



केन्द्रीय माध्यमिक शिक्षा बोर्ड

(शिक्षा मंत्रालय, भारत सरकार के अधीन एक स्वायत्त संगठन)

CENTRAL BOARD OF SECONDARY EDUCATION

(An Autonomous Organisation under the Ministry of Education, Govt. of India)

CBSE/DIR(ACAD)/2021

Date: 29.10.2021

Circular No. Acad- 110/2021

All the Heads of Schools Affiliated to CBSE

Subject: Alternate activities for Science Practical work for classes 9-10.

With the school lockdown during the COVID pandemic, the amount of time available to teachers for face-to-face instruction has reduced in the current academic session. Further, the opportunities for hands-on teacher guided practical work for Science has also been limited. In September 2020, the Board guided schools vide CBSE Circular No. Acad-65/2020 dated 02nd Sept 2020 on the conduct of practical work during the lockdown, where the schools were advised to use the platform of OLabsto facilitate a virtual experience of CBSE curriculum aligned experiments/ activities for classes 9 to 12.

Further to this, the CBSE has curated a set of alternate experiments using simple, readily available household materials that learners can use to do these activities at their homes. The hands-on activities have been designed to have similar learning outcomes for all the lab experiments required to be done in 21-22 for class 9 and 10. Besides this, a list of additional activities from the NCERT lab manual for 9 (20 activities) and 10 (22 activities) are provided. Learners may use these to explore science concepts and gain better understanding.

These hands-on activities are accompanied by step-by-step guides, videos and worksheets for students to record observations. A list of material needed for each experiment, together with alternatives have also been included in the content package to facilitate the learners. The content has been provided by ThinkTac and is also available on the Diksha portal.

While the activities and materials have been chosen to be safe for learners to do on their own, teachers are required to review these before assigning them and advise parents if supervision is required for any specific activity. CBSE would be providing an online training on the usage of these activities, details of which will be intimated separately.

The list of the class 9 and 10 lab experiments and the links to access hands-on activities that can be used as an alternative is detailed as Annexure to this circular.

With regards,

Dr. Joseph Emmanuel
Director (Academics)



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Annexure I

CBSE 9th Lab – Alternate Hands-on Activity Details

SL	Experiment Name	Hands-on Activity	Activity Video URL	Activity Guide URL	Observation Worksheet URL	Material List URL
1	Preparation of a true solution of common salt, sugar and alum	Sublimation, Filtration and Evaporation	https://youtu.be/BZ7uic1tWl	http://cbseacademic.nic.in/TinkTak_LabManual/011_TCM06TA52ENV27_Sublimation_Filtration and Evaporation AL.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/012_TCM06CON9ENV27_Sublimation_Filtration and Evaporation AL.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/013_TCM06TAMTENV27_Sublimation_Filtration and Evaporation AL.pdf
2	Preparation of a suspension of soil, chalk powder and fine sand in water	Mixture - Types	https://youtu.be/hQ5yCcUQhKs	http://cbseacademic.nic.in/TinkTak_LabManual/021_TCM09TA52ENV12_Mixture-Types AL.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/022_TCM09CON9ENV11_Mixture-Types AL.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/023_TCM09TAMTENV12_Mixture-Types AL.pdf
3	Preparation of a colloidal solution of starch in water and egg albumin/milk in water and distinguish between these on the basis of Transparency, Filtration criterion and Stability	DIY Centrifuge	https://youtu.be/voodQoensGY	http://cbseacademic.nic.in/TinkTak_LabManual/031_TCM02TA52ENV24_DIY_Centrifuge AL.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/032_TCM02CON9ENV24_DIY_Centrifuge AL.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/033_TCM02TAMTENV24_DIY_Centrifuge AL.pdf
4	Preparation of a) mixture and b) compound using iron filings and sulphur powder and distinguishing between these on the basis of (i) appearance, i.e., homogeneity and heterogeneity (ii) behaviour towards a magnet (iii) behaviour towards carbon disulphide as a solvent (iv) effect of heat	Mixture - Iron and Sulphur	https://youtu.be/mMusX5mA99Y	http://cbseacademic.nic.in/TinkTak_LabManual/041_TCC09TA52ENV16_Mixture-Iron and Sulphur AL.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/042_TCC09CON9ENV14_Mixture-Iron and Sulphur AL.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/043_TCC09TAMTENV16_Mixture-Iron and Sulphur AL.pdf
5	Perform the following reactions and classify them as physical or chemical changes - Iron with copper sulphate solution in water	Reaction - Single Displacement	https://youtu.be/kmqZpkGEaD8	http://cbseacademic.nic.in/TinkTak_LabManual/051_TCC48TA52ENV14_Reaction-Single Displacement AL.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/052_TCC48CON9ENV11_Reaction-Single Displacement AL.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/053_TCC48TAMTENV14_Reaction-Single Displacement AL.pdf
6	Perform the following reactions and classify them as physical or chemical changes - Burning of magnesium ribbon in air	Reaction - Magnesium and Oxygen	https://youtu.be/1V4O_2hLoFY	http://cbseacademic.nic.in/TinkTak_LabManual/061_TCC05TA52ENV18_Reaction-Magnesium and Oxygen AL.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/062_TCC05CON9ENV16_Reaction-Magnesium and Oxygen AL.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/063_TCC05TAMTENV16_Reaction-Magnesium and Oxygen AL.pdf
7	Perform the following reactions and classify them as physical or chemical changes - Zinc with dilute sulphuric acid	Chemical Change - Metal and Acid	https://youtu.be/9WrgeNhfKY8	http://cbseacademic.nic.in/TinkTak_LabManual/071_TCC33TA52ENV15_Chemical Change-Metal and Acid AL.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/072_TCC33CON9ENV13_Chemical Change-Metal and Acid AL.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/073_TCC33TAMTENV15_Chemical Change-Metal and Acid AL.pdf
8	Perform the following reactions and classify them as physical or chemical changes - Heating of copper sulphate crystals	Explore Physical Change	https://youtu.be/yw8v7YFJTSE	http://cbseacademic.nic.in/TinkTak_LabManual/081_TCP38TA52ENV10_Explore Physical Change AL.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/082_TCP38CON9ENV10_Explore Physical Change AL.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/083_TCP38TAMTENV10_Explore Physical Change AL.pdf
9	Perform the following reactions and classify them as physical or chemical changes - Sodium sulphate with barium chloride in the form of their solutions in water.	Reaction - Precipitation	https://youtu.be/TeR50i0VNbk	http://cbseacademic.nic.in/TinkTak_LabManual/091_TCC20TA52ENV20_Reaction-Precipitation AL.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/092_TCC20CON9ENV20_Reaction-Precipitation AL.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/093_TCC20TAMTENV20_Reaction-Precipitation AL.pdf

