learners etc. This list can be compiled and sent to all the Learners online for their comments. This list can now be extended to mathematical objects for which Learners need to apply their previously learnt knowledge of numbers, geometrical objects, etc. • The idea of ordered pairs can then evolve initially from daily life examples and then from mathematical objects. • The relevance of sets can then be discussed and concept of relations can then evolve after understanding the importance of relation between objects. • Teachers may encourage Learners to attempt exercises and circulate among other Learners. The group members may discuss the questions through emails/mobiles and get their queries resolved. • Particular cases for relations can be seen and conditions can be discussed leading to the concept of Functions. **WEEK 4** • Different notions like Domain, Range, co-domain of functions may then be discussed. Learners may be motivated to form a function and show these mathematical objects. After learners send their examples of functions teacher may change their domain or co-domain and ask whether it still remains a function or not. For example, *f:* $R^+ \rightarrow R$ *such that,* $f(x) = \sqrt{x}$ *is function, but will it remain a function if co-domain R is replaced by N?* Many such examples may be sent by the teacher. Also, learners

		may be encouraged to form such examples and send to other learners. In this way a live interaction can take place. • Learners may be encouraged to sketch graphs of functions. After constructing the graph of a function, they may be encouraged to comment on its nature. Activities (Activity 5 to 6) relevant to Relations and Functions fromthe Laboratory Manual of Class XI, available online may be done by the learners and shared with the other learners. • Exemplar Problem Book which is available on the NCERT website can be used to solve and discuss more problems for getting a better idea of the concept of Sets. • Assessment of learners can be done by observing their responses. Appropriate feedback can then be given. • Learners may be encouraged to use e-resources related to relations and functions available on the NROER website.

Mathematics (Class XII)

Learning Outcomes	*Sources/ Resources*	*Suggested Activities (to be guided by teachers)*
The learner • identifies different types of relations and functions. • explores the values of different inverse trigonometric functions.	**NCERT Textbook (for Class XII)** **Theme 1** Relations and Functions **Theme-2** Inverse Trigonometric Functions **E-resources** Link for textbook/Laboratory Manual/Exemplar problem book— ncert.nic.in – publications---PDF (I to XII); ncert.nic.in – publications---Exemplar problems; ncert.nic.in – publications---science laboratory manuals (Other mentioned at the bottom)	**WEEK 1** • Learners may be given different examples of relations including reflexive, symmetric and transitive and may be asked to differentiate between them. Note that at this juncture the types of differentrelations should be evolved by the students and not to be told by teachers on the group. Learners after observing the relations should send their comments to the teacher. The discussion on these comments should lead to different types of relations. • The concept of equivalence relations can then be discussed. Learners should create examples of such relations and crosscheck their correctness. • Exercises in the textbook and exemplar problem book for Class XII may be discussed. This will help in deepening the understanding of concepts. **WEEK 2** • Similar activities as done in Week 1 for relations may be done for the concept of function. **WEEK 3** • Trigonometric functions on different domains like $(0,\pi)$ or $(-\pi,\pi)$ may be discussed. Learners may comment on which domain the trigonometric function is one-one and onto, one-one or simply onto. The exchange of ideas can lead to the concept of inverse trigonometric functions. Learners may be motivated to make decisions and give reasons for that. This will ensure their involvement in the process of learning. • Learners may trace curves for the inverse trigonometric functions in the e resources available on NROER and comment on their nature. Questions may be put to them like what graph can be seen if the domain of $\cos^{-1} x$ is restricted to (-1, 1)? • Students may download the open source software, GeoGebra and try exploring the graphs of different functions including trigonometric functions.

		WEEK 4 • Problems from textbook for Class XII and Exemplar Problem Book may then be discussed. The generation and sharing of ideas will clarify the concepts and Learners will become confident in posing and solving problems. • E-resources will help in visualising the concepts better.
E-resources that include Geogebra Class XI https://nroer.gov.in/CIET%2C%20NCERT/video/details/55ddc14781fccb28d8d932a8?nav_li=55b1f72181fccb7926fe5451,55b1f73981fccb7926fe5523,55b1f73981fccb7926fe5526 Class XII https://nroer.gov.in/CIET%2C%20NCERT/topic_details/55b1f73a81fccb7926fe552b?nav_li=55b1f72181fccb7926fe5451,55b1f73981fccb7926fe5523,55b1f73a81fccb7926fe552b		

English (Class XI)

Learning Outcomes	*Sources/ Resources*	*Suggested Activities (to be guided by teachers)*
The learner • listens and reflects to communicate through speech and writing. • develops authentic, accurate, useful content for online platforms. • expresses opinions and views independently . • listens patiently to contradictory points of view on online platforms and answers logically inagreement/ disagreement • writes and collects, appreciates narratives and short poems. • speaks fluently and convincingly using authentic evidences. • identifies and uses	1. *We Heard the Bells – The Influenza of 1918* This documentary focuses on communities and groups disproportionately affected by the 1918 influenza epidemic. The 1918 influenza continues to provide lessons for the present, including about how epidemics can foster stigma and discrimination. Available on YouTube https://www.youutube.com/watch?v=XbEefT_M6xY 2. *How we conquered the deadly smallpox virus* - Simona Zompi https://www.youutube.com/watch?v=yqUFy-t4MlQ&t=2s https://share.nearpod.com/cRozKYULw6	**WEEK 1** • Listen with concentration; this will sustain your interest. • View the visuals and try to connect them with the audio version of the script. • You can read/listen to the captions also for understanding. • Try to recall if you have read something related to the video earlier. • Make notes from the video and also note down ideas, thoughts, information experiences, etc. This will help in writing your answers. Learners may be asked to do self-assessment and peer-assessment. Some rubrics may be developed to facilitate this. **Please note** Assessment should incorporate the use of ICT. For example, familiarity with ICT tools, online portals, platforms, skill to browse and collect authentic material as well as following the guidelines for online interaction. Some communication guidelines for online interactions are: a. Give space to all for expressing their views. b. Be logical and overcome biases. c. Be polite but firm in your expression d. Read more before offering rebuttals e. Be active online for learning to share and accept new ideas.

appropriate online resources. • prepares notes while reading. • infers meanings from contexts and describes with clarity. • identifies the similarities and dissimilarities between the two texts. • develops write ups with clarity, using appropriate vocabulary and thoughts. • writes creatively and shows sensitivity towards issues/ people in his/her writing. • **may share and add their learning experiences as they learn from each other while sharing their work online.**		**WEEK 2** **You can use Skype App or mobile calling (if feasible).** **You can createan audio file, video or PDF script to share viaemail and/or WhatsApp.** What measures were taken to deal with the situation? How were the events reported and how was information made available to the public? It is important to learn from history. (You can highlight some key researches onthe treatment of influenza and smallpox in your writing.) Keeping in view the present pandemic, developnotices, advisories, and infographics based on facts for sharing with peers and teachers, parents, elderly, and otherlearners online. **You can add authentic pictures in your presentations.** **List the uses of Arogya Setu App.** **Listen to the interviews of medical experts andeconomists on the prevention of Covid 19.** **Look at the graphs, diagrams, etc., shown in the news. Write the description.** **WEEK 3** 1. Read the given texts/article. Have you noticed the title suggests that though it is about an expedition, yet it is so different from the first text? Share how it is so? 2. Read the following three excerpts from *We're not afraid…* and choose one of them to describe why you

	1. *We're not afraid to die…if we can all be together* 2. *Mountaineers can teach us about isolation.* Mint. April 18,2020 Saturday vi.14No.96	like it or dislike it? a. My brain switched to survival mode. It taught me how to stay strong when you have failure staring at your face. b. If you need to survive these moments of uncertainty. You need to be in harmony with the team. c. I suppose the important thing in isolation is to cherish your companions, to try and enjoy the moment and to be positive. **You can share your experience of being alone in a time of difficulty.** **WEEK 4** 1. You have read both the texts, the idea common to both is - a. man's desire and pride to explore nature, b. to accept challenges of nature c. to know the mystical world of nature. d. nature is tender and caring but furious too at times. You can add more ideas/views. Now summarise the above creativelyand add more ideas and views. You can refer to poems, films, paintings, etc in your write up. You have read two texts and explored these texts for activities. Now, explain the present situation (pandemic, Covid-19 and lockdown) in the context of *isolation* and *being together.*

		You can also do the following activities while reading and after reading the text— 1. While reading make notes as per the dates. 2. Find out the way the text has been organised; sequencing of incidents, concrete details, no reliance on memory, focus on surroundings and the intelligence of the family in dealing with it, etc. 3. While reading the text you must have seen how well prepared were they for the journey; count the details/ objects, etc. 4. Describe the following in your words. a. for the past 16 years we had spent all our leisure time honing our seafaring skills. b. The first indication of impending disaster came at about 6 p.m., with an ominous silence. c. We were getting no replies to our Mayday calls. **You can locate the above excerpts in the text— *We're not afraid...* Read in order to understand the meaning.** **Words and Vocabulary** a. Make as many compound words as you can with –shipwhich have different meanings. b. List the words which are used to describe the different parts of the ship. c. What is *Wavewalker* as mentioned in the text? d. Find out words, expressions which convey bravery, courage and positive attitude of the characters.

		a. Read the text carefully and write the summary of the text in your words. Make points and then write the summary. While making points you can make use of words /expressions from your language, find English substitutes from dictionary, from your teacher, friends and use in your summary. a. Make points and discuss online with teachers and peers —what will be your back to school moment? b. Watch the link on Flocabulary and try to mak one on the author/lesson/poem of your choice

English (Class XII)

