



# THE TIMES OF INDIA

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**TODAY'S  
EDITION**

>> Want to make good use of plastic waste? A student tells you how one can always go eco-friendly  
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> Learn how superhero Shang Chi inspires people with the innate goodness in his character and the ability to be just in adverse situation  
**PAGE 3**



> Ligue 1: Kylian Mbappe scores a double as Paris Saint-Germain (PSG) beat Monaco  
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**STUDENT EDITION**

TUESDAY, DECEMBER 14, 2021


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*Spotlight*

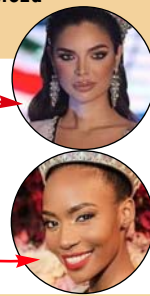
## HARNAAZ SANDHU

**Miss Universe 2021**

**A**ctor-model Harnaaz Sandhu made history on Monday as she was crowned Miss Universe 2021 – beating contestants from 80 countries – 21 years after India last brought home the title. The 70th edition of the event was held at Eilat in Israel, where the 21-year-old bagged the coveted pageant. The Chandigarh-based model, who is pursuing her master's degree in public administration, was crowned by her predecessor, Andrea Meza of Mexico, who won the pageant in 2020.

Only two Indians before Sandhu have won the title of Miss Universe – actors SUSHMITA SEN IN 1994 and LARA DUTTA IN 2000

While Paraguay's Nadia Ferreira, 22, finished second, South Africa's Lalela Mswane, 24, came third



### THE ANSWER THAT WON SANDHU THE CROWN

The biggest pressure the youth of today is facing is to believe in themselves, to know that you are unique and that's what makes you beautiful. Stop comparing yourselves with others and let's talk about more important things that's happening worldwide. This is what you need to understand. Come out, speak for yourselves because you are the leader of your life, you are the voice of your own. I believed in myself and that's why I am standing here today  
– On being asked what advice would she give to young women on how to deal with the pressure they face today



■ Sandhu started her journey in pageantry when she won Times Fresh Face in 2017, representing Chandigarh at the age of 17. She later won the LIVA Miss Diva Universe 2021 title

■ Sandhu has also worked in a few Punjabi films



### Dear students,

The Times of India, Newspaper in Education, thanks you for your unending support during the Covid times. We are extremely delighted to reach out to you with our print edition again, after 18 long months of digital edition. With this comeback, expect Times NIE Powerpack – a revamped print edition, curated keeping your curriculum in mind, making education play-way, and introducing new ideas, themes that you sought from us during the 18 month-absence of the print edition. We look forward to more engagements, larger participation and increased interaction from students, teachers, principals, and parents.

**WE ARE OFFICIALLY BACK! Please share your feedback at**

**[toinie175@gmail.com](mailto:toinie175@gmail.com)**



Students in Mumbai finally get to hold their favourite Times NIE print edition, as Times NIE gets back to schools in the city. Welcoming the print edition, students, principals and teachers grab the first copy on Monday

## Dictionary.com picks 'Allyship' as Word of the Year 2021



The site offers two definitions for allyship: The role of a person who advocates for inclusion of a "marginalised or politicised group" in solidarity but not as a member, and the traditional relationship of "persons or nations cooperating with one another for a common cause"

**A**llyship, an old noun made new again, is Dictionary.com's word of the year. The look up site with 70 million monthly users took the unusual step of anointing a word it added just last month, though 'allyship' first surfaced in the mid-1800s, said one of the company's content overseers, John Kelly. "In the past few decades, the term has evolved to take on a more nuanced and specific meaning. It is continuing to evolve and we saw that in many ways," he added.

**IN THE NEWS**

## NEW CALEDONIA

**V**oters in the French island territory of New Caledonia chose overwhelmingly on Sunday to stay part of France, in a referendum boycotted by pro-independence forces and closely watched around the South Pacific. The vote was monitored by the UN and regional powers, amid global efforts toward decolonisation and amid growing Chinese influence in the region.

### THE HISTORY

**1** New Caledonia, colonised by Napoleon's nephew in the 19th century, is a vast archipelago of about 2,70,000 people east of Australia that is 10 time zones ahead of Paris – and hosts a French military base.

**2** Sunday's vote was the third and last in a decades-long decolonisation process that stemmed from violence in 1988, which led to the French government handing New Caledonia broad autonomy under the Noumea Agreement.

**3** The process was aimed at settling tensions between native Kanaks seeking independence and those who want the territory to remain part of France

## GOING DUTCH! F1 GETS A NEW WORLD CHAMP



**I**n a title race billed as the greatest in history – akin to the James Hunt vs. Niki Lauda title race in 1976 and the Ayrton Senna vs. Alain Prost race in 1990 – Max Verstappen became the first Dutchman to win the Formula One World Championship when he beat overwhelming favourite Lewis Hamilton at the Abu Dhabi Grand Prix final. The race result was subject to a protest from Mercedes, which claimed that the race director had not followed his own rulebook with the late restart and that the result should have been taken from the penultimate lap when Hamilton was leading. Hamilton looked set to win a record-breaking eighth drivers' championship, but a late crash toward the back of the field caused the safety car to be deployed, which slowed the field so the track could be cleared. It wiped away Hamilton's lead and set up a one-lap shootout with Verstappen when the race resumed.

■ Verstappen, 24, is the first Dutch Formula One champion. His fight against Hamilton, 36, has been one of the most dramatic in recent Formula One history after multiple crashes and close on-track fights between the drivers. It is the closest championship result since 2012, when Sebastian Vettel of Red Bull beat Fernando Alonso of Ferrari by 3 points.

## HASINA RANKED 43RD ON FORBES' 100 MOST POWERFUL WOMEN LIST

**B**angladesh Prime Minister Sheikh Hasina has been ranked 43rd on the Forbes' list of 100 Most Powerful Women in the world. "During what she believes will be her final term, Hasina plans to focus on issues such as food security and access to education and healthcare," the magazine mentioned.

