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TODAY'S EDITION

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➤ Learning is stress-free when you experiment and understand concepts play-way. Experts tell us how...

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➤ Explained: Why England's T20I side will give a tough challenge to India

PAGE 4

STUDENT EDITION

FRIDAY, MARCH 12, 2021

TIMES nie Newspaper in Education

WEB EDITION

CLICK HERE: PAGE 1 AND 2

Soon, smart glasses that can tackle climate change!

Tech giant Mark Zuckberg has predicted that his company could be 'teleporting' (a hypothetical transfer of matter or energy from one point to another without traversing the physical space between them) into other people's homes and workplaces by 2030 to combat climate change, using smart glasses. If things go his way, face-to-face meetings would be replaced with virtual conferences and made possible with some form of augmented reality (AR) headset, he predicted. The ultimate vision would involve a normal-looking pair of electronic glasses, which can present content on its lenses beyond the real world, he added.

THE ADVANTAGES

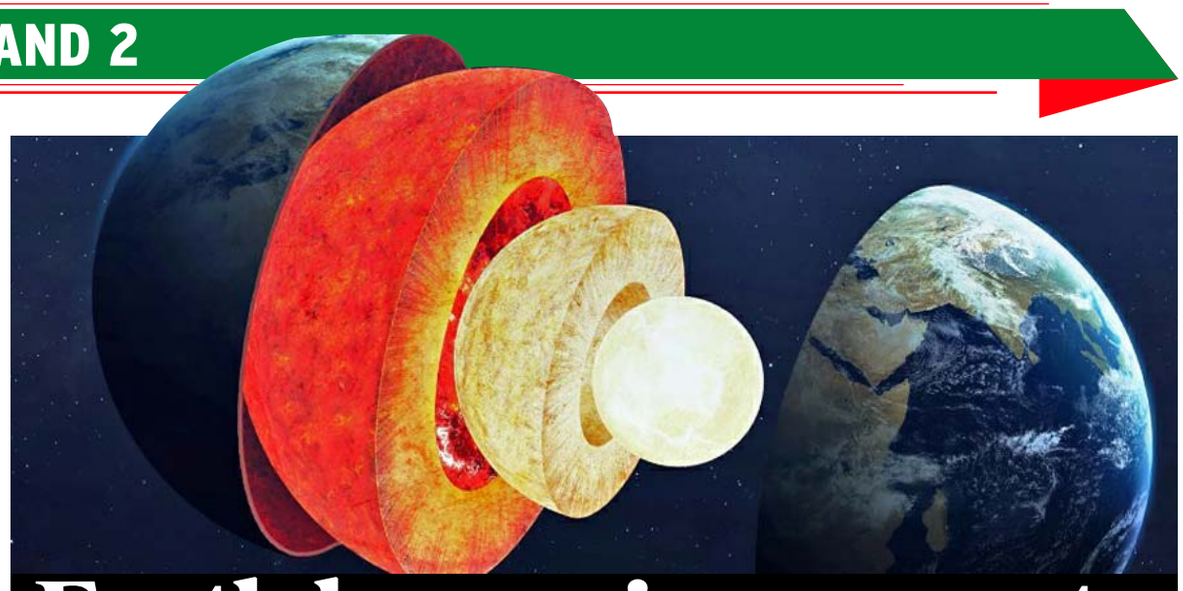
1 According to Zuckerberg, an augmented or virtual reality-based teleportation would not only help in eliminating journey times but would also result in cutting down the fossil fuel emissions that contribute to climate change

2 Such technology could even fundamentally-alter the nature of the daily commute, allowing people to live wherever they want, such as in more remote or affordable settings, and 'beam' virtually into their workplace, when required

➤ Meanwhile, the social media firm's first pair of smart glasses, made in collaboration with luxury eyewear manufacturer Ray-Ban, is slated to be released later this year

➤ However, these will not feature a visual display, but a voice-controlled system tethered to your mobile phone

➤ Other technology firms, including Apple, Google and Microsoft, have also revealed that they are working on augmented reality technology, which aims at defining the look and feel of what will likely be the next major computer interface



Earth has an innermost INNER CORE

For a long time, textbooks have taught that the Earth has four layers: the crust, the mantle, the outer core and the inner core. A fifth layer has been suspected for more than a decade, but it has been near impossible to detect its existence

DID YOU KNOW?