Learning Outcomes	***Sources/ Resources***	***Suggestive Activities***
The learner a. explores genuine online resources. b. Listens/views online resources and expresses through writing and speech. c. critically analyses historical events through writing and sharing of	**Read the story *The Last Lesson* from NCERT Class XII Textbook *Flamingo*. You can read it online at www.ncert.nic.in.** You can access the audio of the text using the QR code provided in textbook-*Flamingo*. Explore the links	**WEEK-1** Alphonse Daudet in the story *The Last Lesson* highlights the important place of language in the lives of people. The story focuses on the major historical event, i.e., the Franco-Prussian War (1870-1871) which affected life in the school where M Hamel, a French teacher took a lot of pains to teach children the French language. What was the routine of the school? Who said the following and why? "My friends, said he, I –I", but something choked him. "*Vive la France*"

ideas and opinions with peers, teachers etc. d. develops and shares views/ opinions on contemporary issues making use of interdisciplinary knowledge. expresses opinions on issues related tochildren in difficult circumstances quotes in discussion, etc., rights of children and legal provisions for the children. e. explains graphs, tables and data related to the issues of children. f. participates in activities like poster making, speech, debate	https://commons.wikimedia.org/wiki/File:French_soldiers_in_the_Franco-Prussian_War_1870-71.jpg https://commons.wikimedia.org/wiki/Category:Franco-Prussian_War *Text* Lost Spring Anees Jung **Class XII**-Flamingo *Films* **Paperboy** – an awardwinning film https://www.youtube.com/watch?v=neWPK3fRg5c Stories and endeavours by ILO(International Labour Organisation), UNICEF and NGO's	**WEEK 2** History is witness to some of the examples wherein the wars had demonised the victorious. One glaring example was when children in the schools of Alsace and Lorraine (districts in France) were prevented from learning French. This was because Germany had taken control of these districts after defeating them in war in 1870. • M.Hamel the French teacher was deeply disturbed when the order for not teaching French in school was issued. What according to you would have been his fear? • Languages are communities; they embody the soul of the culture, capturing a people's history and dreams. Write your views and discuss with your group online. • How many languages do you know and in what contexts do you use them? • Watch videos based on the Franco-Prussian War of 1870. You will find that there isa language of war too. The war lexicon plays a role for the warring armies. There is military terminology, coded signals, names of the machinery used in war, etc. There are war cries to encourage and motivate the soldiers. You will agree that it creates an impact on aprevailing situation. a. Now describe the war scenes as viewed in the video. Listen to the audio to understand the language of war. Discuss with your online group -*Wars bring heartrending misery on the planet earth.* Add experiences, stories, facts, news, etc in the discussion. c. Select three passages from the text and find out the tense forms used. **WEEK 3** a. In the period of pandemic, due to spread of Covid-19, there are heartrending stories of children who have to undergo hardships andhave even lost their lives. Collect such stories, read them and draw conclusions based on them. b. Why are children so susceptible to crime and hard labour? Are the measures taken enough?

etc., for creating awareness about the marginalisation of children in difficult circumstances.		Read efforts taken by ILO, UNICEF and NGOs like *Bachpan Bachao Andolan*. c. Initiate an online discussion on-*Streets are no place for a child.* d. Write the character sketches of Saheb-e-Alam and Mukesh. e. Write diary entries to describe your experience of staying at home; how have you utilised your time ; what changes would you like to bring in your routine in the future? f. Since you are not going to school you can find time to do interesting and entertaining activities. We are making some suggestions; g. observe and draw sunrise/sunset scenes, compose a poem/song/wrap, try your hand in kitchen and try and share your favourite recipes. **WEEK 4** a. What was your experience of watching the two films given (or other English films)? Has the boy in the film *Paperboy* been able to convey his feelings? Mention a few instances in support of your answer. b. What is your opinion about the ambience and the details which have been focused upon in the film? Do these contribute to your experience and understanding of the film? c. Share your experience of translating a film into text.Were you focused on the meaning, performance of characters, music, staging of scenes, etc? d. Describe your favourite scene from the film Paperboy. e. Write a brief script of street play on corona pandemic, care for street animals, etc.

		f. Read the story using the following link; https://www.facebook.com/1733495223546925/posts/3115112452051855/watch and take pictures of the birds, wildlife (if possible) around you which you think are not common sight. You can keep water and food for them. a. Watch the link on Flocabulary and try make one on the author/lesson/poem of your choice

Political Science (Class –XI)

Learning outcomes	*Sources/Resources*	*Suggested Activities (to be guided by teachers)*
The learner • understands what is meant by Politics and Political Theory. • identifies important political thinkers in India and in the world. • explains Equality, Justice and Democracy.	**NCERT/State Textbooks** **Theme-I** Political Theory: An Introduction, ***Sources*** ***E content*** ***QR Code*** ***e-pathshala*** ***Newspapers and magazines***	**WEEK 1** 1. Write short notes on Kautilya, Aristotle and Dr. BR. Ambedkar and share them with your friends through email. 2. Prepare a glossary of terms. 3. Prepare a chart on some of the recent amendments to the Constitution. 4. Collect cartoons from newspapers and magazines and write down the messages they convey politically. Which concepts do they highlight? You may prepare your own cartoons. 5. Collect the messages of important political thinkers and share them with your parents. Those that have inspired you may be shared with all your family members with the help of a mobile.
• explains the importance of freedom for self and the society. • explains the difference between positive and negative freedom.	**Theme-2** Freedom: Overview **Sources** **e-materials** ***OR-Code*** ***e-pathshala*** ***Radio/T.V.and YouTube***	**WEEK 2** ✓ Learners may be asked to read biographies of our freedom fighters (both men and women) as well as of some eminent global personalities like Nelson Mandela who struggled against the apartheid regime in South Africa. You may prepare a short note on their trials and tribulations and what inspired you about them. Share these with your friends with the help of a mobile or on email. **WEEK 3** ✓ Collect important quotes of eminent personalities like Mahatma Gandhi and Subhash Chandra Bose on freedom. ✓ Prepare a glossary of terms.

• explains the concept of Equality • understands that the pursuit of Equality involves treating everyone the same way. • recognises different dimensions of Equality- Political, Economic and Social.	**Theme-3** Equality **Sources e-content** *OR-Code e-pathshala Newspaper, magazines Radio/T.V/other Audio Video materials*	**WEEK 4** 1. Prepare a chart on Schemes and Programmes that address inequalities related to access, enrolment, retention and achievement of learners at the secondary level of education. 2. Write an essay on 'Equality as a principle and as a practice'. 3. Prepare a comic strip on inequalities existing in your neighbourhood. 4. Prepare a note on 'Gender equality as a stepping stone for development' and share it with your friends.

POLITICAL SCIENCE (CLASS XII)

Learning outcomes	***Sources/Resources***	***Suggested Activities (to be guided by teachers)***
The learner • describes Politics in India since Independence. • explains the processes of integration of Princely states into the Indian Union. • interprets sources on the Partition of India	**NCERT/STATE TEXTBOOKS** Politics in India Since Independence: Chapter-1, Challenges of Nation building **Sources** ***e-content*** ***QR-Code*** ***You-Tube*** ***Print materials like Newspaper and Magazines*** ***Radio Talk / TV programme on the theme***	**WEEK-1** Learners may prepare a write-up on the processes of National building. Learners may be asked to collect articles on the Partition of India. Collect stamps issued in 1950 to mark the first Republic Day. Prepare a script for a small documentary on Partition and Beyond. Imagine you are a press reporter writing a brief write-up on 'The Challenges of Nation Building'. Write a biography on any leader who has inspired you and share it with your peers through email.

• describes the functions of the Election Commission of India • explains the processes of election in India. • interprets how the process of voting has changed to electronic voting.	Chapter-2 Era of One Party Dominance e-content **QR-Code** **Newspaper and magazines**	**WEEK-2** Discuss with your parents /grandparents about their experiences during the partition. Prepare a short write-up on the party system in India. Prepare a chart on different political party in India with their symbols. Prepare a chart on the different Lok Sabha Speakers — from the 1st to the 16th, and their respective terms. Share it with your peers through e-mail.
The learner • explains the past and present of planning — Planning Commission to Niti Aayog. • explains what is de-centralised planning. • distinguishes between public and private sectors	**Sources/Resources** Chapter-3 Politics of Planned Development. ***e-content*** ***QR-Code*** ***Youtube*** ***Newspaper and magazines***	**WEEK- 3** Prepare a write-up on the Schemes and Programmes Prepare a Chart on the Green and White revolutions Collect information from the website of different Ministries on the scheme and programmes for the educational welfare of SC/ST and Minorities communities and share it with peers through mobile and e-mail.
• recalls the international context that shaped India's external relations • discusses the content of Article 51 of the Indian Constitution • explains the Sino-Indian relationship • examines India's Nuclear policy	Chapter 4 India's External Relations ***e-content*** ***T.V./Radio*** ***Other state textbooks*** ***Newspaper/magazines***	**WEEK-4** Explain the background that shaped India's external relations Prepare a chart on the contents of Article 51. Write an essay on India's Nuclear Policy. Collect material on India's relation with neighbouring countries Role of India in SAARC. Collect question papers of the last five years and practice answering questions that have appeared on the theme.