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SL	Experiment Name	Hands-on Activity	Activity Video URL	Activity Guide URL	Observation Worksheet URL	Material List URL
10	To prepare a stained, temporary mount of onion peel and to study its cells.	DIY Microscope	https://youtu.be/T2DVJ4q3NOs	http://cbseacademic.nic.in/TinkTak_LabManual/101_TPL20TA52ENV24_DIY_Microscope_AL.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/102_TPL20CON9ENV23_DIY_Microscope_AL.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/103_TPL20TAMTENV24_DIY_Microscope_AL.pdf
11	To prepare a temporary mount of human cheek epithelial cells, and to study its characteristics.	Microscope - Epithelial Cells	https://youtu.be/dsYW6iWM4iA	http://cbseacademic.nic.in/TinkTak_LabManual/111_TBA19TA52ENV12_Microscope-Epithelial_Cells_AL.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/112_TBA19CON9ENV12_Microscope-Epithelial_Cells_AL.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/113_TBA19TAMTENV11_Microscope-Epithelial_Cells_AL.pdf
12	To study parenchyma and sclerenchyma tissues in plants by preparing temporary slides.	Microscope - Stem	https://youtu.be/bzEF168emfk	http://cbseacademic.nic.in/TinkTak_LabManual/121_TBP15TA52ENV21_Microscope-Stem_AL.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/122_TBP15CON9ENV20_Microscope-Stem_AL.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/123_TBP15TAMTENV21_Microscope-Stem_AL.pdf
13	To determine the density of a non-porous solid (insoluble and denser than water) by using a spring balance and a measuring cylinder.	Measure - Density (Kitchen Scale)	https://youtu.be/v8n24MlNrc	http://cbseacademic.nic.in/TinkTak_LabManual/131_TCQ02TA52ENV15_Measure-Density_(Kitchen_Scale)_AL.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/132_TCQ02CON9ENV14_Measure-Density_(Kitchen_Scale)_AL.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/133_TCQ02TAMTENV14_Measure-Density_(Kitchen_Scale)_AL.pdf
14	To verify Archimedes' principle.	Archimedes Principle	https://youtu.be/iEV5qB6x4k	http://cbseacademic.nic.in/TinkTak_LabManual/141_TCP37TA51ENV11_Archimedes_Principle_AL.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/142_TCP37CON9ENV11_Archimedes_Principle_AL.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/143_TCP37TAMTENV11_Archimedes_Principle_AL.pdf
15	To establish the relation between the loss in weight of a solid when fully immersed in (i) tap water; (ii) strongly salty water, with the weight of water displaced by it by taking at least two different solids.	Density - Saline Water	https://youtu.be/ID5k1wckmAM	http://cbseacademic.nic.in/TinkTak_LabManual/151_TCP28TA52ENV16_Density-Saline_Water_AL.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/152_TCP28CON9ENV16_Density-Saline_Water_AL.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/153_TCP28TAMTENV16_Density-Saline_Water_AL.pdf
16	To verify the law of conservation of mass in a chemical reaction.	Matter - Mass Conservation	https://youtu.be/ctqtVsc9u3Y	http://cbseacademic.nic.in/TinkTak_LabManual/161_TCC37TA52ENV21_Matter-Mass_Conservation_AL.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/162_TCC37CON9ENV20_Matter-Mass_Conservation_AL.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/163_TCC37TAMTENV21_Matter-Mass_Conservation_AL.pdf