In a significant discovery that could rewrite the textbooks, scientists have discovered that the **Earth has a 'fifth layer' in the form of an innermost inner core at the centre of the planet.** According to a report in Daily Mail, scientists spotted changes to the structure of iron within the inner core that suggests a new 'boundary line' stretching about 650km from the centre of the Earth, with a temperature of more than 5,000 degrees Celsius. Scientists are of the view that a dramatic and a previously-unknown event happened at some point in the earliest years of Earth's evolution— as much as 4.5 billion years ago. Until recently our understanding of the deepest depths of our world have been through a combination of volcanic eruptions and seismic waves.

WHAT DOES IT MEAN?
According to scientists, investigating the structure of the inner core can help us in understanding more about the Earth's history and evolution

SO, NOW IS IT FINE TO SAY EARTH HAS FIVE LAYERS?

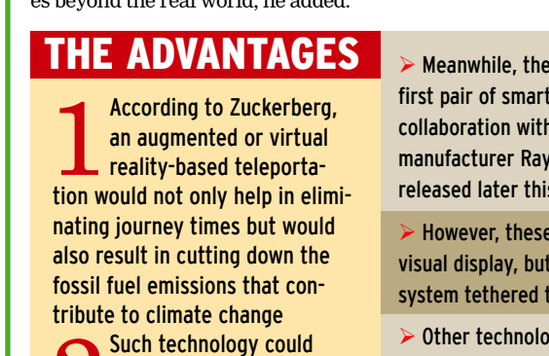
- Recent studies show there are actually five, not four layers to the Earth. They are...
- **CRUST:** To a depth of up to 70km, the crust is the outermost layer of the Earth, covering both ocean and land areas
- **MANTLE:** Going down to 2,890km with the lower mantle, this is the planet's thickest layer and made of silicate rocks, richer in iron and magnesium than the crust overhead
- **OUTER CORE:** Running from a depth of 2,890-5,150km, this region is made of liquid iron and nickel, with trace of lighter elements
- **INNER CORE:** Going down to a depth of 6,370km at the very centre of planet Earth, this region is made of solid iron and nickel
- **INNERMOST CORE:** Recently discovered and stretching for about 650km from the centre of the Earth, this region is solid iron in a different but unknown structure to the inner core

Spotlight

China becomes the first country in the world to introduce vaccine passports

China has become the first country in the world to roll out vaccine passports or an international vaccine health certificate. The certificate will be recognised by other countries soon to ease global travelling. The new passport will show a complete detail of a traveller's Coronavirus history. The passport will also have nucleic acid and antibody test results. Recently, China launched a WeChat programme, wherein citizens can register for the certificate.

- Besides China, countries such as Denmark and Sweden are also developing their own health passports. In Britain, around 2,00000 people have signed a petition to introduce a vaccine certificate



CHARITY

Dorsey to donate Bitcoins to charity from sale of his 1st tweet

Twitter CEO and billionaire Jack Dorsey, who last week announced to sell his very first tweet of March 6, 2006, has said that he will donate the money in Bitcoins for charity. The highest bid for the tweet, put up for auction as an NFT (non-fungible token) on a platform called Valuables, is currently $2.5 million and the auction will end on March 21.

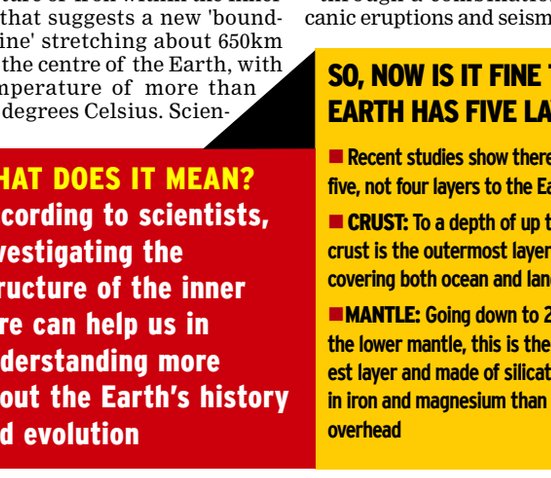
- NFTs allow people to buy and sell ownership of unique digital items and keep track of who owns them, using the blockchain
- Non-fungible means you can't exchange it for another thing of equal value
- The artist Grimes recently sold several NFT items for nearly $6 million. An NFT of LeBron James making a historic dunk (a type of basketball shot) for the Lakers, garnered more than $200,000

Importance of cash flow should be in engineering college syllabus: Paytm CEO

Highlighting the need to know about the importance of cash flow, especially for the younger generation, Vijay Shekhar Sharma, CEO, Paytm, has called for its inclusion in college curriculum. "The importance of cash flow should be added in engineering college or other graduate college syllabus," he tweeted. "We must know how being profitable is not the same being a free cash flow generation," he said, adding that he learnt the importance of cash flow by diluting 40% of his profitable company for "a few lakhs".