■ Hasina is the longest-serving PM in the history of Bangladesh, having served for a combined total of over 17 years and four terms. ■ She won the fourth term after her ruling party, Bangladesh Awami League, won 288 of the 300 parliamentary seats in the 2018 elections

■ On the list, philanthropist MacKenzie Scott, US Vice President Kamala Harris, and President of the European Central Bank Christine Lagarde have been ranked first, second and third, respectively  
■ Every year, the magazine releases a list of 100 powerful women of the world  
■ This year, the 18th annual list included 40 CEOs, the most since 2015, who, according to the magazine, "oversee a record \$3.3 trillion in revenue"

## Plastic waste sculpture museum to come up near Bengaluru

**K**arnataka will house a museum of plastic waste sculpture near Bengaluru's picturesque holiday destination of Nandi Hills soon to sensitise people. The winning sculptures will eventually find place in the first-of-its-kind museum of plastic waste sculptures near Nandi Hills, a popular weekend destination near Bengaluru. Karnataka chief minister Basavaraj Bommai and NITI Aayog Vice chairman Rajiv Kumar had on Friday formally launched the Fellowship, a first-of-its-kind initiative to encourage young artists to create sculptures from plastic waste.


**BEST OUT OF WASTE**

## FACTOID

**310 KG**

That's the weight of the world's largest natural corundum blue sapphire. Named the 'Queen of Asia', the rare gem stone had been found three months ago from a gem pit in Ratnapura, popularly known as gem city situated around 85 km away from Colombo in Sri Lanka.





CLASS: XII - 2021-22

SUBJECT:  
CHEMISTRY

Time Allowed: 1½ Hours

Maximum Marks: 35

# BE DILIGENT TO BOND WITH CHEMISTRY



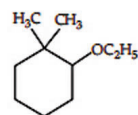
## PAPER SET BY DEEPA CHERIAN, PGT CHEMISTRY, TOC H PUBLIC SCHOOL, VYTTILA, ERNAKULAM

### GENERAL INSTRUCTIONS

1. The Question Paper contains 3 sections.
2. Section A has 25 questions. Attempt any 20 questions.
3. Section B has 24 questions. Attempt any 20 questions.
4. Section C has 6 questions. Attempt any 5 questions.
5. All questions carry equal marks.

### SECTION-A

- Q1)** A binary mixture that forms maximum boiling azeotrope is  
(a) ethanol + acetone  
(b) water + ethanol  
(c) acetone + chloroform  
(d) bromoethane + chloroethane  
**Q2)** IUPAC name of the following compound is:  
(a) 2-ethoxy-1,1-dimethylcyclohexane  
(b) 2,6-dimethyl phenol  
(c) 2-ethoxy propane  
(d) 1-ethoxy-2,2-dimethylcyclohexane  
**Q3)** The relative lowering of vapour pressure of an aqueous solution containing non volatile solute is 0.015, then the molality of the solution is  
(a) 0.01 (b) 0.5 (c) 0.7 (d) 0.8  
**Q4)** The helical structure of protein is stabilised by  
(a) Van Der Waal's forces  
(b) Dipole-dipole interaction  
(c) Dipeptide bond (d) Hydrogen bond  
**Q5)**  $\text{XeF}_6$  on complete hydrolysis forms:  
(a) Only  $\text{XeOF}_4$  (b)  $\text{XeO}_3$ ,  $\text{F}_2$  and HF  
(c)  $\text{XeO}_3$  and HF (d)  $\text{XeO}_3$  and  $\text{XeOF}_4$   
**Q6)** Which alcohol do not react with Lucas reagent at room temperature?  
(a) 3-methyl-2-butanol  
(b) 2-methyl-2-butanol  
(c) 2-methyl-2-butanol  
(d) 2,3-dimethyl-2-butanol  
**Q7)** Bleaching powder reacts with conc. HCl gives  
(a) chlorine (b) oxygen  
(c) chloric acid (d) hypochlorous acid  
**Q8)** The total number of tetrahedral voids in the face centred unit cell is  
(a) 4 (b) 6 (c) 8 (d) 12  
**Q9)** Propanol undergoes catalytic dehydrogenation to give  
(a) propene (b) propanone  
(c) propyl chloride (d) propanal  
**Q10)** Glucose on reaction with bromine water forms  
(a) saccharic acid (b) gluconic acid  
(c) hexane (d) oxime  
**Q11)** Which of the following elements can form oxides in oxidation states varying from +1 to +5?  
(a) N (b) P (c) As (d) Sb  
**Q12)** What of the following statement is not true regarding the structure of nucleic acid?  
(a) DNA has double helix strand structure  
(b) When a nitrogenous base is attached to 1' position of sugar a nucleoside is formed  
(c) A nucleotide is formed when nucleoside is linked to phosphoric acid at 5' position of sugar molecule.  
(d) Nucleosides are joined together by phosphodiester linkage between 5' and 3' carbon atoms of the pentose sugar.  
**Q13)** Which of the following orders are correct as per the properties mentioned against each?  
(a)  $\text{S} < \text{O} < \text{Cl} < \text{F}$  [negative



- electron gain enthalpy]  
(b)  $\text{H}_2\text{O} < \text{H}_2\text{S} < \text{H}_2\text{Se} < \text{H}_2\text{Te}$  [Acidic character]  
(c)  $\text{NaF} < \text{NaCl} < \text{NaBr} < \text{NaI}$  [Ionic character]  
(d)  $\text{BiH}_3 < \text{SbH}_3 < \text{AsH}_3 < \text{PH}_3 < \text{NH}_3$  [Reducing character]  
**Q14)** The formation of ortho hydroxybenzoic acid from phenol using sodium hydroxide and carbon dioxide in acidic medium is known as  
(a) Reimer-Tiemann reaction  
(b) Kolbe's reaction  
(c) Williamson synthesis  
(d) Esterification  
**Q15)** Among the following one which is not a chiral compound  
(a) 2-bromobutane  
(b) 2,3-dichloro propanal  
(c) propan-2-ol (d) butan-2-ol  
**Q16)** The nitrogenous base which is not found in RNA:  
(a) Adenine (b) Thymine  
(c) Guanine (d) Cytosine  
**Q17)** Anisole reacts with a mixture of concentrated nitric acid and sulphuric acid to yield  
(a) ortho-nitro anisole  
(b) para-nitro anisole  
(c) meta-nitro anisole  
(d) ortho and para-nitro anisole  
**Q18)** Which of the following will show metal deficiency defect?  
(a) NaCl (b) FeO (c) KCl (d) ZnO  
**Q19)** Identify the odd one out  
(a) Arginine (b) Lysine  
(c) Valine (d) Glycine  
**Q20)** Which among the following is not a haloalkane?  
(a) 2-iodo acetophenone  
(b) ethylene dichloride  
(c) 2-chloro 2-methyl propane  
(d) 2-bromo pentane  
**Q21)** A compound with excess metal ion and an anion is absent from its lattice position which is occupied by electron, belongs to the type of defect known as:  
(a) Stoichiometric defect  
(b) Non-Stoichiometric defect  
(c) Line defect (d) impurity defect  
**Q22)** The presence of strong hydrogen bonding in  $\text{H}_2\text{O}$  which is absent in  $\text{H}_2\text{S}$  is due to:  
(a) small size and low electronegativity in O  
(b) small size and low electronegativity in S  
(c) small size and high electronegativity in O  
(d) small size and high electronegativity in S  
**Q23)** Which of the following colligative property is directly proportional to molarity:  
(a) Lowering of vapour pressure  
(b) Elevation of boiling point  
(c) Osmotic pressure  
(d) Depression of freezing point  
**Q24)** Which of the following alkyl halides will undergoes  $\text{SN}^2$  reaction most readily?  
(a)  $(\text{CH}_3)_3\text{C-F}$  (b)  $(\text{CH}_3)_3\text{C-Cl}$   
(c)  $(\text{CH}_3)_3\text{C-Br}$  (d)  $(\text{CH}_3)_3\text{C-I}$   
**Q25)** Very low melting point of Noble gases is due to  
(a) Strong vander Waals forces between the atoms of noble gases.  
(b) Weak vander Waals forces between the atoms of noble gases.  
(c) stable  $\text{ns}^2\text{np}^6$  electronic configuration of noble gases.  
(d) Noble gases do not react with others.