CBSE 10th Lab – Alternate Hands-on Activity Details

SL	Experiment Name	Hands-on Activity	Activity Video URL	Activity Guide URL	Observation Worksheet URL	Material List URL
1	Finding the pH of the following samples by using pH paper/universal indicator: (i) Dilute Hydrochloric Acid (ii) Dilute NaOH solution (iii) Dilute Ethanoic Acid solution (iv) Lemon juice (v) Water (vi) Dilute Hydrogen Carbonate solution	DIY Acid-Base Paper Indicator	https://youtu.be/Rjds5v-uUrw	http://cbseacademic.nic.in/TinkTak_LabManual/171_TCP03TA52ENV15_DIY_Acid-Base_Paper_Indicator_AL.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/172_TCP03CONXENV14_DIY_Acid-Base_Paper_Indicator_AL.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/173_TCP03TAMTENV14_DIY_Acid-Base_Paper_Indicator_AL.pdf
2	Finding the pH of the following samples by using pH paper/universal indicator: (i) Dilute Hydrochloric Acid (ii) Dilute NaOH solution (iii) Dilute Ethanoic Acid solution	Acids-Bases - Turmeric Indicator	https://youtu.be/smOuAQ0CIYQ	http://cbseacademic.nic.in/TinkTak_LabManual/181_TCC25TA52ENV24_Acids-Bases-Turmeric_Indicator_AL.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/182_TCC25CONXENV23_Acids-Bases-Turmeric_Indicator_AL.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/183_TCC25TAMTENV23_Acids-Bases-Turmeric_Indicator_AL.pdf

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SL	Experiment Name	Hands-on Activity	Activity Video URL	Activity Guide URL	Observation Worksheet URL	Material List URL
	(iv) Lemon juice (v) Water (vi) Dilute Hydrogen Carbonate solution					
3	Studying the properties of acids and bases (HCl & NaOH) on the basis of their reaction with Zinc metal	Reaction - Acid and Metal	https://youtu.be/5o1ueY1x5hM	http://cbseacademic.nic.in/TinkTak_LabManual/191_TCC18TA52ENV28_Reaction-Acid_and_Metal_AL.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/192_TCC18CONXENV28_Reaction-Acid_and_Metal_AL.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/193_TCC18TAMTENV28_Reaction-Acid_and_Metal_AL.pdf
4	Studying the properties of acids and bases (HCl & NaOH) on the basis of their reaction with Zinc metal	Reaction - Base and Metal	https://youtu.be/odwUPLqk-To	http://cbseacademic.nic.in/TinkTak_LabManual/201_TCC49TA52ENV15_Reaction-Base_and_Metal_AL.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/202_TCC49CONXENV15_Reaction-Base_and_Metal_AL.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/203_TCC49TAMTENV15_Reaction-Base_and_Metal_AL.pdf
5	Studying the properties of acids and bases (HCl & NaOH) on the basis of their reaction with Solid sodium carbonate	Reaction - Acids and Bases	https://youtu.be/SkQE-RAuHh8	http://cbseacademic.nic.in/TinkTak_LabManual/211_TCC01TA52ENV25_Reaction-Acids_and_Bases_AL.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/212_TCC01CONXENV24_Reaction-Acids_and_Bases_AL.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/213_TCC01TAMTENV24_Reaction-Acids_and_Bases_AL.pdf
6	Performing and observing the following reaction - Combination reaction	Reaction - Magnesium and Oxygen	https://youtu.be/KysR0E6MRH8	http://cbseacademic.nic.in/TinkTak_LabManual/221_TCC05TA52ENV18_Reaction-Magnesium_and_Oxygen_AL.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/222_TCC05CONXENV16_Reaction-Magnesium_and_Oxygen_AL.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/223_TCC05TAMTENV16_Reaction-Magnesium_and_Oxygen_AL.pdf
7	Performing and observing the following reaction - Decomposition	DIY Electrolysis	https://youtu.be/0Cv5f8otqIA	http://cbseacademic.nic.in/TinkTak_LabManual/231_TCC19TA52ENV27_DIY_Electrolysis_AL.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/232_TCC19CONXENV27_DIY_Electrolysis_AL.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/233_TCC19TAMTENV27_DIY_Electrolysis_AL.pdf
8	Performing and observing the following reaction - Displacement reaction	Reaction - Single Displacement	https://youtu.be/Wqikm4QDcsA	http://cbseacademic.nic.in/TinkTak_LabManual/241_TCC48TA52ENV14_Reaction-Single_Displacement_AL.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/242_TCC48CONXENV14_Reaction-Single_Displacement_AL.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/243_TCC48TAMTENV14_Reaction-Single_Displacement_AL.pdf
9	Performing and observing the following reaction - Double displacement	Reaction - Double Displacement	https://youtu.be/9eQklnhWOMs	http://cbseacademic.nic.in/TinkTak_LabManual/251_TCC47TA52ENV12_Reaction-Double_Displacement_AL.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/252_TCC47CONXENV12_Reaction-Double_Displacement_AL.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/253_TCC47TAMTENV12_Reaction-Double_Displacement_AL.pdf
10	Observing the action of Zn, Fe, Cu and Al metals on the following salt solutions: (i) ZnSO ₄ (aq) (ii) FeSO ₄ (aq) (iii) CuSO ₄ (aq) (iv) Al ₂ (SO ₄) ₃ (aq) Arranging Zn, Fe, Cu and Al (metals) in the decreasing order of reactivity based on the above result	Reaction - Metal Reactivity Series	https://youtu.be/XxxU3TQ9GYw	http://cbseacademic.nic.in/TinkTak_LabManual/261_TCC21TA52ENV28_Reaction-Metal_Reactivity_Series_AL.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/262_TCC21CONXENV28_Reaction-Metal_Reactivity_Series_AL.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/263_TCC21TAMTENV28_Reaction-Metal_Reactivity_Series_AL.pdf
11	Experimentally show that carbon dioxide is given out during respiration.	DIY Respirometer (Turmeric)	https://youtu.be/VwW0Pu313AM	http://cbseacademic.nic.in/TinkTak_LabManual/271_TBA36TA52ENV15_DIY_Respirometer_(Turmeric)_AL.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/272_TBA36CONXENV14_DIY_Respirometer_(Turmeric)_AL.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/273_TBA36TAMTENV14_DIY_Respirometer_(Turmeric)_AL.pdf
12	Determination of the focal length of (i) Concave mirror	Explore Curved Mirrors	https://youtu.be/fyfo3VLhe8A	http://cbseacademic.nic.in/TinkTak_LabManual/281_TPL19TA52ENV12_Explore_Curved_Mirrors_AL.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/282_TPL19CONXENV12_Explore_Curved_Mirrors_AL.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/283_TPL19TAMTENV12_Explore_Curved_Mirrors_AL.pdf
13	Determination of the focal length of (ii) Convex lens by obtaining the image of a distant object.	DIY Optic Bench (Fresnel Lens)	https://youtu.be/fHmYYz-TC-8	http://cbseacademic.nic.in/TinkTak_LabManual/291_TPL18TA52ENV21_DIY_Optic_Bench_(Fresnel_Lens)_AL.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/292_TPL18CONXENV21_DIY_Optic_Bench_(Fresnel_Lens)_AL.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/293_TPL18TAMTENV21_DIY_Optic_Bench_(Fresnel_Lens)_AL.pdf