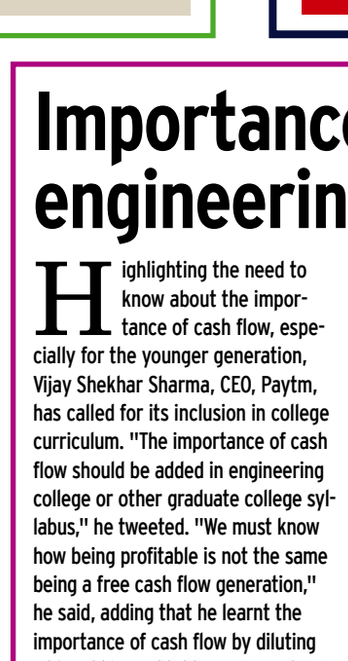
Share your views at toinie175@gmail.com

VIEWPOINT



WHAT IS CASH FLOW

The amount of cash or cash-equivalent, which the company receives or gives out through payment(s) to the creditors is known as cash flow. Cash flow analysis is often used to analyse the liquidity position of a company. It gives a snapshot of the amount of cash coming into the business and the amount flowing out



Bruno Mars calls himself an 'out of work musician' as he begs Grammys to let band Silk Sonic perform

ENTERTAINMENT

Bruno Mars has called on the Recording Academy to allow his new band to perform at March 15 Grammy Awards. In February, the 'Uptown Funk' singer announced that he was teaming up with rapper Anderson Paak to form a new group called Silk Sonic. The duo released their first single 'Leave the Door Open' on March 5. However, Silk Sonic are now lobbying the Grammys to let them perform alongside the likes of BTS, Taylor Swift and Harry Styles at the forthcoming award ceremony. The Recording Academy are yet to respond to Mars's request.

- It's been nearly five years since Mars's last album, 24K Magic, was released in November 2016. It won seven awards at the 2018 Grammys, including the Album of the Year
- Paak's fourth studio album titled 'Ventura' was released in 2019

'World GDP to grow 5.6% if vaccines roll out fast'

The global gross domestic product (GDP) will grow at 5.6 per cent this year, if Covid-19 vaccination rollouts are fast and effective enough across the world, the Paris-based Organisation for Economic Cooperation and Development (OECD) has said.

1 The world output is expected to reach pre-pandemic levels by mid-2021 and the global economy is expected to grow by 4 per cent in 2022 after seeing 5.6 per cent growth in 2021, the OECD said in its latest Interim Economic Outlook

2 The OECD projected the US economy to grow at 6.5 per cent in 2021, thanks to "significant fiscal stimulus along with faster vaccination"

3 It forecast that the GDP will rise 3.9 per cent in the euro area, "where the level of fiscal stimulus is lower and vaccine rollout slower"

4 Prospects are brighter in the Asia-Pacific region, where several countries have effectively contained the virus and industrial activity has regained dynamism, the OECD said

Nothing is impossible. The word itself says I'm possible.

-Audrey Hepburn

TEST YOUR ENGLISH READING SKILLS

EXAMS R fun

CLASS: X - 2020-21

SUBJECT: ENGLISH -LANGUAGE AND LITERATURE (CBSE)

Marks: 40

SAMPLE PAPER SET BY SUDHA, ROYALE CONCORDE INTL SCHOOL, M S PALYA, BENGALURU

READING

Q1. Read the passage given below:

1. Environment pollution has become a major issue during the 20th century as today's society produces goods which are very harmful to the environment. The land, water and air are all increasingly affected by a range of pollutants such as noise, heat, smoke, chemicals, manure, and radioactive isotopes. Once in the environment, many pollutants are diluted, dispersed, or broken down into harmless materials, but others may be concentrated or transformed into more damaging forms and more importantly, damage caused by pollution may not be covered immediately because it is not as easy as it seems. Every year, the burning of fossil fuels releases about 5.6 billion tons of carbon dioxide in the air- an amount that is expected to increase. Even though carbon dioxide is a gas that plants survive on, an excess amount proves to be harmful. Carbon dioxide molecules absorb heat energy. The greater the amount of carbon dioxide in air, the greater amount of heat energy is absorbed, which results in global warming.