Economics (Class XI)

Learning Outcomes	*Source*	*Suggested Activities (to be guided by teachers)*
The learner ✓ understandsthe nature of Economics and Statistics. ✓ classifies the basic economic activities like production, consumption and distribution. ✓ explains the relationship between Statistics in analyzing economic problems. ✓ interprets basic economic data related to agriculture, GDP, population etc. from news reports.	***Texbook Statistics for Economics*** (Class XI) **Theme1 Introduction** ***Web-links*** **Dictionary of Economics for Schools (Trilingual)** ✓ http://www.ncert.nic.in/publication/Miscellaneous/pdf_files/Dic_Eco.pdf ✓ http://ncert.nic.in/textbook/textbook.htm?kest1=2-9 ✓ http://ncert.nic.in/textbook/textbook.htm?kest1=1-9	**WEEK -1** ✓ Teachers may start the discussion with the definition and importance of Statistics. ✓ Examples may be taken to explain the importance of statistics in economics. ✓ Explain consumer, producer, seller, employer and employee, through their activities. ✓ Learners may be asked to list their daily and monthly wants and their resources (pocket money, gifts etc.). They may be asked to find out how many of their wants they are able to fulfill within given resources. ✓ After this, teachers may explain to them that scarcity of resources gives rise to economic problems. ✓ Itmust be explained to them how production decisions are taken in view of limited resources. **WEEK 2** ✓ With this background, the role and importance of statistics in making a choice among scarce resources may be discussed. ✓ Collect a newspaper report on crop production in the country and organise it into a table. ***Exemplar Activity*** Learners may be given the paragraph below: *During the planning period, the death rate has considerably declined, and it was 6.4 per thousand in 2016 as against 27.4 per thousand in 1951. The infant mortality rate has also come down from 146 per thousand in 1951 to 34 per thousand in 2016. Moreover, life expectancy at birth has risen from 37.2 years for males and 36.2 years for females in 1951 to 66.9 years for males and 70 years for females during 2011-15. (Puri and Misra, Indian Economy, 2018)* Learners may be asked to present the dataplaced above in tabular form. • Thus, teachers can use similar statistics from newspapers, etc., and explain the use of data in making policies for the welfare of people.

The learner • understands the meaning and purpose of Data Collection. • distinguishes between Primary and Secondary Data. • Identifiesimportant sources of Secondary Data. • differentiates between Census or Complete Enumeration and Sample Methods of data collection • understands thedifference between Random and Non-Random Sampling.	**Theme 2 Collection of Data** ***Web-links*** **Dictionary of Economics for Schools (Trilingual)** • http://www.ncert.nic.in/publication/Miscellaneous/pdf_files/Dic_Eco.pdf • http://ncert.nic.in/textbook/textbook.htm?kest1=ps9 • http://ncert.nic.in/textbook/textbook.htm?kest1=2-9	**WEEK 3** • Teachers should explain the sources from which data can be obtained. • They should explain the difference between primary and secondary sources. • Some of the important secondary sources may be discussed. • Teachers can discuss the two major types of methods/techniques of primary data collection, i.e., Census method and Survey method. **WEEK 4** • Teachers can describethe characteristics of a good questionnaire. They may show examples of good questions and poor questions from the textbook. • The difference between population and sample can be explained with the help of the number of learners in the classroom. ***Exemplar Activity*** Suppose a study of gradual progression of learners into adulthood withrespect totheir height and weight is to be made. There are approximately 50 learners each in two sections of a class. You pick any five learners from each section, by drawing chits from roll number 1 to 50. After the exercise, you have data for weight and height of 10 learners from bothsections. Teachers can discuss the following points: • What kind of data do you have now? • Can it be called Census survey or Sample Survey? • Is it Random sampling or Non-random sampling? • Is the source of data primary or secondary?

Economics (Class XII)
Macroeconomics

Learning outcomes	***Sources/Resources***	***Suggested Activities (to be guided by teachers)***
The learner • Identifies the economic question that concerns all the citizens. • understand the importance of output level of goods and services produced within your economy. • explains how single good could be representative of all goods	**Class XII Economics textbook can be accessed from the web portal of NCERT** https//www.ncert.nic.in/as Energised Textbooks with QR codes Textbooks are also available on e-pathshala APP Create a group on WhatsApp for Learners and economics teachers Information can also be shared through e-mail	**WEEK 1** Initiate a discussion on the measure of the lockdown that has been announced to contain the spread of Coronavirus. What will be its impact upon the economy? Will prices as a whole rise or come down? Should workers be given their salary? What will be a reasonable indicator to show that the economy is better or worse? Share in a blog or WhatsApp group that the production of goods generates income, output and employment. For example, a firm produces Rs 500 worth of biscuits which means 500 worth of income has been generated i.e. production worth Rs 500= income of 500. Taking a hint from the following statement, write a paragraph on how agriculture and industry are complementary to each other. **Hint:** In our country 50 per cent of the labour is engaged in agriculture. Can they be absorbed by the industry? Find out how the price of representative goods reflects the general price level of the economy. For e.g. consumer price index (CPI) is computed by considering the general price of the household items used for consumption.
• understands the meaning and importance of basic economic variables, i.e., income, employment, inflation, etc., • Recapitulates the	Learners can discuss the following economic variables, on Facebook. Learners can use their mobiles to share information **Explore e-content given on NROER** E-content on QR code can also be referred	**WEEK 2** National income is the sum total of goods and services produced within an economy. The average income of developed countries like U.S.A and Japan is more than India and Indonesia. Discuss with your friends. Unemployment denotes the number of adults who are on the lookout for a job. Do you agree that the loss of employment is associated with the loss of income and may even push aperson into poverty?

difference between microeconomics and macroeconomics. • explains how market came into existence. • explains how the economic aggregates (output, price and employment) portray the large picture of the economy?	Refer to news on T.V and radios	Inflation is increase in the price level which leads to a fall in the purchasing power of money Think and answer - Suppose in any firm, an owner gives a hike of 5 percent salary toher/hisworkers. Will the workers be benefitted if there is no inflation? Or Will the workers be benefitted if the inflation rate is 5 percent? Microeconomics deals with individual economic agents. Macroeconomics deals with the economy as a whole. Let's say your mother asked you to purchase a litre of milk. You visit the nearby dairy cooperatives like Mother dairy or Amul. Find out how milk is delivered bythe dairy cooperative. As a thoughtful learner, reflect on how milk production on large scale gets organised. Who coordinates the sale of milk? Or Discuss with your parents how coordination between buyers and sellers of fruits isestablished? When aggregate output increases, it has an impact on the income of many individuals. Do you agree that an individual's salary may increase? When there is an increase in the price of the essential commodities what will happen to the labourer engaged in construction work? Hint: Adjustment in his budget Imagine your friend's mother is working in a firm. One fine morning she was fired from the job. What will she do? Share with your friend that economic aggregates arevery important for they portray the health of the economy.

• identifies the cause of great depression in the 1930's and suggest measures to overcome it	Parents along with teachers can develop a worksheet and share it in the group. The use of the worksheet is to provide learners with different ways of expressing themselvesand also to enable them to be engaged in different activities thatpromote the skills of problem solving, critical thinking and so on. E-portfolios can be shared where views or opinions of the learners on different sets of activities can be shared.	**WEEK 3** Discuss with your parents the cause of the Great Depression which occurred in the 1930s. Various suggestions have been made by an economist to overcome the problem- a) Governments should increase spending to stimulate economic activity. b) Taxes can be raised to curtail expenditure. c) Governments should not do anything for they havevery limited understanding of the economy. Which suggestion will you agree to and why?
• understands some of the main challenges facing the developing country		**WEEK 4** Let us say country A imports a large amount of goods and services from other countries. Your teacher says one should produce goods and services on its own How do you reconcile these two facts? In your neighbouring state, let us say, only 50 girls are enrolled in the secondary school for every 100 boys. Suggest a measure to increase the enrolment of girls. Do you agree that enrolment of girls will lead to faster economic growth? There was a strike in a private bank as the workers were protesting against automation. You have been asked for suggestions. Do you agree that both situations are correct or is only one correct? Give reasons. a) The workers will be benefitted from automation. b) There will be a reduction in jobs after automation. Refer to the website for the UN (www.un.org). On the home-page click 'Economic and social development' and then click on 'statistics'. Look for 'social indicators' and answer the following. Why does an increase in the population make it difficult for its people to improve their living standards?

Sociology (Class XI)

Learning Outcomes	*Sources/ Resources*	*Suggested Activities (to be guided by teachers)*
The learner • understands how the study of Sociology reflects upon the connection between a personal problem and a public issue • understands the concept of society and how societies are unequal in nature.	**NCERT/State Textbook on Sociology** Class-XI Theme-1 Sociology and Society Search websites that advertise fancy white-collar jobs. Read newspapers Watch youtube videos on different types of societies.	**WEEK 1** Read pages 1 to 3 from the NCERT textbook. Make a list of the most desired jobs in our society. (This list can also be made, without going through textbook pages) Write down the questions and suggestions which you often receive on working hard and deciding your career. ***Activity 1*** Write your analysis of the connection between a personal problem and a public issue. Continue readingthe Chapterfrom pages 4 to 6. Try to identify the type of society that you live in. List the types of societies that you know about and you have seen. In your opinion how are these societies different in nature? Discuss with your parents and friends about the reasons for inequalities in societies. What do you think should be the focus of society? The aforesaid questions may be answered without reading the textbook as well. Do the activities given on pages no. 5 and 6.
• Understand how Sociology studies human society as an interconnected whole. • understands the difference between Sociology and	Visit different sites of social media. Read about panchayats on the Internet Read e-newspaper	**WEEK 2** Write about social life. Give your own definition of group and social behaviour. Discuss with your grandparents, parents, elder sibling about norms and values and their importance in the society. Write a paragraph on common sense. Try to recall how you use theword 'common sense' in your daily life.

common-sense knowledg.	Read blogs related to the topic	Reflect, write and discuss with your parents why they/you have certain views and whether we can question these views? Study the language of newspapers and blogs. Identify the differences. Do the activity given on page no. 8 of the NCERT textbook
➢ understands the development of sociology as a discipline. ➢ understands the growth of Sociology in India. ➢ understands the scope of Sociology. ➢ understands the relationship of Sociology with other social sciences.	Blogs, newspapers and social media Youtube, online movie streaming websites.	**WEEK 3** Read the chapter from pages 10 to 15. Read about the origin of Sociology. Read about August Comte, Karl Marx and Herbert Spencer. Write essays on Industrialisation and Urbanisation. Read about Enlightenment. Discuss with your grandparents/ parents about society and life when they were young. If you are a farmer in a village and you have to move to a city you will be leaving your agriculturalwork behind to probably work in a factory. What changes will happen in your life? Do the activities given on pages no. 12 and 13. Prepare a write-up on the making of Sociology. **WEEK 4** Read the chapter from pages 15 to 21 of the NCERT or State textbook. Take any topic of your choice and try to find out its sociological dimensions. Discuss with your friends about family, politics, and the economy and write about the interconnectivity among them. Watch the film *Lagaan*. Critically reflect upon the social, political and economical aspects of the society as shown in the film.