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SL	Experiment Name	Hands-on Activity	Activity Video URL	Activity Guide URL	Observation Worksheet URL	Material List URL
14	To trace the path of a ray of light passing obliquely through a rectangular glass slab for different angles of incidence and to measure the angle of incidence, angle of refraction, the angle of emergence and interpret the results.	Snell's Law	https://youtu.be/v829V_alDCU	http://cbseacademic.nic.in/TinkTak_LabManual/301_TPL28TA52ENV12_Snell's_Law_AL.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/302_TPL28CONXENV11_Snell's_Law_AL.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/303_TPL28TAMTENV11_Snell's_Law_AL.pdf
15	To trace the path of a ray of light through a glass prism	Light - Deviation and Dispersion	https://youtu.be/3ICF4zk-k-w	http://cbseacademic.nic.in/TinkTak_LabManual/311_TPL27TA52ENV12_Light-Deviation_and_Dispersion_AL.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/312_TPL27CONXENV12_Light-Deviation_and_Dispersion_AL.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/313_TPL27TAMTENV12_Light-Deviation_and_Dispersion_AL.pdf
16	Studying the dependence of potential difference (V) across a resistor on the current (I) passing through it and determining its resistance. Also plotting a graph between V and I.	Circuit - Resistance	https://youtu.be/snn-dOE5u6A	http://cbseacademic.nic.in/TinkTak_LabManual/321_TPM20TA52ENV14_Circuit-Resistance_AL.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/322_TPM20CONXENV13_Circuit-Resistance_AL.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/323_TPM20TAMTENV14_Circuit-Resistance_AL.pdf
17	Studying (a) binary fission in Amoeba, and (b) budding in yeast and Hydra with the help of prepared slides.	Microscope - Asexual Reproduction	https://youtu.be/IGPdOLCnYOq	http://cbseacademic.nic.in/TinkTak_LabManual/331_TBA28TA52ENV11_Microscope-Asexual_Reproduction_AL.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/332_TBA28CONXENV11_Microscope-Asexual_Reproduction_AL.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/333_TBA28TAMTENV11_Microscope-Asexual_Reproduction_AL.pdf