2. In fact, America is the largest carbon dioxide producing nation. There are several ways to reduce pollution; however, considering the economic problems, America is going through, it is a difficult issue.

3. One of the ways to deal with pollution considering the economic problem is to give out marketable pollution permits. Marketable pollution permits are a combination of command and control and market-based technique to the task of restricting pollution emissions. Major polluters can bid for a permit that allows them to generate a fixed amount of pollution. These permits can be resold: The government can systematically decrease the amount of pollution permits available so that the total pollution emissions can be controlled.

On the basis of your understanding of the passage, answer ANY TEN questions from the twelve that follow. (1x10=10)

(i) The environmental pollution is increasing
a. due to felling of trees
b. due to burning of fossil fuels
c. people adding harmful products to the environment
d. All the above.

(ii) According to the passage, which one of the following is the largest carbon dioxide producing nation?
a. Australia **b.** The United Kingdom
c. The United States of America

d. None of the above.

(iii) Which one of the following is the current major issue?
a. COVID-19 **b.** Pandemic-19
c. Environmental pollution
d. None of the above.

(iv) According to the passage, which one of the following is a not a pollutant?
a. Noise **b.** Heat **c.** Smoke **d.** Dry leaves

(v) Which one of the following contributes maximum in releasing of carbon dioxide in the air?
a. Burning of fossil fuels
b. Use of plastic **c.** Industries
d. None of the above.

(vi) According to the passage, which one of the following is the one of the ways to deal with pollution?
a. To give out marketable pollution permits **b.** Public awareness
c. Heavy penalties **d.** None of the above.

(vii) Carbon dioxide is a gas that plants survive on. (True/False)

(viii) Find out the word from the passage which means the same as "produce."

(ix) Based on the understanding of the passage, choose the option that lists the main inherent causes of air pollution.
a. Industry – Industries are a major contributor to air pollution
b. Burning of Fossil Fuels.
c. Household and farming chemicals
d. Construction and Demolition.
e. Open burning of garbage waste.
1) a & b **2)** a & e **3)** b & c
4) c & d **5)** e & d

(x) According to the survey conducted every year, the burning of fossil fuels releases about ___ tons of carbon dioxide in the air.
a. 4.6 billion tons **b.** 2.3 billion tons
c. 5.6 billion tons **d.** 8.6 billion tons

(xi) Choose the option that lists statement that is NOT TRUE.
a. One of the ways to deal with pollution considering the problem is to not give out marketable pollution permits.
b. Marketable pollution permits area combination of command and control.
c. Major polluters can bid for a permit.
d. Government can systematically decrease the amount of pollution permits.

(xii) What is the message conveyed in the last paragraph of the passage?

LITERATURE

Q2. Read the extracts given below answer the questions that follow. (5 X 1)

(A) Kisa Gotami had only son, and he died. In her grief, she carried the dead child to all her neighbours, asking them for medicine, and the people said: "She has lost her senses. The boy is dead." As length, Kisa Gotami met a man who replied to her request, "I cannot give thee medicine for thy child, but I know a physician who can."

Poor Kisa Gotami now went from house to house, and the people pitied her and said, "Here is mustard seed; take it!" But when she asked, "Did a son or daughter, a father or mother, die in your family?", they answered her, "Alas! the living are few, but the dead are many."

a. How did Kisa Gotami feel when the people said she had lost her senses?
i) Rather shocked **ii)** Fairly displeased
iii) Quite embarrassed
iv) Poignant distress and bereavement.

b. Choose the option that lists the set of statement that are NOT TRUE according to the given extract.
(1) Kisa Gotami had lost her senses.
(2) Neighbours were making fun of Kisa Gotami.
(3) Mustard seeds can cure death.
(4) Kisa Gotami had lost her son.
(5) Kisa Gotami was depressed due to son's death.
(6) Kisa Gotami went begging for food carrying her dead son.
(7) People pitied Kisa Gotami.
a) 2, 3, 4 **b)** 5, 6, 7 **c)** 3, 5, 7 **d)** 2, 3, 6

c. Which word does "lost her senses" NOT correspond to?
i) Helpless **ii)** Confused
iii) Bewildered **iv)** Cognizant

d. Choose the characteristic displayed by the man when Kisa Gotami asked for help.
i) encouragement **ii)** indulgence
iii) embarrassment **iv)** Compassionate

e. The extract uses the phrase, "Alas! the living are few, but the dead are many" Which of the following expressions is incorrect with respect to the word "living"?
i) will **ii)** thing **iii)** being **iv)** woods