### SECTION-B

- Q26)** Find the number of atoms present per unit cell of iron crystal lattice if the

- edge length is 270 pm and density is  $7.5\text{g/cm}^3$ ; [Molar mass of Fe =  $56\text{g/mol}$ ].  
(a) 1 (b) 2 (c) 4 (d) 8  
**Q27)** Which of the following will not show Anti-Markownikoff addition of HBr  
(a) 2-Butene (b) 1-Hexene  
(c) Propene (d) 1-Butene  
**Q28)** For the reaction  
 $\text{C}_6\text{H}_5\text{MgBr} \xrightarrow{\text{HClO}_4} \text{A} \xrightarrow{\text{acidified FeCl}_3} \text{B}$  The product 'B' in the reaction is  
(a) Phenol (b) Ethyl alcohol  
(c) Benzyl alcohol (d) 2-phenyl ethanol  
**Q29)** Which of the following solutions has the highest boiling point at one atmospheric pressure?  
(a) 0.1 M NaCl (b) 0.1 M CaCl<sub>2</sub>  
(c) 0.1 M urea (d) 0.1 M  $\text{C}_6\text{H}_{12}\text{O}_6$   
**Q30)** Phenyl-methyl ethers on reaction with HI gives  
(a) ethyl iodide  
(b) iodobenzene and methanol  
(c) phenol and methyl iodide (d) benzene  
**Q31)** Complete the following reaction:  
 $\text{XeF}_4 + \text{PF}_5 \rightarrow$   
(a)  $[\text{XeF}_3]^+ [\text{PF}_6]^-$  (b)  $[\text{XeF}_5]^+ [\text{PF}_6]^-$   
(c)  $[\text{Xe} [\text{PF}_6]]^-$  (d)  $[\text{XeF}_5] [\text{PF}_6]$   
**Q32)** Which among the following compounds can react with aqueous sodium hydroxide solution  
(a)  $\text{C}_6\text{H}_5\text{OH}$  (b)  $\text{C}_6\text{H}_5\text{CH}_2\text{OH}$   
(c)  $(\text{CH}_3)_3\text{COH}$  (d)  $\text{C}_6\text{H}_5\text{OH}$   
**Q33)** Which of the following statements are correct?  
(a) S-S bond is present in  $\text{H}_2\text{S}_2\text{O}_8$ .  
(b) In peroxosulphuric acid ( $\text{H}_2\text{S}_2\text{O}_8$ ) sulphur is in +6 oxidation state.  
(c) Iron powder along with  $\text{Al}_2\text{O}_3$  and  $\text{K}_2\text{O}$  is used as a catalyst in the preparation of  $\text{NH}_3$  by Haber's process.  
(d) Change in enthalpy is positive for the preparation of  $\text{SO}_3$  by catalytic oxidation of  $\text{SO}_2$ .  
**Q34)** What will be the concentration of sugar solution in g/litre if the osmotic pressure of a sugar solution is 2.5 atm at 300 K.  
(a) 24.6 g/litre (b) 38.8 g/litre  
(c) 26.2 g/litre (d) 34.2 g/litre  
**Q35)** What is the radius of copper atom if it crystallizes in face-centred cubic lattice with a unit cell length of 228 pm.  
(a) 150 (b) 114 (c) 100 (d) 98  
**Q36)** Which among the following is most covalent?  
(a)  $\text{NCl}_3$  (b)  $\text{NCl}_5$  (c)  $\text{PCl}_3$  (d)  $\text{PCl}_5$   
**Q37)** Chlorine upon reaction with cold and dilute solution of sodium hydroxide forms  
(a) NaCl and  $\text{NaClO}_2$  (b) NaCl and NaClO  
(c) NaCl and  $\text{NaClO}_3$  (d) NaCl and  $\text{NaClO}_4$   
**Q38)** The acidity order of the following four compound is  
(A) Phenol (B) Methyl phenol  
(C) m-nitrophenol (D) p-nitrophenol  
(a)  $(\text{D}) > (\text{C}) > (\text{A}) > (\text{B})$   
(b)  $(\text{C}) > (\text{D}) > (\text{A}) > (\text{B})$   
(c)  $(\text{A}) > (\text{D}) > (\text{C}) > (\text{B})$   
(d)  $(\text{B}) > (\text{A}) > (\text{C}) > (\text{D})$   
**Q39)**  $\text{HClO}_4$  is a stronger acid than HClO because:  
(a)  $\text{ClO}_4^-$  ions formed are more stable than  $\text{ClO}^-$  ions.  
(b)  $\text{ClO}_4^-$  ions formed is less stable than  $\text{ClO}^-$  ions.  
(c) Oxygen atoms are less dispersed.  
(d) Cl is more electronegative  
**Q40)** The increasing order of boiling point of haloalkanes is  
(a)  $\text{CH}_3\text{I} < \text{CH}_3\text{Br} < \text{CH}_3\text{Cl}$   
(b)  $\text{CH}_3\text{Cl} < \text{CH}_3\text{Br} < \text{CH}_3\text{I}$   
(c)  $\text{CH}_3\text{Br} < \text{CH}_3\text{Cl} < \text{CH}_3\text{I}$   
(d)  $\text{CH}_3\text{I} < \text{CH}_3\text{Cl} < \text{CH}_3\text{Br}$   
**Q41)** The decreasing order of the reducing character of the hydrogen halides are  
(a)  $\text{HI} > \text{HBr} > \text{HCl} > \text{HF}$   
(b)  $\text{HI} > \text{HCl} > \text{HF} > \text{HBr}$