Annexure II

CBSE 9th - Additional Hands-on Activity Details

SL	Experiment Name	Hands-on Activity	Activity Video URL	Activity Guide URL	Observation Worksheet URL	Material List URL
1	To show that gases are readily compressible and liquids are not.	Matter - Compressibility	https://youtu.be/1tdQbeYfvsI	http://cbseacademic.nic.in/TinkTak_LabManual/341_TCP11TA52ENV19_Matter-Compressibility_AL.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/342_TCP11CON9ENV19_Matter-Compressibility_AD.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/343_TCP11TAMTENV19_Matter-Compressibility_AL.pdf
2	To study the process of evaporation.	Matter - Evaporative Cooling	https://youtu.be/TRITrywcPwq	http://cbseacademic.nic.in/TinkTak_LabManual/351_TCP06TA52ENV27_Matter-Evaporative_Cooling_AL.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/352_TCP06CON9ENV27_Matter-Evaporative_Cooling_AD.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/353_TCP06TAMTENV26_Matter-Evaporative_Cooling_AL.pdf
3	To prepare a saturated solution of common salt in distilled water and to determine its solubility at room temperature. To prepare a solution of common salt of 10% composition by mass	Matter - Solubility	https://youtu.be/QLx54jCk84q	http://cbseacademic.nic.in/TinkTak_LabManual/361_TCP22TA52ENV29_Matter-Solubility_AL.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/362_TCP22CON9ENV29_Matter-Solubility_AD.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/363_TCP22TAMTENV29_Matter-Solubility_AL.pdf
4	To study the process of separation of a mixture of two immiscible liquids.	Separating Funnel Model	https://youtu.be/9q22bFKAG5U	http://cbseacademic.nic.in/TinkTak_LabManual/371_TCM12TA52ENV14_Separating_Funnel_Model_AL.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/372_TCM12CON9ENV14_Separating_Funnel_Model_AD.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/373_TCM12TAMTENV14_Separating_Funnel_Model_AL.pdf
5	To separate a mixture of two miscible liquids by simple distillation.	DIY Distillation (Test Tube)	https://youtu.be/h0pcaucur8	http://cbseacademic.nic.in/TinkTak_LabManual/381_TCP35TA52ENV11_DIY_Distillation_(Test_Tube)_AL.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/382_TCP35CON9ENV11_DIY_Distillation_(Test_Tube)_AD.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/383_TCP35TAMTENV11_DIY_Distillation_(Test_Tube)_AL.pdf

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SL	Experiment Name	Hands-on Activity	Activity Video URL	Activity Guide URL	Observation Worksheet URL	Material List URL
6	To study the phenomenon of osmosis.	Explore Osmosis	https://youtu.be/et2xEV7K-50	http://cbseacademic.nic.in/TinkTak_LabManual/391_TCP17TA52ENV13_Explore_Osmosis_AL.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/392_TCP17CON9ENV12_Explore_Osmosis_AD.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/393_TCP17TAMTENV12_Explore_Osmosis_AL.pdf
7	To study plasmolysis in leaf epidermal peels of Rhoec or Tradescantia.	Explore Plasmolysis	https://youtu.be/rQGiE4bVCn8	http://cbseacademic.nic.in/TinkTak_LabManual/401_TBO06TA52ENV10_Explore_Plasmolysis_AL.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/402_TBO06CON9ENV11_Explore_Plasmolysis_AD.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/403_TBO06TAMTENV11_Explore_Plasmolysis_AL.pdf
8	To test the presence of starch in a given food sample and metanil yellow in pigeon pea.	Food Test - Milk Adulteration	https://youtu.be/NGzfUqf6WDw	http://cbseacademic.nic.in/TinkTak_LabManual/411_TCC13TA52ENV15_Food_Test-Milk_Adulteration_AL.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/412_TCC13CON9ENV14_Food_Test-Milk_Adulteration_AD.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/413_TCC13TAMTENV14_Food_Test-Milk_Adulteration_AL.pdf
9	To identify and study striated muscle fibre and nerve fibre in animals.	Microscope - Animal Tissue	https://youtu.be/iQDPCCAJN7I	http://cbseacademic.nic.in/TinkTak_LabManual/421_TBA27TA52ENV11_Microscope-Animal_Tissue_AL.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/422_TBA27CON9ENV10_Microscope-Animal_Tissue_AD.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/423_TBA27TAMTENV10_Microscope-Animal_Tissue_AL.pdf