GRAMMAR

Q3. Choose the correct options to fill in the blanks to complete the note about the -Hornbill festival of Nagaland. (3 x 1)

Hornbill festival **(i)** festival of North-east India of Nagaland, which is home to 16 different tribes. The festival, **(ii)** culture but also diminishes the generation gap. It helps in bonding the different tribes of the state. The festivities **(iii)** of December every year. Celebrations begin in Kisama Heritage Village which is almost 12 km away from Kohima.

(i) **a.** is important **b.** are an important
c. was the important **d.** is an important

(ii) **a.** not only celebrates their
b. but only celebrates them
c. only celebrates their
d. not only celebrates there

(iii) **a.** begins in the first week
b. begin in the first week
c. began in the first week
d. begun in the first week

Q4. Fill in the blanks by choosing the correct options for ANY FOUR of the six sentences given below. (4 x 1)

(i) They ____ borrow from the bank to start their business.
a. hadn't to **b.** need not
c. shan't to **d.** might not to

(ii) It ____ a magician showing a trick.
a. must be **b.** musn't be
c. needn't be **d.** shan't be

(iii) After the examination, I _____ able to go home for a week.
a. should not be **b.** shall be
c. musn't be **d.** needn't be

(iv) Neither of these two boys ____ scored well.
a. has **b.** is **c.** were **d.** are

(v) ___ skydiving class is ____ unique gift idea for adventurous co-workers.
a. a; an **b.** an; a **c.** a; a **d.** the, an

(vi) She ____ sitting in the waiting room ___ 5:30 p.m.
a. has been; until **b.** has been; since
c. had been; for **d.** has been; till

WRITING

Q5. Attempt the following in 100-120 words (5 marks)

You are Satish Khurana, a librarian in a prestigious public school. Write a letter in 150-200 words to Angel Publications, Mall Road, Delhi, placing an order for some books for the school library you had ordered telephonically. Share the reason for being unable to pick up the goods in person. Include all the relevant details such as the name of books and quantity, address details, the convenient time slot, etc.

Q6. Attempt the following in 100-120 words (5 marks)

Write an analytical paragraph in about 150-200 words on the topic "Books Are Our Best Friend." You may take the help of the given hints

■ **Hints:** books enlighten, cheer, encourage, break loneliness, never leave in need, a welcome escape from boredom

LITERATURE

Q7. Answer ANY TWO questions in 20-30 words each, from (A) and (B) respectively. (2 x 4=8)

(A) ANY TWO (2 x 2=4)
i. How did Mandela's "hunger for freedom" change his life?
ii. What are the "tokens" that the poet says he may dropped long ago and which the animals have kept from him.
iii. Why is Coorg called the land of rolling hills? What is Kodagu? Why is it famous for?

(B) ANY TWO (2 x 2=4)
i. Why did Valli rebuke the elderly woman on the bus?
ii. Do you think the lawyer was gullible? How could he have avoided being taken for a ride?
iii. "Dowry is a negation of a girl's dignity." Prove this statement in the light of the story "Bholi" How can this evil be eradicated from our society?

Find the right code to click

EXAMS R fun

MOCK PAPER
SUBJECT: COMPUTER SCIENCE (CBSE) (2020-21)
CLASS: XII, MARKS: 70

Paper set by Yogini Rajesh Pathak, PGT (Comp Science), Udgam School, Ahmedabad

PART-A (SECTION-I)

Select the most appropriate out of the options if any given for each question. Each question carries one mark.