Sociology (Class XII)

Learning Outcomes	*Sources/ Resources*	*Suggested Activities (to be guided by teachers)*
The learner ✓ understands how the study of Sociology enables self-reflexivity ✓ understands colonialism and nationalism in India ✓ gets a preview of the textbook	**NCERT TEXTBOOK *Indian Society*** Class-XII Chapter-1 **Introducing Indian Society** Read about colonialism and nationalism. Read Rabindra Nath Tagore's book *Nationalism* Read on internet about census and population. Read BR Ambedkar's book *Castes in India* or any of his works on the Caste system in India. Read the book *Understanding Gender* byKamla Bhasin Chapter 2 **The Demographic structure of Indian Society**	**WEEK 1** Read the chapter from pages 1-5. Write an essay on your understanding of the society in which you live. Discuss with your friends, parents and grandparents about generation gap. Write down the difference inperspectives on generation gap. Locate yourself on social map with the help of the example given on page 4. Read page 5 of the chapter. Write an easy on your understanding of colonialism and nationalism. Discuss with your friends about colonialism and its impacts on the world and India. Discuss with your family members about nationalism. Write down the different opinions and try to identify the causes of differences in their opinions. Read the chapter from pages 6-7. Write a paragraph on demography. Discuss with your family members about caste, tribes and family in India. Write your impressions of caste. Why do you consider family as an important institution of society? Imagine a society without markets and write how it will look like? Critically reflect on the changing nature of markets and how markets impact society. Write about gender and the generally seen gender stereotypes. Write your views about social exclusion and the factors responsible for it. Discuss with your friends about the meaning of social diversity and the different perceptions about social diversity. **WEEK 2** Read the chapter from pages 10 to 12.

✓ understands social demography and its importance in Sociology ✓ understands Malthusian theory of Population Growth ✓ understands the theory of Demographic Transition ✓ understands common concepts and indicators given in the chapter ✓ understands the size and growth of population in India.	Read the Abstract of Census of India - 2011 Read Thomas Robert Malthus' book *An Essay on the Principle of Population* Read on theory of demographic transition Collect information from the Internet on the birth and death rates in India for the last 10 years. Read *Imagining India: Ideas for the New Century* by Nandan Nilekani.	Make a list of the most populated countries in the world. Try to understand the composition of their societies. Discuss with your friends why population data is important to understand the development of a country and for the formulation and implementation of policies. Read the chapter from page 12 to 13. Write about Malthusian theory of Population growth. Do you agree with this theory? Write your critical reflections on this theory. Write your views on unjust and unequal social systems. Do the activity 2.1 given on page no. 14. **WEEK 3** Read the chapter from pages 13 to 14. Write about the theory of Demographic Transition. Discuss with your friends about the causes and factors of population explosion. Read the chapter from page 14 to 16. Write why it is important to keep the record of birth and death rates of a country. Make a list of countries with negative population growth rate. Analyse the causes for this phenomenon. Write about the fertility rate and infant mortality rate in India. Try to observe the link between these two. Write your views about the sex ratio in India. Discuss with your friends how the young population of India can contribute to the overall development of the country. **WEEK – 4** Read the chapter from pages 16 to 21. Analyse Table 1 given on page 17.

	Visit the reference resources given in the box 2.2.	Write your analysis on the differences in the population growth in India in the 20th Century. Read box 2.2 given on page 18. Try to observe the difference in the situation of Spanish influenza in 1918 and Covid-19 pandemic in 2020. Analyse chart 2 given on page 20. Write about the possible causes for different birth ratios in different states of India.

Psychology (Class XI)

Theme 1: What is Psychology?

Learning Outcomes	***Sources/ Resources***	***Suggested Activities (to be guided by teachers)***
The learner ➢ identifies psychology as an established discipline ➢ states the different branches of psychology explains the role of psychology in understanding mind and behaviour. ➢ explains that psychology deals with thoughts, feelings, sensations, emotions, and perceptions ➢ Enumerates the usefulness of psychology in everyday life. ➢	**NCERT/State Textbook in Psychology (Class XI)** Students may also visit NROER, an online educational resource repository of NCERT and explore the e-resources available online for Psychology, i.e. ▪ Evolution of Psychology https://nroer.gov.in/55ab34ff81fccb4f1d806025/file/582aa11116b51c1a9064b2c5 ▪ Branches of Psychology https://nroer.gov.in/55ab34ff81fccb4f1d806025/page/582aa26416b51c1a9064b2e7	**WEEK 1** **Understanding role of psychology through experience and observation** ▪ Write in your own words what you understand of psychology? Write how psychology can help in understanding better your inner self and the world around you. Ask your peers/siblings/parents to do the same. Compare your views/responses. ▪ Write the main points given in the book related to the explanation aboutwhat psychology is. Reflect on the meaning of psychology you formed earlier. What are the differences between both? ▪ Think about things/situations around you which can be better understood with the help of psychology and why. Write about how you have been feeling since the past 2-3 days and which possible psychological processes are involved in it. **WEEK 2** **Appreciating the growth of psychology and developments in India** ▪ Read about the 'Evolution of Psychology' andwrite which approach/perspective you find interesting and why? ▪ Write some of those aspects keeping in mind the Indian context (for example-yoga, different cultural practices, vratas, etc.) Which among these do you think psychology can attempt to understand / explain?Why do you think so? Discuss it with your peers/teachers/parents. **WEEK 3** **Recognising fields of specialisation in psychology** ▪ Select the branch of psychology which interests you the most and the branch you find least interesting. Write down the following points - what makes it interesting and what is not of interest to you.

		▪ Search information related to the different branches of psychology on the Internetto discover what psychologists do. ▪ Relate your new learning with your initial understanding of psychology. **WEEK 4** **Valuing psychology in daily life to help understand oneself and others** ▪ Observe someone talking to you. Try to pay attention to what the person is saying and how (i.e. facial expressions, tone of voice, speed of articulation, body posture, eye movements, and hand-gestures, etc.). ▪ Make a list of happenings /examples from everyday life which you might consider as human behaviour and those which you think are mental processes studied in psychology ▪ Which discipline do you think has a close relationship with psychology? Why do you think so? ▪ Make a list of skills and feelings that you think are necessary to become a psychologist? Explain why you think these are important?

Psychology (Class- XII)

Theme 1: Variations in Psychological Attributes

Learning Outcomes	***Sources/ Resources***	***Suggested Activities (to be guided by teachers)***
The learner • enumerates individual variations in terms of characteristics and behaviours • distinguishes different domains of psychological attributes- intelligence, aptitude, personality, interest, and values. • explains different assessment methods: psychological test, interview, case study, observation, and self-report. • describes the construct of intelligence, theories of intelligence and Indian perspective. • explains variations in intelligence as entwined in both heredity and environment. • Lists the difference between different types of intelligence tests	**NCERT/ State Textbook in Psychology (Class XII)** Students may also visit NROER, an online educational resource repository of NCERT and explore the Psychology e-resources available online, i.e. ▪ Different Assessment methods http://econtent.ncert.org.in/wp-admin/admin-ajax.php?action=h5p_embed&id=460 ▪ Theories and Measurement of Intelligence https://nroer.gov.in/55ab34ff81fccb4f1d806025/page/582add6516b51c60b06a81e2	**WEEK-1** **Understanding individual differences in human functioning and assessment of psychological attributes** • Observe and identify different characteristics and behaviours of your own self and your family members. Classify these according to aspects in which you and your family members are similar and those in which you differ. Try to name the characteristics/behaviours. • Write which psychological attribute (e. g. intelligence, aptitude, interest, personality, and values) would you like to learn more about and why. **WEEK-2** **Understanding Intelligence and its theories** • Make a list of all the attributes (quality, characteristics, traits, features) you consider as sign of intelligent behaviours. Keeping these attributes in view try to formulate a description/explanation of intelligence. • Think of any three people who you think are intelligent. Try to visualise their thoughts, behaviours and actions. Classify these and prepare a list. • Compare your understanding of intelligence as formulated in the previous activity with the explanation given in the Psychology Textbook. • Which theory of intelligence do you find most interesting? Write the points which interest you. • Write the careers that interest you? Reflect on which multiple intelligences are important for these careers? • Search information related to skills and abilities required for different careers on the Internet.