10	To study the characteristics of Spirogyra, Agaricus, moss, fern, Pinus and an angiosperm plant.	Microscope - Fungi (Mushroom)	https://youtu.be/m6raB943kDM	http://cbseacademic.nic.in/TinkTak_LabManual/431_TBM05TA52ENV15_Microscope-Fungi_(Mushroom)_AL.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/432_TBM05CON9ENV15_Microscope-Fungi_(Mushroom)_AD.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/433_TBM05TAMTENV15_Microscope-Fungi_(Mushroom)_AL.pdf
11	To prepare herbarium sheet of a flowering plant.	DIY Herbarium Sheet	https://youtu.be/wcXrerjb4gU	http://cbseacademic.nic.in/TinkTak_LabManual/441_TBP32TA52ENV11_DIY_Herbarium_Sheet_AL.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/442_TBP32CON9ENV10_DIY_Herbarium_Sheet_AD.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/443_TBP32TAMTENV10_DIY_Herbarium_Sheet_AL.pdf
12	To compare the external features of monocot and dicot plants.	Microscope - Leaf Venation	https://youtu.be/UyYTKVbaWA	http://cbseacademic.nic.in/TinkTak_LabManual/451_TBP12TA52ENV26_Microscope-Leaf_Venation_AL.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/452_TBP12CON9ENV26_Microscope-Leaf_Venation_AD.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/453_TBP12TAMTENV26_Microscope-Leaf_Venation_AL.pdf
13	To compare the external features of monocot and dicot plants.	Plant Life - Germination	https://youtu.be/5y8XXf25GEs	http://cbseacademic.nic.in/TinkTak_LabManual/461_TBP16TA52ENV24_Plant_Life-Germination_AL.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/462_TBP16CON9ENV23_Plant_Life-Germination_AD.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/463_TBP16TAMTENV23_Plant_Life-Germination_AL.pdf
14	To study the life cycle of malarial parasite.	Flexagon - Plasmodium Life Cycle	https://youtu.be/c5EeId-LPBU	http://cbseacademic.nic.in/TinkTak_LabManual/471_TBE09TA52ENV10_Flexagon-Plasmodium_Life_Cycle_AL.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/472_TBE09CON9ENV10_Flexagon-Plasmodium_Life_Cycle_AD.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/473_TBE09TAMTENV10_Flexagon-Plasmodium_Life_Cycle_AL.pdf
15	To study the third law of motion using two spring balances.	DIY Spring Balance	https://youtu.be/sF-dQoZYAK8	http://cbseacademic.nic.in/TinkTak_LabManual/481_TPF34TA52ENV22_DIY_Spring_Balance_AL.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/482_TPF34CON9ENV21_DIY_Spring_Balance_AD.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/483_TPF34TAMTENV21_DIY_Spring_Balance_AL.pdf
16	To study the variation in limiting friction with mass and the nature of surfaces in contact.	Trolley Model	https://youtu.be/t9NumOhVJic	http://cbseacademic.nic.in/TinkTak_LabManual/491_TPF31TA52ENV25_Trolley_Model_AL.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/492_TPF31CON9ENV24_Trolley_Model_AD.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/493_TPF31TAMTENV24_Trolley_Model_AL.pdf
17	(i) To study the effect of amplitude on the time period of a simple pendulum. (ii) To study the variation in time period of a simple pendulum with its length. (iii) To study the effect of mass on the time period of a simple pendulum.	Motion - Periodic	https://youtu.be/bFguc5zJ5U	http://cbseacademic.nic.in/TinkTak_LabManual/501_TPT14TA52ENV11_Motion-Periodic_AL.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/502_TPT14CON9ENV11_Motion-Periodic_AD.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/503_TPT14TAMTENV11_Motion-Periodic_AL.pdf
18	To determine the speed of a transverse pulse propagated through a stretched string.	Transverse Wave Model	https://youtu.be/p8M05J5ivv0	http://cbseacademic.nic.in/TinkTak_LabManual/511_TPS20TA52ENV11_Transverse_Wave_Model_AL.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/512_TPS20CON9ENV11_Transverse_Wave_Model_AD.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/513_TPS20TAMTENV11_Transverse_Wave_Model_AL.pdf
19	To determine the speed of a longitudinal pulse	Longitudinal Wave Model	https://youtu.be/DKIALxcTZYg	http://cbseacademic.nic.in/TinkTak_LabManual/521_TPS21TA52ENV10_Longitudinal_Wave_Model_AL.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/522_TPS21CON9ENV10_Longitudinal_Wave_Model_AD.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/523_TPS21TAMTENV10_Longitudinal_Wave_Model_AL.pdf