Q1. Find the invalid identifier from the following
a) Name **b)** true
c) 3rdName **d)** L_Name [1]

Q2. Given the lists L=[9,11,26,82,52, 72,101,2], write the output of print(L[2:5]) [1]

Q3. Write a statement in Python to perform the following operations:
• To open a text file "BOOK.TXT" in read mode
• To open a binary file "BOOK.bin" in write mode [1]

Q4. Identify the valid relational operator in Python from the following.
a) ** **b)** < **c)** ? **d)** or [1]

Q5. Suppose a tuple X is declared as X = (10, 12, 43, 39), which of the following is incorrect?
a) print(X[2]) **b)** X[4]=-12
c) print(min(X)) **d)** print(len(X))[1]

Q6. Write a statement in Python to declare a variable Day to store a dictionary whose keys are S, M and T and values are Sunday, Monday and Tuesday respectively. [1]

Q7. A tuple is declared as
T = (2,5,6,9,8)
What will be T+T ? [1]

Q8. Name the mathematical function / method that is used to return a square root value of a number. [1]

Q9. Name the protocol that is used for video conferencing. [1]

Q10. Deepika wants to remove all rows from the table BANK. But she needs to maintain the structure of the table. Which command is used to implement the same? [1]

Q11. Name The transmission media best suitable for connecting to hilly areas. [1]

Q12. In the stack, if user tries to remove element from the empty stack then it is called as _____. [1]
a. Empty Collection
b. Overflow of stack
c. Garbage Collection
d. Underflow of Stack

Q13. Find the output of following code. [1]

```
str1='Welcome'
print(str1[:6]+'PYTHON')
```

Q14. Which of the following types of table constraints will prevent the entry of duplicate rows?
a) Check **b)** Foreign key
c) Primary Key **d)** NULL [1]

Q15. _____ cable transmits the signal in form of light. [1]

(SECTION-II)

Both the case study-based questions below are compulsory. Each Sub-question carries 1 mark.

Q16. Consider the following table.
Database name: School
Table: Result
Attributes of table are as follows:
Adno - Numeric
SName - Character of size 20
Percentage - Numeric
Clsection - Character of size 5
Stream - Character of size 10

Table : Result

Adno	SName	Percentage	Clsection	Stream
1001	Sushant	90.2	12A	Science
1002	Vaidyanath	80.5	12B	Humanities
1003	Miara	68.9	12B	Science
1004	Niara	96.0	12A	Commerce

(a) Identify the attribute best suitable to be declared as a primary key. [1]

(b) Write the degree and cardinality of the table Result. [1]

(c) Insert a row with the following data into the attributes Adno, SName and Clsection respectively in given table Result. [1]
Adno=1006, SName="Amit" and Clsection="12C"

(d) Now Admin wants to display the structure of the table RESULT, i.e., name of the attributes and their respective data types, size that he has used in the table. Write the query to display the same. 1

Q17. Kirtan of class 12 is writing a program to read a CSV file "student.csv" which will contain student name and class for few students. He has written the following code. As a programmer, help him to successfully execute the given task.

```
import _________                #Line 1
f=open("student.csv","____")    #Line 2
Reader=csv._______              #Line 3
for r in Reader:
   print(r[0],r[1])
f._________                     #Line 4
```

(a) Name the module he should import in Line 1. [1]

(b) In which mode, Kirtan should open the file to read data from the file? [1]

(c) Fill in the blank in Line 3 to create object to read the data from a csv file. [1]

(d) Fill in the blank in Line 4 to close the file. [1]

PART-B (SECTION-I)

Q18. Evaluate the following expressions: [2]
a) 12 % 3 ** 4 // 5 + 6
b) 20 > 3 or 5 == 5 and not 18 > 30

Q19. Differentiate between Viruses and Trojan Horse in context of networking and data communication threats. 2

Q20. Expand the following terms:
a) URL **b)** SMTP **c)** Wi-Fi **d)** IPR [2]

Q21. Differentiate between actual parameter(s) and a formal parameter(s) with a suitable example for each. [2]

Q22. Rewrite the following code in Python after removing all syntax error(s). Underline each correction done in the code. [2]

```
for Name in [Amar, Shveta, Parag]:
    IF Name[0]='S':
        Print(Name)
```

Q23 What are the possible outcome(s) after execution of the following code? Also specify the maximum and minimum values that can be assigned to variable PICK.[2]

```
import random
PICK=random.randint(0,3)
CITY=["DELHI","MUMBAI","CHENNAI","KOLKATA"]
for I in CITY:
    for J in range (1,PICK):
        print(I,end="")
    print()
```

(i) DELHIDELHI MUMBAIMUMBAI CHENNAICHENNAI KOLKATAKOLKATA	(ii) DELHI DELHIMUMBAI DELHIMUMBAICHENNAI
(iii) DELHI MUMBAI CHENNAI KOLKATA	(iv) DELHI MUMBAIMUMBAI KOLKATAKOLKATAKOLKATA

Q24. What do you understand by Primary Key in a table? Give a suitable example of Primary Key in a table containing some meaningful data. [2]