- (c)  $\text{HBr} > \text{HI} > \text{HCl} > \text{HF}$   
(d)  $\text{HF} > \text{HCl} > \text{HBr} > \text{HI}$

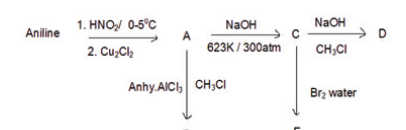
- Q42)** Toluene  $\xrightarrow{\text{Cl}_2/\text{hv}}$  A  $\xrightarrow{\text{aq NaOH}}$  B  $\xrightarrow{\text{Alkaline KMnO}_4}$  C.  
Identify the product 'C'  
(a) phenol (b) benzyl alcohol  
(c) benzoic acid (d) benzaldehyde  
**Q43)** Aqueous solution of an unknown solute boils at  $100.512^\circ\text{C}$ , then the freezing point of the solution will be ( $K_b = 0.512\text{K m}^{-1}$ ,  $K_f = 1.86\text{K m}^{-1}$ )  
(a)  $0.512^\circ\text{C}$  (b)  $-0.512^\circ\text{C}$   
(c)  $1.86^\circ\text{C}$  (d)  $-1.86^\circ\text{C}$   
**Q44)** An alkyl halide on reaction with Mg forms Grignard reagent which on reaction with water gives propane. Same alkyl halide on reaction with Na in dry ether forms a compound Y. Identify 'Y'.  
(a) propane (b) butane  
(c) pentane (d) hexane

- Given below are two statements labelled as Assertion (A) and Reason (R)  
**Q45) Assertion (A):** When  $\text{SO}_2$  reacts with  $\text{Cl}_2$  in the presence of catalyst charcoal, sulphuryl chloride is formed.  
**Reason (R):**  $\text{SO}_2$  is a reducing agent.  
(a) Both A and R are true and R is the correct explanation of A  
(b) Both A and R are true but R is not the correct explanation of A.  
(c) A is true but R is false.  
(d) A is false but R is true.  
**Q46) Assertion (A):** Ag CN forms isocyanide when react with haloalkanes while KCN form alkyl cyanides.  
**Reason (R):** KCN is covalent while Ag CN is ionic in nature thus providing different ions in solution.  
(a) Both A and R are true and R is the correct explanation of A  
(b) Both A and R are true but R is not the correct explanation of A.  
(c) A is true but R is false.  
(d) A is false but R is true.  
**Q47) Assertion (A):** It is not possible to separate the components of azeotropes by fractional distillation.  
**Reason (R):** The solutions which show a large positive deviation from Raoult's law form minimum boiling azeotrope at a specific composition.  
(a) Both A and R are true and R is the correct explanation of A  
(b) Both A and R are true but R is not the correct explanation of A.  
(c) A is true but R is false.  
(d) A is false but R is true.  
**Q48) Assertion (A):**  $\text{F}_2$  is less reactive than  $\text{Cl}_2$ .  
**Reason (R):**  $\text{F}_2$  has lower bond dissociation energy than  $\text{Cl}_2$ .  
(a) Both A and R are true and R is the correct explanation of A  
(b) Both A and R are true but R is not the correct explanation of A.  
(c) A is true but R is false.  
(d) A is false but R is true.  
**Q49) Assertion (A):** Osmotic pressure method is best method to calculate molar mass of proteins.  
**Reason (R):** Proteins have poor solubility and not stable at higher temperature.  
(a) Both A and R are true and R is the correct explanation of A  
(b) Both A and R are true but R is not the correct explanation of A.  
(c) A is true but R is false.  
(d) A is false but R is true.

### SECTION-C

- Q50)** Match the following:  
I II  
A. Albumin 1. Glycosidic  
B. Lactose 2.  $\alpha$ -helix  
C. Sucrose 3. globular

- D. Protein 4. invert sugar  
5. amide  
(a) A-2, B-4, C-1, D-5 (b) A-5, B-1, C-4, D-2  
(c) A-3, B-1, C-4, D-5 (d) A-1, B-4, C-3, D-2  
**Q51)** Which of the following analogy is correct?  
(a)  $\text{XeF}_2$ : two lone pair electron ::  $\text{XeF}_4$ : Square planar  
(b)  $\text{HClO}_4$ : chloric acid ::  $\text{HClO}_3$ : chlorous acid  
(c)  $\text{H}_2\text{SO}_4$ : Caro's acid ::  $\text{H}_2\text{S}_2\text{O}_8$ : Oleum  
(d)  $\text{XeF}_4$ : two lone pair electron ::  $\text{XeO}_3$ : pyramidal  
**Q52)** For the following reaction:



- (a) A: chlorobenzene, B: toluene, D: phenol, E: p-bromophenol  
(b) A: chloro benzene, B: toluene, C: phenol, E: 2,4,6-tribromophenol  
(c) B: p-chloro toluene, C: phenol, D: anisole, E: 2,4,6-tribromophenol  
(d) B: toluene, C: phenol, D: p-methyl phenol, E: p-bromophenol