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SL	Experiment Name	Hands-on Activity	Activity Video URL	Activity Guide URL	Observation Worksheet URL	Material List URL
	propagated through a stretched slinky.			inal Wave Model AL.pdf	dinal Wave Model AL.pdf	dinal Wave Model AL.pdf
20	To study the reflection of sound.	DIY Stethoscope	https://youtu.be/v3B4j9iXJkM	http://cbseacademic.nic.in/TinkTak_LabManual/531_TBA05TA52ENV27_DIY_Stethoscope_AL.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/532_TBA05CON9ENV26_DIY_Stethoscope_AL.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/533_TBA05TAMTENV26_DIY_Stethoscope_AL.pdf

CBSE 10th - Additional Hands-on Activity Details

SL	Experiment Name	Hands-on Activity	Activity Video URL	Activity Guide URL	Observation Worksheet URL	Material List URL
1	To measure the change in temperature during chemical reactions and to conclude whether the reaction is exothermic or endothermic.	Reaction - Exothermic and Endothermic	https://youtu.be/in3WspwAL9Q	http://cbseacademic.nic.in/TinkTak_LabManual/541_TCC41TA52ENV12_Reaction-Exothermic and Endothermic_AL.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/542_TCC41CONXENV12_Reaction-Exothermic and Endothermic_AD.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/543_TCC41TAMTENV12_Reaction-Exothermic and Endothermic_AL.pdf
2	To show that acids, bases, and salts are electrolytes.	Acids-Bases - Conductivity	https://youtu.be/2X3_JWn1_n0	http://cbseacademic.nic.in/TinkTak_LabManual/551_TCC02TA52ENV27_Acids-Bases-Conductivity_AL.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/552_TCC02CONXENV27_Acids-Bases-Conductivity_AD.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/553_TCC02TAMTENV27_Acids-Bases-Conductivity_AL.pdf
3	To identify bleaching powder among given samples of chemicals.	Explore Bleaching Powder	https://youtu.be/SGctEJkzsDc	http://cbseacademic.nic.in/TinkTak_LabManual/561_TCC39TA52ENV13_Explore Bleaching Powder_AL.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/562_TCC39CONXENV12_Explore Bleaching Powder_AD.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/563_TCC39TAMTENV12_Explore Bleaching Powder_AL.pdf
4	To identify washing soda or baking soda among given samples of chemicals.	Explore Washing Soda	https://youtu.be/aeZzFnbV7ml	http://cbseacademic.nic.in/TinkTak_LabManual/571_TCC40TA52ENV13_Explore Washing Soda_AL.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/572_TCC40CONXENV13_Explore Washing Soda_AD.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/573_TCC40TAMTENV13_Explore Washing Soda_AL.pdf
5	To show that crystals of copper sulphate contain water of crystallisation	DIY Copper Sulphate Crystals	https://youtu.be/VY4xf8rZ08	http://cbseacademic.nic.in/TinkTak_LabManual/581_TCP08TA52ENV26_DIY_Copper Sulphate Crystals_AL.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/582_TCP08CONXENV25_DIY_Copper Sulphate Crystals_AD.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/583_TCP08TAMTENV25_DIY_Copper Sulphate Crystals_AL.pdf
6	To study physical and chemical properties of acetic acid (ethanoic acid).	Explore Ethanoic Acid	https://youtu.be/kzF1wibqPs0	http://cbseacademic.nic.in/TinkTak_LabManual/591_TCC50TA52ENV10_Explore Ethanoic Acid_AL.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/592_TCC50CONXENV11_Explore Ethanoic Acid_AD.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/593_TCC50TAMTENV11_Explore Ethanoic Acid_AL.pdf
7	To study some oxidation reactions of alcohol	Reaction - Alcohol Oxidation	https://youtu.be/DI50mh9yU0	http://cbseacademic.nic.in/TinkTak_LabManual/601_TCC51TA52ENV11_Reaction-Alcohol Oxidation_AL.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/602_TCC51CONXENV10_Reaction-Alcohol Oxidation_AD.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/603_TCC51TAMTENV10_Reaction-Alcohol Oxidation_AL.pdf
8	To study saponification reaction for preparation of soap	DIY Handmade Soap	https://youtu.be/FT9SRIUoVXM	http://cbseacademic.nic.in/TinkTak_LabManual/611_TCC23TA52ENV16_DIY_Handmade Soap_AL.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/612_TCC23CONXENV16_DIY_Handmade Soap_AD.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/613_TCC23TAMTENV16_DIY_Handmade Soap_AL.pdf
9	To compare the foaming capacity of different samples of soap. To study the comparative cleansing capacity of a sample of soap in soft and hard water.	Explore Soap	https://youtu.be/q3P7UYj-ulu	http://cbseacademic.nic.in/TinkTak_LabManual/621_TCC44TA52ENV17_Explore Soap_AL.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/622_TCC44CONXENV20_Explore Soap_AD.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/623_TCC44TAMTENV20_Explore Soap_AL.pdf
10	To prepare temporary mounts of leaf peels to observe stomata and to differentiate between dicot and monocot stomata.	Microscope - Stomata	https://youtu.be/BmX_x3nIK4s	http://cbseacademic.nic.in/TinkTak_LabManual/631_TBP24TA52ENV11_Microscope-Stomata_AL.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/632_TBP24CONXENV11_Microscope-Stomata_AD.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/633_TBP24TAMTENV11_Microscope-Stomata_AL.pdf
11	To show that light is essential for photosynthesis.	Plant Life - Photosynthesis	https://youtu.be/WQhT-S-rto	http://cbseacademic.nic.in/TinkTak_LabManual/641_TBP25TA52ENV15_Plant_Life-Photosynthesis_AL.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/642_TBP25CONXENV15_Plant_Life-Photosynthesis_AD.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/643_TBP25TAMTENV15_Plant_Life-Photosynthesis_AL.pdf