• Distinguishes between aptitude, intelligence and creativity	▪ Culture and Emotional Intelligence https://nroer.gov.in/55ab34ff81fccb4f1d806025/page/582ae09316b51c60b06a8226	**WEEK 3** **Understanding nature, nurture, assessment, and types of intelligence tests** • How are you and your sibling;you and your friend, similar as well asdifferent? Make a list of factors that you think have led to these similarities and differences. Try to group them as those related to the environment of individual and those due to genetics /heredity. • What will be the Intelligence quotient of a 16-year-old child having the mental age of an 18-year-old? • Find out the mental age of a 14-year-old child having anIntelligence Quotient of 100. • Search for information about the different ways in which heredity and environment influence intelligence. **WEEK 4** **Understanding culture and intelligence, emotional intelligence, aptitude, and creativity** • Find out which aspects in Indian culture are considered intelligent behaviours? Are the same aspects considered intelligent in Western countries? • Are culture and intelligence related? Write points which indicate the relationship exists. • Make a list of behaviours, qualities, actions, thoughts, etc., which make a person emotionally competent.Reflect on these and write down those behaviours/ actions/skills etc. which you possess. • Write about one situation thatyou handled by making use of these behaviours, qualities, actions, thoughts, etc. • In which area do you think you are most proficient (music, dance, studies, arts, sports, etc.)? Is this intelligence or aptitude? • Find out different ways in which people can be creative.List the characteristics of creative individuals.

COMMERCE

Business Studies (Class XI)

Learning Outcomes	*Sources/ Resources*	*Suggested Activities (to be guided by teachers)*
The learner ❖ classifies and compares economic and non-economic activities to arrive at the concept of business. ❖ Analysesinformation to differentiate between economic and non-economic activity. ❖ evaluates business as an economic activity ❖ understands elements of risk and uncertainty for profit objective of business ❖ enlists the factors for starting one's own business ❖ appreciates the development of trade in historical past	**Source NCERT Textbook Business Studies** **Theme 1** Business Trade and Commerce	**WEEK -1** **Theme- Economic and Non-Economic Activity**: **BEGIN WITH GROUP ACTIVITY** This activity introduces the concept of'business' to the learners. Teachers are advised to do the following group activity to begin with: - Mode: Interactive: *Google form* - Collaboration: using Instagram live/Skype/Facebook live ***Activity 1*** Identifying different types of occupations /professions/jobs - Discuss with learners about the occupations/jobs/professions their family members, relatives and neighbours are engaged in. - Encourage them to recall and list various types of occupations/jobs/professions they observe around them. - Use the following Google form to accumulate responses - *Link of Google form for teachers* https://docs.google.com/forms/d/e/1FAIpQLSeESQBWVRNwroM7UhXovndwCRnT16Gd7ISGHgGOaG-9omB1_Q/viewform?usp=sf_link - *Link for Google form for sharing with learners* https://docs.google.com/forms/d/1qjmVQJRNNU0Dxx1pVgOi1a-InFevzH50Z_upRjcSDJc/edit?usp=sharing **Evaluation/Assessment** - What occupations can they think of? Compile and Read aloud the responses of learners.

		- Are learners able to differentiate between: (1) Self owned work/self-employment (2) Working for others i.e. wage employment (3) working not for money but for love, affection and household work i.e. mother cooking food for family, etc. Now go to page number 11 of the textbook and discuss the content with the learners. Encourage learners to complete the given activity: *Try it yourself at page 11 of the textbook.Instruct learners to read the text by themselves and raise queries.* **WEEK 2** **Theme** Business as an Economic Activity ***Activity*** Use of Concept Map - Share the concept map with the learners - Use the following link for a concept map https://h5p.org/node/768111?feed_me=nps - Instruct them to read the concept map for about 10 minutes. ***Discuss the following topics with them*** - *Characteristics of business as an economic activity* - *Objectives of business* - *Importance of profit earning in business* - *Classification of Industry* - *Trade and Auxiliaries to Trade* - *Risk and uncertainties and business activities* - *Discuss the concept of Business as an economic activity.* - Instruct learners to read Chapter 1 from page no. 12 to page no. 23 and raise queries. **Evaluation/Assessment** 1. *Instruct learners to attempt E-resource in the QR code for chapter 1*

		(https://h5p.org/node/490910) at the beginning of Chapter 1 using the *e-pathshala* scanner app. **WEEK 3** **Theme** **Starting your own business** ***Activity 3*** Factors affecting starting a business - Share the e resource (https://h5p.org/node/50230?feedme=nps) with learners. - Encourage them to complete the exercise by identifying the businesswomen covered in the e- resource by surfing the internet. There is no time limit to complete the task. Let the learners do the assignment at their own pace. - Initiate a discussion with learners using Instagram live/Skype/Facebook live on starting one's own business. - Go to pages no. 24 -25 of the textbook and discuss the factors for starting a business. **Evaluation/Assessment** - Encourage learners to read the content on pages 24-25 and raise queries, if any. - Ask them to identify any manufacturing or trading business and list the factors they will consider to start their own business. *[Hint: Define the business idea, name the product, choose a name for the business, list the factors associated to start the identified business]* **Note to teachers**: this activity will be_taken further to Chapter 2 **WEEK 4** **Theme** History of Trade in India: • Discuss the followingwith learners: - Why was the Indian subcontinent referred to as '*Swarn Bhoomi' and 'Swarn Deep*'by the then travelers to our country. - What made Columbus and Vasco Da Gama undertake journeys to locate our

		country? - To what extent were an indigenous banking system and taxation mechanism developed in ancient times for merchant corporations? - List the major exports, imports and trade centers of ancient India. - Comment on the use of *Hundies* and *Chitties* for carrying out monetary transactions by merchant corporations. • Share the given e-resource for understanding the ways of monetary transactions by thetrading community https://h5p.org/node/768161 • Discuss the chapter content from pages 4 to page 10 with learners. • Encourage them to raise queries. ***Activity 4*** Chapter end Exercises - Instruct learners to attempt all short and long answer questions given at the end of the chapter and submit them to their Business Studies teacher via email. - Teacher to facilitate completion of the work, before proceeding to the next chapter. - Suitable timeframe may be given to learnerswith respect to this.

Business Studies (Class XII)

Learning Outcomes	*Sources/Resources*	*Suggested Activities (to be guided by teachers)*
Mode of transaction: Mode: Skype/Facebook live/ Instagram live		
The learner • discusses the significance of managing business organisation effectively • describes management as an Art, Science and Profession • appreciates the techniques of scientific management • understandsthe general principles of management • examines the dimensions of business environment managing business effectively	**Source** **NCERT Textbook Business Studies Part I Principles and Functions of Management** **Theme 1** Nature and Significance or Management **Theme 2** Principles of management **Theme 3** Business Environment	**WEEK 1** **Theme** **How Big business houses are the result of effective business management** • Teachers are advised to collect success stories or the timeline of big business houses operating in India for the pastseveraldecades and weave it into a story to arrive at a discussion on the concept and nature of management. • Exemplar links with respect to this can be https://www.tata.com/about-us/ta https://www.ril.com/TheRelianceStory.aspx https://www.infosys.com/about/history.html • Encourage learners to search for other success stories to understand how important management is for the growth of a business organization • Such stories can also be from the unorganized sector in their own state. **Theme** **Concept of Management** Discuss with learners the following topics: • Why is management a goal-oriented process? • What makes management all pervasive and continuous in an organisation? • How is management to be treated as a group activity? • Why is it called an invisible force? • What makes management a dynamic function in an organization? • Efficiency versus Effectiveness. Instruct students to read the chapter from page 5 to page 19 and raise queries.

		Activity 1 Relating with the success stories • Encourage learners to identify one success story, either from the organised or unorganised sector [Local, Country wide or Global). • In case internet facility is not available, cases given in boxes throughout the chapter in the textbook can be used. • Develop a write up of 2 pages on its management strategies. [**Hint:** Vision statement, mission, objectives, growth strategies, prepare timeline] **WEEK 2** **Theme** **Coordination as theessence of the management process** • Explain the management process listing the levels and functions of the management. • Make learners understand that individual functions do not have any value. They need to be coordinated for fruitful results. • Discuss coordination as theessence of effective management. • Instruct learners to read the chapter from page 21 to page 26 and raise queries. ***Activity 2*** How to organise 'Swachhta Diwas' in school by applying functions of management • Make a group of learners for each function of management. • Each group is to prepare a blue print (or concept map) of tasks related to the respective function allotted to them. • Facilitate discussions as to how each group will coordinate with each other at different levels to make **'***Swachhta Diwas***'** a success. • What will happen if all groups work individually? Arrive at the concept of coordination as a function of management. **Chapter end Exercises** ➢ Share the link: https://h5p.org/node/716134 https://h5p.org/node/303714 with

		learners. ➢ Instruct learners to attempt all short and long answer questions given at the end of the chapter 2 and submit them to their Business Studies teacher via email. ➢ Teacher to facilitate completion of the work, before proceeding to the next chapter. ➢ Suitable timeframe may be given to learnerswith respect to this. **WEEKS 3 AND 4** **Theme** **Scientific rigor in managing business** Discuss the following with the learners ❖ Universal applicability of management principles in all walks of life ❖ No 'rule of thumb' approach ❖ Cause and effect relationship based on practice and experimentation ❖ Workforce behaviour and means for optimum utilisation of resources ❖ Instruct students to read the chapter from page 32 to page 45 and raise queries.