- CASE1:** Read the passage given below and answer the questions 53-55  
In an ideal crystal, there must be regular repeating arrangement of the constituting particles. Crystalline solids have regular arrangement of particles, definite geometrical shapes, sharp melting points and definite heat of fusion. On the other hand, amorphous solids have no regular arrangement of particles, irregular shapes, melt over a range of temperature and no definite heat of fusion. The crystal structures are often classified by considering a cubic or hexagonal close-packed lattice of one set of ions with the other set of ions filling the octahedral or tetrahedral interstices. In pure crystal, defects arises either due to disorder or dislocation of the constituting particles from the normal positions or due to the movement of the particles even at absolute zero temperature. In ideally ionic structures, the coordination numbers of the ions are determined by electrostatic considerations. The coordination number of ionic solids also depends upon temperature and pressure.  
**Q53)** Diamond is an example of:  
(a) Covalent network solid (b) Ionic solids  
(c) Ionic solid (d) Metallic solids  
**Q54)** A compound is formed by two elements P and Q. The element Q forms hcp lattice and atoms of P occupy 75% of tetrahedral voids. The formula of the compound will be  
(a)  $\text{QP}_3$  (b)  $\text{PQ}_3$  (c)  $\text{P}_3\text{Q}_2$  (d)  $\text{Q}_2\text{P}_2$   
**Q55)** In a triclinic crystal  
(a)  $a = b = c$ ,  $\alpha = \beta = \gamma \neq 90^\circ$   
(b)  $a \neq b = c$ ,  $\alpha = \beta = \gamma = 90^\circ$   
(c)  $a \neq b \neq c$ ,  $\alpha \neq \beta \neq \gamma \neq 90^\circ$   
(d)  $a \neq b \neq c$ ,  $\alpha = \gamma = 90^\circ$ ,  $\beta \neq 90^\circ$

**KEY:** 1c 2a 3d 4d 5c 6b 7a 8c 9d 10b 11a 12d 13b 14b 15c 16b 17d 18b 19d 20a 21b 22c 23c 24d 25b 26b 27a 28c 29b 30c 31d 32d 33b 34d 35c 36d 37b 38a 39a 40b 41a 42c 43d 44d 45b 46c 47b 48d 50c 51d 52c 53a 54c 55c

These questions are meant for practice purpose only. Students are advised to check format, syllabus and marks for Board test papers with their teachers. Questions have been given by teachers and NIE is not responsible for them.

## READ, RECITE, REVIEW

Technology is growing by the day and has made self-study a tad easier as we can look up the internet for references from several sources. Self-study effectively is one of the best ways to achieve good marks in class X board exam. Here are some tips that can help as we enter the last lap of the annual academic year.

- Be consistent with your studies.
- Dedicate and allot a specific time every day to study.
- Don't just study your favourite subject.
- Note down important points while studying.
- Make use of reference materials such as guides, online resources, videos,



- etc.
- It is scientifically proven that browsing the social media decreases the productivity of brain. So browsing is not a good idea, especially during exam time.
  - Follow 3 R's - Read, Recite, Review.
  - Practice a lot of questions in each and every subject, work out previous question papers.
  - Prepare flash notes.

DIYA NAIR A R, class X,  
MGM Central Public School,  
Thiruvananthapuram

- Q26)** Find the number of atoms present per unit cell of iron crystal lattice if the

## MY SCHOOL PROJECT | PLASTOID

# It's time to put plastic waste to good use...

### WHAT IS IT?

The rate at which fossil fuels are being used it will be imperative to find other alternatives of energy very soon. We also have another alarming issue to tackle, i.e. pollution. And the most salient determinant for pollution is plastic.

The aim of this project is to use plastic as a pre-fuel instead of a pollutant.



This project operates on the principle of pyrolysis. Plastics from several sources are consolidated and heated in a vacuum chamber to approximately  $450^\circ\text{C}$ . This causes the plastics to decompose into hydrogen, carbon dioxide, carbon monoxide, and oil gas.

Now, when we condense this mixture of gases, we obtain crude oil that can be used as a fuel to run vehicles, etc. The other gases are converted into methanol by distinct means (such

as heating). These fuels are then further refined.

Consequently, no greenhouse gas is released, no polluting agent is released. Hence we get pure fuels from plastic waste.

AADITYA PATNAIK,  
class X G, Jubilee  
Hills Public School,  
Hyderabad





## SPIRITED QUIZZING SESSION CONDUCTED

"Liberty cannot be preserved without general knowledge among the people". John Adams

General Knowledge Quiz Competition was conducted as a part of CCA for class IV, comprising twelve students from each house. The quiz was a mixed bag with questions from different fields which covered history, sports, general science, comics, mathematics and current affairs. The participants were very excited and answered the questions with great enthusiasm. The questions were intriguing and exciting with a timer set on. Though some of the questions were tricky, the

**Shobha, Faculty, Science Department, Jain Heritage A Cambridge School**  
**Kondapur**

students tried to answer them with confidence. The activity was very informative and knowledge enhancing for the participants. The students displayed ecstatic spirit and enjoyed the quiz to the fullest which accentuated their curiosity.

## Spotlight on human rights, role of global community

Delhi Public School, Nacharam, celebrated the International Human Rights Day on December 10 to honour the day in 1948 when the United Nations General Assembly adopted and proclaimed the Universal Declaration of Human Rights.

A special assembly was conducted by students of class XI to raise awareness about the inherent rights that everyone is entitled to as a human being. After the invocation, the students were informed about the importance of the day. A video on 'Equality, removing inequalities, advancing human rights', was screened. A motivational video on the strength of humanity and power of oneness proved inspiring.

A video of various NGOs instrumental in protecting human rights was telecast. A mellifluous song advocating universal brotherhood captivated the audience.

Speaking on the occasion, Sr Vice Principal Nandita Sunkara said students need to be ambassadors of knowledge and sensitize people about the various rights needed to lead a dignified life. Being unaware of human rights would be the biggest violation.

The assembly gave out a strong message that it is 'US' who have to

protect rights as every right comes with a silent corresponding duty attached to it. The assembly envisioned by Principal Sunitha Rao and conducted under the guidance Saira and Shilpa sent a clear message that human rights belong equally to each of us and bind us together as a global community with the same ideals and values.

**Delhi Public School Nacharam**



## RAISING AWARENESS ABOUT PEOPLE WITH DISABILITIES

Special needs individuals need equal treatment, equal access

When The Hollies sang 'He ain't heavy, He's my brother,' the track smashed through charts in 1969 and still remains a much loved favourite classic today. A classic whose lyrics about doing good service by helping one's fellowmen, reverberates in the air.

On December 3, the International Day of Persons with Disabilities (IDPD) was hosted by Gitanjali Devshala in collaboration with Gitanjali Devashray. The theme for the event was 'Leadership and participation of persons with disabilities.'

Children from both the schools actively participated in song, dance and craft activities. Shailaja Rao, retired HOD- National Institute for Empowerment for Persons with Multiple Disabilities (NIMPD), was the special guest and speaker. Majula Kalyan, Founder and Director of Swayamkrushi, a voluntary organisation for people with special needs, attended the celebrations

**Gitanjali Devshala Hyderabad**

along with her students who interacted very actively throughout the event.

The event aimed at raising awareness about people with disabilities and their inclusion and accessibility in all spheres of life.