Q25. Differentiate between *fetchmany()* and *fetchall()* methods with suitable examples for each. [2]

Q26. Write the full forms of DDL and DML. Write any two commands of DDL in SQL. [2]

Q27. Find and write the output of the following Python code: [2]

```
def Change(P,Q=10):
    P=P+Q
    Q=P-Q
    print(P,"#",Q)
    return (P)
R=500
S=300
R=Change(R,S)
print(R,"#",S)
S=Change(S)
```

(SECTION-II)

Q28. Write a MySQL-Python connectivity program to retrieve data and display, one record at a time, from city table for employees with id less than 10. [3]

Q29. Write a method/function **DISPLAYWORDS()** in python to read a text file **STORY.TXT**, and display those words, which are less than 4 characters long. [3]

Q30. Write an output for SQL queries (i) to (iii), which are based on the table: **STUDENT** given below: [3]

Table : **STUDENT**

RollNo	Name	Class	DOB	Gender	City	Marks
1	Nanda	X	06-06-1995	M	Agra	551
2	Saurabh	XII	07-05-1993	M	Mumbai	462
3	Sanal	XI	06-05-1994	F	Delhi	400
4	Trisla	XII	08-08-1995	F	Mumbai	450
5	Store	XII	08-10-1995	M	Delhi	369
6	Marisla	XI	12-12-1994	F	Dubai	250
7	Neha	X	08-12-1995	F	Moscow	377
8	Nishant	X	12-06-1995	M	Moscow	489

(i) Select count(*), City from STUDENT group by city having count(*)>1;

(ii) Select max(DOB),min(DOB) from STUDENT;

(iii) Select Name,Gender from STUDENT where City="Delhi";

Q31. Write a function in Python PUSH(Arr), where Arr is a list of numbers. From Arr list, function must push all numbers divisible by 6 into a stack implemented by using a list. Display the stack if it has at least one element, otherwise display appropriate error message.[3]

(SECTION-III)

Q32. Software Development Company has set up its new centre at Raipur for its office and web-based activities. It has 4 blocks of buildings named Block A, Block B, Block C, Block D. [5]

Block	Number of Computers
A	25
B	50
C	125
D	10

Shortest distances between various Blocks in meters:
Block A to Block B - 60 m
Block B to Block C - 40 m
Block C to Block A - 30 m
Block D to Block C - 50 m
Block B to Block D-30 m
Block A to Block D-20 m

(i) Suggest the most suitable place (i.e. block) to house the server of this company with a suitable reason.

(ii) Suggest the type of network (LAN,MAN,WAN) to connect all the blocks with suitable reason.

(iii) The company is planning to link all the blocks through secure and high-speed wired medium. Suggest a way(LAYOUT) to connect all the blocks.

(iv) Suggest the most suitable wired medium for efficiently connecting each computer installed within each block out of the following network cables:
• Coaxial Cable • Ethernet Cable
• Single Pair Telephone Cable.

(v) Suggest the device to be used to connect all computers within each block in the network.

Q33. Write SQL queries for (i) to (v), which are based on the table: **STUDENT** given in the question 30: [5]

(i) To display the records from table student in alphabetical order as per the name of the student.

(ii) To display Class, Dob and City of student whose marks are in range 450 to 551.

(iii) To display Class and total number of students for each class with total number of students more than two.

(iv) To increase marks of all students by 20 whose class is "XII".

(v) To insert new tuple with suitable data in table student.

Q34. A binary file "student.dat" has structure [RNo, Name, Stream, Marks]. Use pickle module and [5]

i. Write a user defined function *CreateFile()* to input data for a record and add to student.dat.

ii. Write a function *CountRec (Stream)* in Python which accepts the Stream name as parameter, count and return number of students in the given stream stored in the binary file "student.dat".

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.

CLICK HERE: PAGE 3 AND 4

"A man who carries a cat by the tail learns something he can learn in no other way." **Mark Twain**

Beginning the journey of learning in an alphabetical order, Times NIE takes you through one concept from each subject every fortnight.

TEACHERS, IF YOU HAVE A CONCEPT THAT CAN CHANGE A CLASSROOM, SHARE IT ON toinie175@gmail.com WITH YOUR PHOTOGRAPH

CLASSROOMS TO EXPERIENCE ZONES

GEOGRAPHY

CANYON

A canyon is a deep, narrow valley with steep sides. 'Canyon' comes from the Spanish word cañon, which means 'tube' or 'pipe.'