Accounting (Class-XI)

Learning Outcomes	*Sources/ Resources*	*Suggested Activities (to be guided by teachers)*
Mode of transaction: Mode: Skype/Facebook live/ Instagram live		
The learner **1.** understandsaccounting as a source of information a. appreciates the role of accounting as a language of business **2.** classifiesand compares accounting data for generating accounting information **3.** analysesand evaluates accounting concepts for preparation of financial statements.	**Source** **NCERT Textbook Accounting** **Theme 1** Introduction to Accounting **Theme 2** Theory base of Accounting	**WEEK 1** **Theme** **What is accounting** The teacher should discuss: ❖ role of accounting in keeping financial records of business activities. ❖ accounting data versus accounting information ❖ users of accounting information ❖ qualitative characteristics of accounting information ❖ basic accounting terms used ***Evaluation/Assessment*** ❖ Instruct learners to read the text of Chapter 1 by themselves and raise queries ❖ Encourage learners to complete the in-text exercisesgiven on pages 7 to 19 of the textbook for better clarity about **Chapter 1** **Test your Understanding** ▪ Instruct learnersto attempt all questions for practice (both short and long answer questions) given at the end of the chapter 1 and to submit them to their accounting teacher via email. ▪ Teacher to facilitate completion of the work, before proceeding to the next chapter. **WEEK 2** **Theme** **Accounting Concepts** The teacher should discuss— ▪ Generally Accepted Accounting

		Principles (GAAP) ▪ Various Accounting concepts for recording business transactions in the book of accounts. ▪ Cash versus Accrual basis of accounting ▪ Role of accounting standards developed by ICAI for preparing financial statements ▪ IFRS and Ind_AS for enhancing qualitative nature of financial statements. ▪ Encourage learners to access the e-content material embedded in QR codes for Chapter 1 and Chapter 2 of the Accounting textbook Part 1 (developed using QR code). Learnerscan access these QR codes through the e-pathshala scanner on their smart mobile phones. https://h5p.org/node/473281 https://h5p.org/node/478704 https://h5p.org/node/304362 **Theme** **Goods and Services Tax** ▪ Concept of GST as One Nation one Tax ▪ Applicability of GST for inter-state and intra state movement of goods and services i.e., CGST, SGST and IGST. ▪ Encourage students to access the link https://h5p.org/node/304344?feed_me=nps. *Learners can access these QR codes through the e=pathshala scanner on their smart mobile phones.* ***Evaluation/Assessment*** 1. Instruct learnersto read the text of Chapter 2 by themselves and raise queries. Instruct learners to attempt all short and long answer questions given at the end of the chapter 2 and submit them to their teacher via email. **a)** Encourage learners to complete the in-text exercises given on pages 27 and 33 of the textbook for better clarity on chapter 2.

		Test your Understanding **b)** Instruct learnersto attempt all questions for practice (both short and long answer questions) given at the end of the chapter 1 and submit them to their accounting teacher via email. **c)** Teacher to facilitate completion of the work, before proceeding to the next chapter.
The learner • describes the nature of transaction source documents and preparation of accounting vouchers; • applies accounting equation for effect of transactions; • records transactions using rules of debit and credit • explains the concept of book of original entry and recording of transactions in journal • explains the concept of ledger and posting of journal entries to the ledger accounts.	**Source** **NCERT or State Textbook Accounting** **Theme 3** Recording of Transactions, I	**WEEK 3** **Theme** **Source Documents and Accounting vouchers** • Use of source documents and evidencing the occurrence of business transactions • Preparation of accounting vouchers for recording of business transactions • Classification of accounting vouchers as cash vouchers, debit vouchers, credit vouchers, journal vouchers, etc. **Theme** **Accounting Equation** Discuss with learners: • Resources of the business entity must be equal to the claims of those who have financed these resources i.e., **A= C+L** • Identifying capital and revenue items • Analysis of business transactions to show effect on accounting equation. • Encourage learners to access the following links to practice https://h5p.org/node/478818. *Learners can access these QR codes through the epathshala scanner on their smart mobile phones.* **WEEK 4** ***Activity 1: Numerical questions for practice on accounting equation***

		• Encourage learnersto practice solved illustrations given on pages 51 to 60 to understand rules of debit and credit and the effect on accounting equations. • Instruct learnersto attempt all questions for practice (both short and long answer questions) given at the end of the chapter and to submit them to their accounting teacher via email. • Instruct learners to practice numerical unsolved questions 1 to 10 given on pages 88 to 92. • Teacher to facilitate completion of the work, before proceeding to next topic. Suitable time frame may be given to complete the task. • Teachers are advised to draft similar questions for practice.

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Accounting (Class XII)

Learning Outcomes	*Source/ Resources*	*Suggested Activities (to be guided by teachers)*
Mode of transaction: Mode: Skype/Facebook live/ Instagram live		
The learner ✓ differentiates between Profit and Not for profit Organisations ✓ explains the accounting treatment of items for Not for profit organisations ✓ prepares Receipts and Payments Account and Income and Expenditure Account for Not for profit organisations ✓ preparespartnership accounts ✓ understandsthe provisions of Indian Partnership Act 1932 ✓ applies accounting treatment for the reconstituted firm on admission, retirement and death of a partner	**Source NCERT Textbook Accounting Part I Not for Profit Organisations and Partnership Accounts** **Theme 1** Not for Profit Organisations **Source NCERT Textbook Accounting Part I Not for Profit Organisations and Partnership Accounts** Theme 1: Accounting for Partnership-basic Concepts	**WEEK 1** **Theme** **Understanding Not-for-Profit Organisations** ***Discuss*** • the concept and features of Not for Profit Organisations • Distinguish between profit and Not for Profit Organisations • Accounting records for Not for Profit Organisations. **WEEK 2** **Theme** **Procedure for preparing accounting records of Not for Profit Organisations** • Discuss the steps involved in the preparation of Receipts and Payments account • Discuss the steps in preparation of Income and Expenditure Account • Explain the treatment of peculiar items relating to Not for Profit Organisations • Classification of Capital versus revenue items for accounting records of Not for Profit Organisations • Guide learnersby providing simple transactions to prepare accounting records of Not for Profit Organisations **WEEK 3** **Theme** **Preparation of Receipts and Payments account and Income and Expenditure Account and the Balance Sheet of Not for Profit Organisations** • Encourage learnersto practice solved

		illustrations given on pages 11 to 45 of the textbook. • Self-study by learnersand raising queriesfor further clarification. **WEEK 4** • Instruct learners to complete chapter-end exercises on their own. • Facilitate learners so that they can clarify doubts whilecompletingthis assignment • Provide a suitable timeframe to complete this assignment. • Teachers should not proceed to next chapter unless doubts of all learners are satisfactorily clarified. • The QR code given for each chapter of the textbook contains additional questions of varied difficulty levels. Teachers should make use of these numerical exercises during the course of transacting the chapter Not for Profit Organisations. • Learners may be asked to solve the QR code content to practice numerical questions at their own pace.

Fine Arts

Classes XI-XII

Guidelines

- The subject Fine Arts covers different visual art subjects, like, Painting, Sculpture and Graphics (also called creative painting, sculpture and applied art) Different Boards use different nomenclature. This calendar follows the NCERT Curriculum and Syllabus.
- All these subjects covered under Fine Arts have two components, (i) Theory and (ii) Practical. Students may follow the NCERT syllabus or the Syllabus of their respective Boards. For NCERT Syllabus of Fine Arts please refer to the given link; (http://www.ncert.nic.in/rightside/links/PDF/syllabus/Art_Education final_syllabus.pdf)
- For 'Painting', theory part, students can refer to the NCERT textbooks.
- It is advisable for the students of Higher Secondary classes to engage themselves in creation of art and learning theory simultaneously while at home. Students can utilise this time to prepare for their internal assessment and board examination.
- Students need not go out to the market for buying art material. Rather they may think of using material easily available at/ home to create art.
- Students are advised to prepare their portfolio for maintaining all the work done during this period for assessment. This work can be part of their internal assessment for the finals or Board exams.
- All activities are suggestive in nature and students are free to modify them as per the facilities and resources available.
- The Learning Outcomes mentioned are general and not specific to any one activity. These are the outcomes of the processes suggested for the activities in column two.
- Parents and teachers should encourage and support children in doing their work of art as their performance in the subject can open attractive avenues for higher studies in the field.

Suggested Activities: Class XI

Learning Outcomes	*Suggested Activities (History of Arts)*	*Resources/ Material*
The Learner - tells about early developments in Indian art of sculpture, architecture and painting from the earliest times to the Ancient periods and early Medieval period in different part of the sub-continent, - identifies different characteristic features of Indian art during different periods, regions and regimes, and differentiate among them, - appreciate the rich tangible heritage of the Country and be proud of it,	Students can visit the NCERT website, and access the Class XI textbook, *'An Introduction of Indian Art – Part I'*. http://epathshala.nic.in/process.php?id=students&type=eTextbooks&ln=en **WEEK 1 (THEORY)** The very first Chapter is about Pre-historic cave paintings, read the text carefully, open it's QR Codes and read Exercises first. Make notes of your observations on different topics and sub-topics, how familiar you are with the names of the cave sites, do you find any similarities in your earlier works, child art, how did they paint the rough surfaces, what were the reasons/ objective behind the painting in your opinion etc. Visit different Museum websites, and look at the details of the paintings. **WEEK 2 (THEORY)** The second chapter is on Indus Valley Civilisation. Again, go through the same process. Now, can you make a toy or beads or any similar items used by people of the Indus Valley Civilisation. Visit different website for virtual visit of Museums, look at the details of the artifact which are given for detailed study in your course/textbooks. Note down your observations of detailed plates. **WEEK 3 (THEORY)** The thirdchapter is on the art of the Mauryan period. Like previous chapters, read it carefully, take note of full page pictures and their description, the artifacts you know, like, Lion Capital of Ashok, the stories related to it and how it became the National emblem, etc. Draw their diagrams and write about them. Can you make some object taking clue or using the motif from the sculptures?	https://nroer.gov.in/home/e-library/ http://ccrtindia.gov.in/visualarts.php http://www.nationalmuseumindia.gov.in/collections.asp https://nroer.gov.in/home/e-book/

	WEEK 4 (THEORY) **Note:** Collect photographs from magazines, calendars, greeting cards**,** or what all you can get at home, arrange them in a chronological order and make an album of Indian Arts of different periods. Write captions under each of them in 4-8 lines of information such as period, date, name of the object, material used in making it, name and place of Museum or Collection where it lies presently.	