As part of the International Communication Project (ICP), communication was recognised and accepted as a basic human right and spotlight was thrown on raising awareness regarding the rights of people with special needs. Adaptations that include personal

adequacy, social competency and economic independence were scrutinised. Government initiatives were also explored and discussed.

It wasn't all work and no play for the attendees of the session. Adults and children alike plunged into song and dance sessions that not only lightened the mood but also uplifted the spirits and left each one with a cheery disposition. Outstanding and ingenious craftwork was showcased and everyone tried their hand at cutting, pasting and designing.

## COTTON

I watch as the white, fluffy cotton  
Swings in the air;  
Soft and snug as the feather of  
swan  
It makes the view beautiful  
From the window.  
Roaming around the farm,  
I pluck out cotton and  
Take it to my grandmother.  
She stitches  
Beautiful clothes for the summer  
I prance around the farmhouse,  
Adorning them.  
It feels like soft, white, fluffy cotton.

**P ESHITA VASUKI, class VIII-A, Delhi School of Excellence, Banjara Hills**



## SAY NO TO JUNK FOOD

Delhi World School, Shadnagar, conducted a special assembly on 'Junk food and healthy food.'

More and more people are getting obese and even lazy because of the increase in intake of junk food. Burgers, pizzas, chips, fried food, etc., contain high quantities of fat and carbohydrates leading to major health issues.

**Delhi World School Shadnagar**

On the other hand, having healthy food makes people fit and active. They are energetic and motivated to do exercises regularly. Health benefits of having fresh vegetables and fruits are plenty. The students were urged to follow a healthy lifestyle by avoiding junk food.



Let gratitude be the pillow upon which you kneel to say your nightly prayer. And let faith be the bridge you build to overcome evil and welcome the good. On Thanksgiving Day, we acknowledge our dependence. Students of Pre Primary classes celebrated Thanksgiving Day by saying thank

## Thanking Family

**Ganges Valley School Hyderabad**

you to their family members for showering goodness, blessings, love and care on them.

The little munchkins of PP I and PP II made thanksgiving cards and shared virus-free hugs and kisses. It was a day marked with love and gratitude.

## GARUDASANA - THE EAGLE POSE

The name characterises strength, flexibility, and agility of the body as well as alertness, one-pointedness, and sharpness of the mind. Suppleness and elasticity of the extremities (the



YOGA4ALL

### BENEFITS

#### PHYSICAL

- It strengthens the muscles, tones the nerves and loosens the joints of your legs.
- It stretches your hips, thighs, shoulders and upper back.
- It improves muscle tone flexibility in your thighs.
- It develops the balance of your body.

#### THERAPEUTIC

- It helps relieve sciatica and rheumatism in the legs and arms.
- It develops balance.
- It relieves stiffness in the shoulders

#### PSYCHOLOGICAL

- It sharpens your awareness and concentration.
- It keeps your mind alert.
- It helps you to cultivate confidence.

#### MUSCLES INVOLVED

- Flexors, abductors and internal rotators of the hip
- Planter flexors of the ankle, flexors of the elbow
- Protractors of the shoulder girdle
- Flexors, abductors and medial rotators of the shoulder

### METHOD OF PRACTICE

#### Starting Position

- Stand with feet together and hands at the sides.

#### Step 1

##### Practice of Wrapping of Legs

- While exhaling, lift your left leg and wrap it around your right knee from the front and take it back from behind the right calf, locking the ankle of your right leg with your left foot.
- Once the balance on one leg is secured, try to straighten your torso.
- Maintain the position for six seconds with a suspension of your breath or breathe normally if you cannot hold the breath.
- Inhaling, unwrap your leg and come to the starting position.
- Repeat the same procedure with the opposite legs.

#### Step 2

##### Practice of Wrapping Arms

- While exhaling, extend the left

arm with the elbow slightly bent. Place the right elbow on the inside of the right elbow. Now push the left arm outwards and leftwards trying to wrap the hands to join the palms of both hands.

- Maintain the pose for six seconds with the suspension of breath.
- While inhaling, return to the starting position.
- Repeat the same procedure with the opposite hands.

#### Final Posture:

- Practice both Steps 1 and 2 simultaneously.
- Repeat the same process with the opposite legs and hands.

#### Limitations:

- Severe arthritis and problems with the extremities, tennis elbow, frozen shoulders.
- People with cardiac problems, hypertension and vertigo.

Courtesy: The Yoga Institute  
The Yoga Institute was founded on 25th December, 1918 by the founder, Shri Yogendraji. It found a permanent base in Santacruz, Mumbai, in 1948



## AN INSIGHTFUL SESSION FOR TEACHERS

Pallavi Model School, Boduppal organised a virtual session with a distinguished speaker Swami Bodhamayananda in collaboration with Ramakrishna Math on the theme 'Change your mind and change your life.' It was a wonderful session where all the teachers of Pallavi Group of Schools, were enlightened to become a better teacher and a better guru.

Principal T Tanuja welcomed and introduced the eminent speaker to the teachers. Swamiji started the session with shlokas to pray for society to move towards positivity. He narrated the event of 'Samudra Manthan' and told that

**Pallavi Model School Boduppal**

what was poison for the world, turned into an ornament for Lord Shiva and therefore he is called Neelkanth. He also explained that in today's society we are experiencing poison in the form of global warming, environmental pollution, lust, crime, dishonesty and so on. In view of this, the teachers need not be just a communicator but an educator.

He explained the importance of striking the right balance between internal nature and external nature. He also exemplified the methods of accomplishing it through Karma Yoga (work), Bhakti Yoga (worship), Dhyan Yoga (psychic control), or philosophy. He used several examples through videos and PPTs to explain how we can practice yoga and meditation to become more mindful. He chanted shlokas and enlightened the teachers on upanishads.

A brief question-and-answer session was conducted with the teachers. The session concluded with a vote of thanks by the principal. She expressed gratitude to the speaker for the enlightening session which would surely help the teachers to make the teaching-learning process more meaningful and mindful.