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SL	Experiment Name	Hands-on Activity	Activity Video URL	Activity Guide URL	Observation Worksheet URL	Material List URL
12	To show that carbon dioxide is essential for photosynthesis.	Plant Life - Photosynthesis (CO ₂)	https://youtu.be/y-u6qrKKI7Y	http://cbseacademic.nic.in/TinkTak_LabManual/651_TB35TA52ENV12_Plant_Life-Photosynthesis_(CO2)_AL.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/652_TB35CONXENV12_Plant_Life-Photosynthesis_(CO2)_AD.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/653_TB35TAMTENV12_Plant_Life-Photosynthesis_(CO2)_AL.pdf
13	To study the liberation of carbon dioxide gas during aerobic respiration.	Reaction - Acids and Bases (Plastic Bag)	https://youtu.be/iVUW95d1Eel	http://cbseacademic.nic.in/TinkTak_LabManual/661_TCC17TA52ENV14_Reaction-Acids_Bases_(Plastic_Bag)_AL.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/662_TCC17CONXENV12_Reaction-Acids_and_Bases_(Plastic_Bag)_AD.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/663_TCC17TAMTENV12_Reaction-Acids_and_Bases_(Plastic_Bag)_AL.pdf
14	To study the liberation of carbon dioxide gas during fermentation.	Respiration - Anaerobic	https://youtu.be/i8rl1w3Osjq	http://cbseacademic.nic.in/TinkTak_LabManual/671_TBM02TA52ENV24_Respiration-Anaerobic_AL.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/672_TBM02CONXENV24_Respiration-Anaerobic_AD.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/673_TBM02TAMTENV24_Respiration-Anaerobic_AL.pdf
15	To study the action of salivary amylase on starch solution.	Digestion - Starch (Amylase)	https://youtu.be/8qnXC7qtKE	http://cbseacademic.nic.in/TinkTak_LabManual/681_TCC16TA52ENV28_Digestion-Starch_(Amylase)_AL.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/682_TCC16CONXENV27_Digestion-Starch_(Amylase)_AD.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/683_TCC16TAMTENV27_Digestion-Starch_(Amylase)_AL.pdf
16	To study the phenomenon of phototropism and geotropism in plants	Plant Life - Tropism	https://youtu.be/j-Z2wYAwOXA	http://cbseacademic.nic.in/TinkTak_LabManual/691_TB18TA52ENV11_Plant_Life-Tropism_AL.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/692_TB18CONXENV11_Plant_Life-Tropism_AD.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/693_TB18TAMTENV11_Plant_Life-Tropism_AL.pdf
17	To study binary fission in Amoeba or Paramoecium and budding in yeast or Hydra.	Plant Life - Vegetative Propagation	https://youtu.be/qZt5LsGRnlw	http://cbseacademic.nic.in/TinkTak_LabManual/701_TB19TA52ENV12_Plant_Life-Vegetative_Propagation_AL.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/702_TB19CONXENV12_Plant_Life-Vegetative_Propagation_AD.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/703_TB19TAMTENV12_Plant_Life-Vegetative_Propagation_AL.pdf
18	To verify the laws of reflection of light using a plane mirror.	Law of Reflection (Mobile Phone)	https://youtu.be/cHABkxAW1sc	http://cbseacademic.nic.in/TinkTak_LabManual/711_TPL26TA52ENV13_Law_of_Reflection_(Mobile_Phone)_AL.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/712_TPL26CONXENV12_Law_of_Reflection_(Mobile_Phone)_AD.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/713_TPL26TAMTENV12_Law_of_Reflection_(Mobile_Phone)_AL.pdf
19	To draw magnetic field lines of a bar magnet. To draw the magnetic field lines of a current-carrying straight wire.	Magnetism - Field Lines	https://youtu.be/j6A7USdbJWw	http://cbseacademic.nic.in/TinkTak_LabManual/721_TPM07TA52ENV13_Magnetism-Field_Lines_AL.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/722_TPM07CONXENV13_Magnetism-Field_Lines_AD.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/723_TPM07TAMTENV13_Magnetism-Field_Lines_AL.pdf
20	To study the magnetic field of an electromagnet.	DIY Electromagnet	https://youtu.be/iachsDUumfk	http://cbseacademic.nic.in/TinkTak_LabManual/731_TPM03TA52ENV17_DIY_Electromagnet_AL.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/732_TPM03CONXENV16_DIY_Electromagnet_AD.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/733_TPM03TAMTENV16_DIY_Electromagnet_AL.pdf
21	To study the force on a current-carrying straight conductor in a magnetic field and to verify that the motion of the conductor is according to Fleming's left-hand rule.	Fleming's Left Hand Rule	https://youtu.be/wdH0J-byFE8	http://cbseacademic.nic.in/TinkTak_LabManual/741_TPM24TA52ENV11_Fleming's_Left_Hand_Rule_AL.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/742_TPM24CONXENV11_Fleming's_Left_Hand_Rule_AD.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/743_TPM24TAMTENV11_Fleming's_Left_Hand_Rule_AL.pdf
22	To study the phenomenon of electromagnetic induction	Faraday's Law	https://youtu.be/klvlgqwmM	http://cbseacademic.nic.in/TinkTak_LabManual/751_TPM25TA52ENV10_Faradays_Law_AL.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/752_TPM25CONXENV10_Faradays_Law_AD.pdf	http://cbseacademic.nic.in/TinkTak_LabManual/753_TPM25TAMTENV10_Faradays_Law_AL.pdf

'शिक्षा सदन', 17 राऊज़एवेन्यू, इंस्टीटूशनल एरिया, नई दिल्ली -110002

'Shiksha Sadan', 17, Rouse Avenue, Institutional Area, New Delhi-110002





केन्द्रीय माध्यमिक शिक्षा बोर्ड

(शिक्षा मंत्रालय, भारत सरकार के अधीन एक स्वायत्त संगठन)

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(An Autonomous Organisation under the Ministry of Education, Govt. of India)

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2. The Commissioner, Navodaya Vidyalaya Samiti, B-15, Sector-62, Institutional Area, Noida 201309
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9. The Director, Central Tibetan School Administration, ESSESS Plaza, Community Centre, Sector-3, Rohini, Delhi
10. The Additional Director General of Army Education, A-Wing, Sena Bhawan, DHQ, PO, New Delhi-110001
11. The Secretary AWES, Integrated Headquarters of MoD (Army), FDRS Building No.202, Shankar Vihar(Near APS), Delhi Cantt-110010
12. The Secretary, Eklavya Model Residential Schools (EMRS), Ministry of Tribal Affairs, Government of India.
13. The Secretary, Sainik Schools Society, Room No. 101, D-1 Wing, Sena Bhawan, New Delhi-110001.
14. The Chairman, Odisha Adarsha Vidyalaya Sangathan, N-1/9, Near Doordarshan Kendra, PO Sainik School Nayapalli, Bhubaneswar, Odisha-751005.
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