Painting Practical (Class XI)

Learning Outcomes	***Suggested Activities***	***Resources/ material***
The learner - demonstrates safe and proper use of drawing and materials. - observes and selects ubject matter and ideas for his/her work. - applies elements of art in painting to effectively communicates his/her ideas. - appreciates beauty in nature and in man made objects using skill of art elements.	***Activity – 1*** **Sketching** of nature and of geometrical objects/ structures in pencil/charcoal . Sketching of natural forms at home such as; live plants and trees,available vegetables and fruits, leaves and flowers etc., Geometrical forms such as; table, chair, TV, books, bucket, basket, building, monument etc. Any kitchen utensil as they are based on geometrical forms. **While sketching focuse should be on the use of line, form, light and shade, textures of objects etc.** Any sketch book or plain notebook can be used for this purpose ***(****sketching should be part of everyday routine for students of visual arts)* ***Activity – 2*** - Explores means to make own colors and brushes with available material at home. - Make charcoal at home for sketching. ***Activity – 3*** **Object Study –** learn to arrange objects for study (still life). - Study 2-3 objects using pencil / charcoal or / and oil pastels (students can use poster or water colours also if they are comfortable with the medium).	**NCERT Syllabus/ State board syllabus** - Sketchbook can be created with leftover papers of old notebooks - Objects for study as per choice and availability - If available use Mobile phone / computer for viewing art work of masters, view video clips suggested by the school teacher or in this calendar of activities - Colors and brushes for painting. Preference to be given to those created by students themselves. - Self made Portfolio for maintaining records of the art work done.

	– Use any two seasonal vegetables or fruits as object for the study. One object can be a kitchen utencil. – In study of objects the focuse should be on use of line, form, light and shade, textures of objects and ratio and proportion of one object with the other, etc. ***Activity – 4*** – Make an artistic composition on subjects such as; 'Scene from my window', 'My neighborhood', 'Festival I like the most', etc. This composition can be from imagination as well as what you can see around. – Artwork created is to be maintained in portfolio for assessment. – Use of available colours will be appreciated. – Students can create composition as a collage making use of available colored papers/ graphics/ photos from old newspapers or /and old magazines. Use any glue (you can make your own also) for pasting. – Use of multimedia such as; cloth pieces, thread, flat colours, mirror pieces, leaves, flowers, bangles, etc., is encouraged for better effects. – If available make use of computer art for understanding design and composition. – Artwork created is to be maintained in portfolio for assessment.	

Suggested Activities: Class XII

Learning Outcomes	***Suggested Activities - History of Arts***	***Resources/material***
The Learner – knows and appreciate Indian art of painting during Medieval and Modern periods, – identifies the styles of Rajasthani,	In Class XI, you have already studied about early mural paintings in different parts of the Indian sub-continent.In Class XII, you will be taking the journey of around 1500 years where Indian painting saw a varied style. **WEEK 1** Find out about the manuscript paintings of eastern and western India, where we find the Jain and Buddhist manuscripts written and painted in leafs and tied together. From the websites, look at the painted manuscript	https://nroer.gov.in/home/e-library/ http://ccrtindia.gov.in/visualarts.php http://www.nationalmuseumindia.gov.in/collections.asp https://nroer.gov.in/home/e-book/ Visit other Museum sites and collections online.

Mughal, Pahari, Company paintings, Bengal School, Post-Independence trends in modern Indian arts etc. – identifies different characteristic features of Indian art during different periods, regions and regimes, and differentiate among them, – appreciates the rich tangible heritage of the Country and be proud of it,	and find about the period, place and script. Can you make a folio of illustration on a topic which may be as current as COVID-19, as a documentation! **WEEK 2** There are several schools of Rajasthani miniature paintings, find out about the miniature traditions of painting, which were the schools/ styles, what were the themes, who painted them, etc. Have you seen a miniature painting? Can you copy it and paint it in the actual size? **WEEK 3** In the Mughal period, the miniature traditions saw new heights. There are many styles and influences which were amalgamated into the Mughal miniatures and make it a robust Indian style. Find about these influences and how they are reflected. Take one Mughal miniature and study it thoroughly, write a critique on it with illustrations, showing different features. **WEEK 4** Read online articles on Early, Middle and Later phases of Mughal Miniature styles and find out about the differences and similarities among them.	

Painting Practical (Class-XII)

Learning Outcomes	***Suggested Activities***	***Resources/ materials***
The learner – demonstrates safe and proper use of drawing and materials. – observes and selects ubject matter and ideas for his/her work. – applies elements of art in painting to effectively communicate his/her ideas. – appreciates the beauty in nature and in man-made objects using the different elements of art.	*Following activities are based on your experience of Class XI and will help you perform more skillfully and artistically. Explore, experiment and express freely for better results.* ***Activity – 1*** - **Sketching** of nature and of geometrical objects/ structures/ part of building in pencil / charcoal. - Sketching of natural forms at home such as; live plants and trees, available vegetables and fruits, leaves and flowers etc., - Geometrical forms such as; table, chair, TV, books, bucket, basket, building, monument etc. Any kitchen utencil as they are based on geometrical forms. - Sketching of clothes kept in different arrangements is interesting and imporatant. - **While sketching focus should be on the use of line, form, light and shade, textures of objects etc.** Any sketch book or plain notebook can be used for this purpose ***(****sketching should be a part of everyday routine for students of visual arts)* ***Activity – 2*** **Object Study** (still life) of a group of 2-3 objects (natural and geometrical) in pencil colors /charcole, pastel or water colours while focusing on light and shade from a fixed point of view. - For natural objects take; any vegetable or fruit. - For Geometrical objects take; thick book, any one kitchen utencil such as tumbler/bowl, jug etc. Any object which is based on geometrical forms like cubes, cones, cylinders and sphere can be used. - The group of objects can be organised at a distance of 5-6 feet. For Geometrical objects take; textbook, any one kitchen utencil such as tumbler/bowl, jug etc. – Use quarter size paper sheet or use your drawing file for the study. ***Activity – 3*** **Make A Viewfinder –** Use a thick paper of 4x6 inches to make your viewfinder. Cut a clean rectangle window of 2x3 centimeters in the center. This will help you select compositions of your choice.	**NCERT Syllabus/ State board syllabus** - Sketchbook can be created with leftover papers of old notebooks – Objects for study as per choice and availability – If available use Mobile phone / computer for viewing art work of masters, view video clips suggested by the school teacher or in this calendar of activities - Colors and brushes for painting. Preference to be given to those created by students themselves. - Self made Portfolio for maintaining records of

	- Compose view from with in the house or of outside visible from your house. - use pencil charcoal or any other dry colour available to make quick compositions in your sketchbook. ***Activity – 4*** **Composition** - – Select any composition of your choice from your sketches made earlier and complete it using available colours. – One can make composition using folk art style (warli, madhubani, gond, etc.) of his/her region as composition. Try to make conscious use of line, shape, form, texture, color and space in your composition. – Artwork created is to be maintained in portfolio for assessment.	the art work done.

APPLIED ARTS FOR CLASSES XI-XII

Applied Art (Class XI)

Learning Outcomes	***Sources/Resources***	***Suggested Activities (History of Arts) (to be guided by teachers)***
The learner • Understands early developments in Indian art of sculpture, architecture and painting from the earliest times to the Ancient periods and early Medieval period in different part of the sub-continent, • identifies different characteristic features of Indian art during different periods, regions and regimes,	https://nroer.gov.in/home/e-library/ http://ccrtindia.gov.in/visualarts.php http://www.nationalmuseumindia.gov.in/collections.asp https://nroer.gov.in/home/e-book/	**Learners can visit the NCERT website, and access the Class XI textbook, 'An Introduction of Indian Art – Part-I'.** http://epathshala.nic.in/process.php?id=Learners&type=eTextbooks&ln=en **WEEK 1 (THEORY)** The very first theme is about Pre-historic cave paintings. Read the text carefully, open its QR Codes and read theexercises first. Make notes of your observations on different topics and sub-topics. How familiar are you with the names of the cave sites? Do you find any similarities withyour earlier works, i.e. art as a child, and these? How did they paint the rough surfaces? What were the reasons/ objectives behind the paintings in your opinion?

VOCAL MUSIC (HINDUSTANI)

Guidelines

- Features of Indian Classical Music should gradually be comprehended by learners
- The *shruti/swar sthana* of notes should be comprehended according to the guidance of a teacher or from recorded Music.
- They should know the different types of notes practiced in different ragas
- They should know simple *Taals* like *Tritaal, Keherva, Jhaptaal, Dadra*
- Placement of fingers and hand on any percussive instrument/melodic instrument should be very clear to learners as this is the basis of sound productionaccording to syllables
- Folk Music or regional music needs to be practiced to understand the Music of common people.
- They should meaningfully comprehend the vastness and variety of Indian Film Music (old and new).