## LIVING LIFE TO THE FULLEST

**STEPHEN HAWKING INSPIRING ICONS**

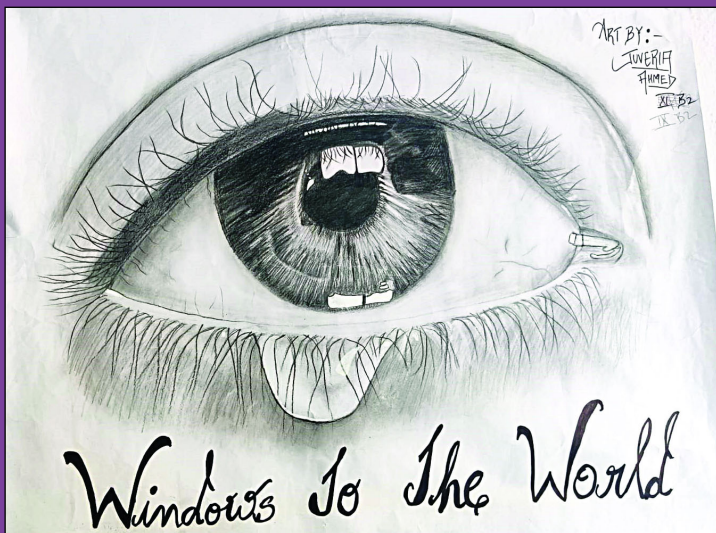
Stephen Hawking is the legend who said "Intelligence is the ability to adapt to a change". I am really inspired by this English physicist and cosmologist as life is all about self confidence that made him succeed even in such a difficult situation.

At the age of 21, he was diagnosed with a motor neuron disease. When he got to know that he would live only for a few years, he put all his attention into his work and research so that he could fully utilise his remaining life.

In 1985, he was on wheelchair and completely lost his voice. That is when California's computer programmers developed a software that worked based on his eye movement. His contributions to the understanding of gravity, black holes and cosmology were truly immense.

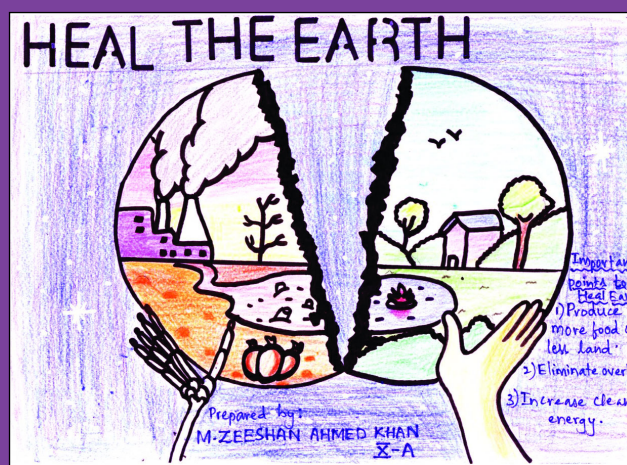
His resilience and his words inspire me: "no matter how much difficult life will be, you can always do something, you can be successful if you are determined."

**RAMYA PRIYA, class VIII, Sister Nivedita School, Hyderabad**



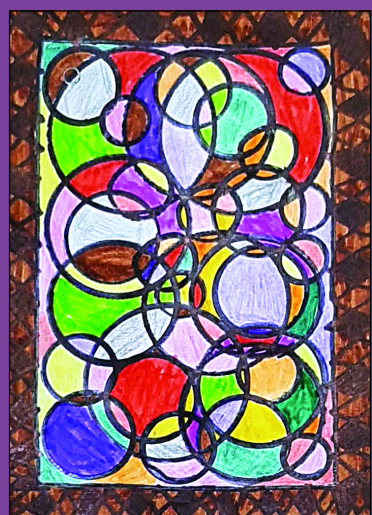
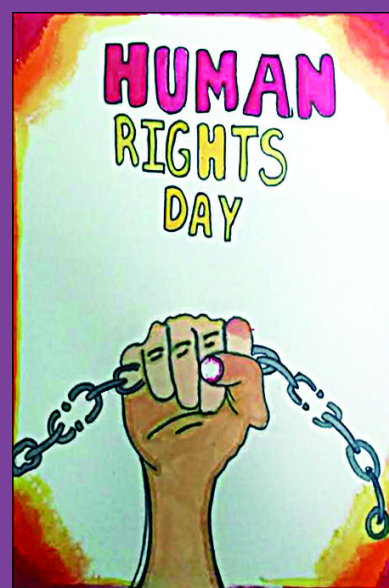
**FINE EYE: JUVERIA AHMED, class IX, Springfields School, Tolichowki**

## Painters' Gallery



**STARK REALITY: M ZEESHAN AHMED KHAN, class X, Springfields International School, Tolichowki**

**UNCHAINED: UJESH CHINHARA, class VI, Jain Heritage Cambridge School, Kondapur**



**COLOUR CODES: D SRISHTI, class IV-F, Army Public School, Bolarum**



# MBAPPE SCORES A DOUBLE

## Takes PSG closer to title with 2-0 win over Monaco



Paris St Germain's Kylian Mbappe scores their first goal from the penalty spot

Paris St Germain continued their march towards the Ligue 1 title when a Kylian Mbappe double earned them a clinical 2-0 home victory against Monaco on Sunday. Mbappe found the back of the net with a penalty and a precise strike in the opening half to put the league leaders on 45 points from 18 games, 13 ahead of second-placed Olympique de Marseille who have a game in hand.

"Maybe it was not brilliant but we killed it in the first half," said Mbappe, who scored his ninth and 10th goals in 10 appearances against his former club. "I can't get sentimental. I love playing football and I love scoring goals." The France striker, who also scored 16 league goals for Monaco at the beginning of his career, does not turn 23 until later this month.

Monaco, who had scored three goals in each of their wins in the previous two games, are eighth on 26 points. They are one of six teams within six points fighting for second place, with Stade Rennais in third on 31 points after their 2-1 defeat at home against fourth-placed Nice.

At the Parc des Princes, Monaco started well with Sofiane Diop coming close when his attempt crashed into goalkeeper Gianluigi Donnarumma in the second minute.

But it took PSG only 12 minutes to take the advantage as Mbappe converted a penalty after Angel Di Maria had been brought down by Djibril Sidibe. PSG relied on Mbappe again to double the tally at the end of a sharp counter-attack, with the France forward firing the ball into the far corner after being set up by Di Maria for his ninth league goal of the season.

Lionel Messi had an opportunity to wrap it up in the 71st minute but the Argentine's crossed shot went just wide. Ten minutes from time, he had a chance again but his chip was also off target in a relatively disappointing performance by the former Barcelona player.

Monaco had a couple of chances to reduce the arrears but PSG stayed composed to get their first win in three Ligue 1 matches after two draws.

Mauricio Pochettino's side ultimately eased to victory in a subdued atmosphere at the Parc des Princes, with one end of the stadium closed as a

punishment after the club's ultras let off flares en masse during a recent game.

"It was a professional performance and we deserved to win. Kylian was extraordinary once again," Pochettino, who has been criticised for his team's performances this season, told broadcaster Amazon Prime.

"We are very pleased with our results, but we can improve our performances," he admitted later.

PSG fullback Juan Bernat suffered a thigh injury and was replaced in the 51st minute by Thilo Kehrer. AGENCIES

## CRYSTAL PALACE BACK TO WINNING

A double from Conor Gallagher helped Crystal Palace return to winning ways with a 3-1 victory at home to Everton in the Premier League on Sunday. Palace had lost its previous three matches \_ all by one-goal margins \_ but this first win since the beginning of November was much deserved, with James Tomkins also on target for the hosts. Palace climbed to 12th, above Everton, which is back in London on Thursday to face Benítez's old team, Chelsea.



Photo: REUTERS

## HAZLEWOOD ruled out for second Test

### Absence of bowling attack a big loss for Australia in second Ashes game

Pace bowler Josh Hazlewood has been ruled out of the second Ashes cricket Test because of a side strain he sustained in Australia's nine-wicket win over England in the series-opening match.

Hazlewood picked up the key wickets of Dawid Malan and Joe Root within his first three overs in the first Test at the Gabba as England slumped to 11-3 before finally being bowled out for 147. But he bowled just 14 overs in the second innings, and picked up a wicket on Saturday after a prolonged rest.

Hazlewood flew home to Sydney on Sunday for further assessment, and the rest of the Australian squad was travelling to Adelaide on Monday. The second Test, a day-nighter, starts Thursday.

Jhye Richardson and Michael Neser, who played a tour game for Australia A against the England

### ANDERSON, BROAD 'FIT AND READY'

England head coach Chris Silverwood on Monday said pace bowling duo James Anderson and Stuart Broad are "fit and ready" to go for the upcoming second Ashes Test.

Anderson and Broad had missed the first Test and their omission raised many eyebrows as Australia thrashed England in the Ashes opener last week. "Jimmy will be fit and ready to go for the second Test, as will Stuart. They are available. Certainly, from an experience point of view, with the bowlers we've got heaps of experience so I'm



Chris Silverwood

happy with that," Silverwood said. "The guys have already been training with the pink ball behind the scenes. And what we have got is a very skillful set of bowlers. We have talent and we

still have two of the best up our sleeve as well," said Silverwood.

The England head coach admitted that Broad was disappointed to miss the first Test. "Stuart has been great, to be honest. Obviously, he was disappointed not to be playing but he understood that this is a long series," said Silverwood. ANI

Lions last week, are in Australia's squad as pace cover.

Australia's first-choice bowling attack of Hazlewood, Pat Cummins, left-armers Mitchell Starc and spinner Nathan Lyon has had consistent success against England. Hazlewood's absence will be a big loss for Australia in the day-night environment. His 32 wickets in seven day-night tests are second only to Starc in pink-ball matches.

After the first test finished Saturday, Cummins said Hazlewood's injury is "nothing too serious. It wasn't scary enough to not bowl today. It was good he came out today and was able to bowl and get through a really good spell."

Hazlewood is still in the selection mix for the third test starting Dec. 26. PTI

## THE ASHES



## K SRIKANTH WINS FIRST ROUND MATCH IN BWF WORLD C'SHIPS

Indian badminton ace Kidambi Srikanth beat Pablo Abian of Spain to begin his BWF World Championships campaign on a winning note at Huelva in Spain.

The 12th seeded Indian beat the local challenger 21-12 21-16 in 36 minutes in the first round of the men's singles event.

The Indian men's doubles pair of Manu Attri and B Sumesh Reddy, however, lost in straight games against Joel Elpe and Rasmus Kjaer of Denmark in the opening round. Attri and Sumesh lost 16-21 15-21 in 32 minutes to make an exit from the showpiece event.

Earlier in the day, the women's doubles pair of Pooja Dandu and Sanjana Santosh retired after they lost the first game 12-21 to



Kidambi Srikanth

the Dutch duo of Alyssa Tirtosentono and Imke van der Aar.

Reigning champion PV Sindhu, who got a bye in the first round, will open her campaign against Martina Repiska of Slovakia. PTI

## QUIZ TIME!

**Q1:** Which team won the first Hockey India League held in January 2013?

- a) Punjab Warriors
- b) Uttar Pradesh Wizards
- c) Mumbai Magicians
- d) Ranchi Rinors

**Q2:** Which Japanese figure skater is the first Asian to win an Olympic gold?

- a) Yuzuru Hanyu
- b) Shoma Uno
- c) Daisuke Takahashi
- d) Nathan Chen

**Q3:** A form of martial arts, Sambo is associated with which country?

- a) Japan
- b) India
- c) Indonesia
- d) Russia

**Q4:** Bangalore Blues challenge cup is associated with \_\_\_\_

- a) Football
- b) Throwball
- c) Basketball
- d) Volleyball

**Q5:** Who became the first male skier born in the new millennium to win a World Cup race?

- a) Gino Caviezel
- b) Henrik Kristoffersen
- c) Marco Odermatt
- d) Lucas Braathen

**Q6:** Garbine Muguruza became the first Spanish woman



Garbine Muguruza

to win the WTA finals since Arantxa Sanchez-Vicario in 1993. Whom did she defeat in the finals?

- a) Paula Badosa
- b) Anett Kontaveit
- c) Maria Sakkari
- d) Ashleigh Barty

**Q7:** Which country has qualified for the Football World Cup the most times, without winning it?

- a) Cuba
- b) Pakistan
- c) India
- d) Mexico

**Q8:** Which host country was the first to win the ICC

World Cup on home soil?

- a) England
- b) India
- c) Australia
- d) Sri Lanka

**Q9:** Who is the first Indian woman to win a WTA title?

- a) Rutuja Bhosale
- b) Sania Mirza
- c) Karman Kaur Thandi
- d) Ankita Raina

**ANSWERS:** 1 d) Ranchi Rinors  
2 a) Yuzuru Hanyu 3 d) Russia  
4 c) Basketball 5 d) Lucas Braathen  
6 b) Anett Kontaveit 7 d) Mexico  
8 b) India 9 b) Sania Mirza