Music (Class XI)

Learning Outcomes	Suggested activities	Sources /Resources
Learner • sings / plays *aroha, avroha* and *pakad* of the ragas • identifies the notes (*shuddha, komal, tivra*) in the ragas • identifies swar patterns of the ragas • sings/plays one compositio/*chhota khyal/gat* in the ragas • identifies the swar patterns of the given ragas	Teachers record the *swar* pattern and one composition and send them on WhatsApp to learners. Form a group on WhatsApp and teach learners to play taal on any percussive instrument Form a group on WhatsApp and help the learners understand the art of writing notation in the Bhatkhande Taal Paddhati ***Some weblinks*** https://www.youtube.com/watch?v=1xb7z6Ni8LI https://www.youtube.com/	**Singing /Playing *Raag Bhairavi* and *Raga Bhimpalasi*** ***Activity 1*** Practise of *aroha, avroha* and *pakad* of the ragas. Practise of swar patterns in the raga. ***Activity 2*** Creation of innovative swar patterns according to the nature of the raga. Document the swar combinations in your notebook. ***Activity 3*** Find out similar swar patterns in Film Music/ Regional Film Music/ Folk Music and document the same in your notebook.

in Film Music/ Regional /Folk Music • recites/ plays *bols* of *Tritaal* on any percussive instrument • sings/ plays compositions in *Jhaptaal* • writes *Tritaal* according to the norms of *Bhatkhandeswa rlipi* theory • comprehends the relevance /importance of Folk Music	watch?v=r97bzs3fyTY https://www.youtube.com/watch?v=Br9xxlIl1-0 https://www.youtube.com/watch?v=OUT1OfIXWvI https://www.youtube.com/watch?v=SxRMsYre02k https://www.youtube.com/watch?v=41vThsMiV7c https://www.youtube.com/watch?v=LPjtbMn9Tns	**Knowledge of *Taal* and the process of documentation** ***Activity 4*** To let the learners write the *taalTeentaal* in *Thah, dugun, tigun, chaugun* **Drawing pictures of Musical Instruments** ***Activity 5*** Draw a picture of any Indian Musical Instrument of your own interest and label the diagram *by using online resources*. **Knowledge of Folk Music and analysis** ***Activity 6*** Learn a folk song from any region /state on the theme of celebrating a birth,marriage orlocal festival. Try to find the meaning of the words if you don't know the dialect.Analyse the theme anddocument everything in your notebook.

Music (Class XII)

Learning Outcomes	***Suggestive Activities***	***Source/ Resources***
The learner sings /plays aroha, avroha and pakad of the ragas - identifies the notes (*shuddha, komal, tivra*) in the ragas - identifies *swar* patterns of the ragas	- Teachers record the swar pattern and one composition and share them with the learnersvia WhatsApp. - Form a group on WhatsApp and teach the learners how to play taal on any percussive instrument	**Singing /Playing Raag Malkauns and Raga Bageshwari** ***Activity 1*** Practise of aroha, avroha and pakad of the ragas Practise of swar patterns in the raga ***Activity 2*** Creation of innovative swar patterns according to the nature of the raga. Document the swar combinations in your notebook.

- sings/ plays one composition/*chhota khyal / gat* in the ragas - identifies the swar patterns of the given ragas in Film Music/ Regional /Folk Music - recites /plays bols of Jhaptaal on any percussive instrument - sings/ plays compositions in Jhaptaal - writes Jhaptaal according to the norms of Bhatkhande swarlipi theory - comprehends the relevance /importance of Folk Music - comprehends the style/ shaili of Dhamar	- Form a group on WhatsApp and help the learners understand the art of writing notations in the Bhatkhande Taal Paddhati ***Some weblinks*** https://www.youtube.com/watch?v=wWMZGZnSoEc https://www.youtube.com/watch?v=fiRfulUvldU https://www.youtube.com/watch?v=BkinFn_6_HI https://www.youtube.com/results?search_query=ncert+official+dhamar	***Activity 3*** Find out similar swar patterns in Film Music/ Regional Film Music/ Folk Music and document the same in your copy ***Activity 4*** Introduction of the Dhamar shaili **Knowledge of Taal and the process of documentation** ***Activity 5*** Letlearners write the taal Jhaptaal in *Thah, dugun, tigun, chaugun* **Drawing pictures of Musical Instruments** ***Activity 6*** Draw a picture of any Indian Musical Instrument of your own interest and label the diagramby using online resources. **Knowledge of Folk Music and analysis** ***Activity 7*** Learn a folk song of any region /state on the themes of celebration of birth, marriage, festivals etc. Try to find the meaning of the words if you don't know the dialect.Analyse the theme anddocument everything in your copybook.

HEALTH AND PHYSICAL EDUCATION: HIGHER SECONDARY STAGE

Yoga and other physical exercises need be considered as an integral part of everyday activities for everyoneduring this lockdown period. This is most true for learners who are in the phase of adolescence. WHO has defined adolescence both in terms of age (10-19 years) and as a phase of life marked by special attributes. These attributes include rapid physical, psychological, cognitive and behavioural changes and developments, including, the urge to experiment, attainment of sexual maturity, development of adult identity, and transition from socio-economic dependence to relative independence.

During this period of social distancing, it is most important for learners (of this age group especially) to do some fitness activities at home.Since learners at this stage are also passing through the stage of adolescence,it is important for them to know about the various aspects of growth and development occurring in them. They should be able to clarify myths aboutissues relating to growing up and empower themselves to develop the ability to apply life skills in challenging situations.

For holistic health, knowing is not enough. One needs to be physically active, and mentally alert. Therefore, know about yourself and how doing yoga and physical activities at home is beneficial. Along with other assignments, spare at least 60 minutes forYoga and other physical exercises.One can select from a range of Yogic practices and practice them daily at a specific time. If you were not doing Yogic practices earlier then start with simple and comfortable ones. In Yoga, both Do's and Don'ts are very important.To begin with, as said earlier, simple practices need to be selected.

These activities will enable youto achieve the following objectives even while staying at home.

Learning Outcomes	*Sources/ Resources*	*Suggested Activities*
The learner • Understands healthy eating habits, and personal hygiene. • Becomes aware of the importance of sanitation and cleanliness among people. • Identifiesfactors affecting health and wellbeing • Exploresthe relationship between endurance activity choices (jumping, skipping or any other exercise, etc.) and health. • Performsyogic activities for holistic health, • Analysesfactors affecting growth and development • during adolescence • period.	**Training and Resource Materials on adolescence Education** (http://www.aeparc.org/upload/39.pdf **Health and Physical Education Textbook for Class IX** http://ncert.nic.in/textbook/textbook.htm?iehp1=9-14 Yoga A Healthy Way of Living Secondary Stage http://www.ncert.nic.in/gpPDF/pdf/Yoga-Secondary-Stage-13128.pdf Yoga for Adolescent MDNIY) http://yogamdniy.nic.in//WriteReadData/LINKS/2662c9a05-ddd4-41b9-be5d-15284952607c.pdf http://yogamdniy.nic.in//Contents.aspx?lsid=1084&lev=1&lid=691&langid=1	**Learners at home to be asked to do the following activities** • Prepare a menu for a healthy meal- breakfast, lunch and dinner. Involve yourself in the preparation. • Develop at least 6 slogans on promoting healthy eating habits and explain their importance. Share them with friends. • Create a public service advertisement to build awareness about healthy eating habits, and personal hygiene among your family members and peers. • Gather information about communicable and non - communicable diseases through pictures and news items. Note their causes, risk factors,and preventive measures, etc. • Gather information on the mission '*SwachhVidyalaya- Swachh Bharat*' • Do exercises daily at home like jumping, skipping, sit-ups, pull-ups, push ups, etc. • If you have space in your home, you can practice honing skills of a game you like. • You may also see videos given on the website of the official federation of thegame/sport. • Observe changesin your bodybecause of physical activities and yoga and write them down daily in your diary. Yogic practices are found effective for the development of all dimensions of one's personality. Before starting asanas, Yoga Sukshma Vyayama (micro yogic practices) is to be done. These micro yogicactivities practices are as follows.Movement of neck shoulder, knee, and ankle movement each for 3 rounds as suggested by the Morarji Desai National Institute of Yoga (MDNIY) which is an autonomous organisation under Ministry of AYUSH, Government of India. In Yoga protocol, the neck movement includes forward and backward, right and left bending; twisting the neck right and left followed by rotation of the neck both clockwise and anti-clockwise. Theankle movement includes ankle stretches and rotation. All these activities require about 8 minutes. These Micro Yogic Activities are also important for making one ready to undertake the following *yogasanas*

		Neck Movement • Forward and backward bending, • Right and left bending, • Right and left twisting and • neck rotation. ***Shoulder Movement*** • Shoulder stretch • Shoulder rotation • Trunk Movement • Trunk twisting • Knee Movement • Ankle Movement All these should be done without any jerks. Some of the yogic practices are given below. You can do the asanas for 15 minutes overall. ***Asanas*** • *Surya Namaskar* • *Tadasana* • *Katichakrasana* • *Bhujangasana* • *Shalabhasana* • *Dhanurasana* • *Makarasana* • *Halasana* • *Hastottanasana* ✓ *Padhastasana* ✓ *Trikonasana* ✓ *Shashankasana* ✓ *Ushtrasana* ✓ *Ardhamatsyendrasana* ✓ *Bhujanagasana* ✓ *Shalabhasana* ✓ *Matsyasana* ✓ *Shavasana* ***Kriya*** • *Kapalabhati* ***Pranayama*** • *Anuloma-viloma Pranayama* • *Bhramari Pranayama* • *Bhastrika Pranayama* ***Meditation*** ***Yoga Nidra*** **All these asanas are explained in the textbooksmentioned as resources** Remember to take at least eight hours of sound sleep.