WHAT CREATES CANYONS: The movement of rivers, the processes of weathering and erosion, and tectonic activity create canyons.

DID YOU KNOW? Canyons are like silent journals of an area's history over thousands or even millions of years. By studying the exposed layers of rock in a canyon wall, experts can learn about how the climate changed, what kind of organisms were alive at certain times, and even how the canyon may change in the future.

BUILD YOUR OWN CANYON

TEACHER PROMPT: Canyons can be so massive and deep that it seems like they've been around forever. But many of them began as layers of sediment that were gradually carved down by the powerful natural force of water. In this experiment, see how water completely transforms the structure of sediments within your miniature landscape.

MATERIALS

- Clear plastic container (like ones used for food storage)
- Sand (almost enough to fill your container)
- Food colouring (at least four colours is best)
- Sandwich bags
- Water

STEPS

- Divide the sand in five separate bags. The amount may vary. Each collection of sand will represent a different rock layer in the canyon.
- Add several drops of food colouring into each bag so that each collection of sand is a different colour.
- One by one, pour each bag of sand into the container to create layers that are about 2.5cm thick. Then, look through the side of the container: the unique pattern of stacked sediments is called strata.

- Now, fill a new bag with water, then snip off one of the bottom corners and allow the water to pour over the sand in the container. Lift or tilt the container slightly so that a 'river' can cut a unique path down through the sand. Check out your canyon!

WHAT TO WATCH OUT FOR?

- How do the strata look on the inside of the canyon walls versus on the outside?
- Refill the water bag and make it 'rain' on top of the canyon. How does the rain make its way down to the river at the base of the canyon? Does erosion occur?

CHEMISTRY

CAPILLARY ACTION

Capillary action describes the spontaneous flow of a liquid into a narrow tube or porous material. Capillary action is caused by the cohesive forces of the liquid and the adhesive forces between the liquid and tube material. These forces pull the liquid into the tube.

DID YOU KNOW? Water moves through the plant by means of capillary action. Capillary action occurs when the forces binding a liquid together (cohesion and surface tension) and the forces attracting that bound liquid to another surface (adhesion) are greater than the force of gravity.

SETTING UP THE RAINBOW SCIENCE EXPERIMENT

SUPPLIES NEEDED:

- Printable walking water recording sheets (button to download at the bottom of the post)
- Small plastic cups or glasses
- Paper towels (*read my tips below for picking the right ones)
- Food colouring in primary colours
- Water

1 Place 5 cups in a row and pour water in all the cups. Cups should be about 3/4 full.

2 Add 5 drops of red food colouring to the 1st cup, 5 drops of yellow colour to the 3rd cup and blue food colouring to the 5th cup.

3 Place the tissue paper strips connecting all the five cups as shown below. Wait and watch as the primary colours make the secondary ones in the 2nd and 4th cups.

Experiment conducted with 5 cups in pic

TEACHER PROMPT: QUESTION TO ASK

- What do you think will happen to the water?
- What is happening now?
- Why do you think the colours are changing?

EXPLAIN THE SCIENCE BEHIND IT

The coloured water travels up the paper towel by a process called capillary action. Capillary action is the ability of a liquid to flow upward, against gravity, in narrow spaces. This is the same thing that helps water climb from a plant's roots to the leaves in the tree tops.

Paper towels, and all paper products, are made from fibers found in plants called cellulose. In this demonstration, the water flowed upwards through the tiny gaps between the cellulose fibers. The gaps in the towel acted like capillary tubes, pulling the water upwards.

The water is able to defy gravity as it travels upward due to the attractive forces between the water and the cellulose fibers.

LANGUAGE

CONFLICT

By Kartik Bajoria
Jaipur-based
Communication Skills
Educator & Writer

While the literal meaning of the word 'conflict' is to have a disagreement, the word brings in interesting 'literary' significance. Suppose you wanted to read this newspaper on your laptop but the battery was low, that would mean a 'conflict' has arisen in the situation. An impediment preventing you from accomplishing your desired result; in this case, the laptop not containing enough charge. This kind of extraneous, physical problem, is termed, an external conflict.

A conflict in literature, however, can be much more profound and personal. Suppose you had to do something risky to save someone but your fear of taking risks prevented you from going ahead; this would signify an 'internal conflict'. In fiction writing and literature, the characters that face deep inner conflicts make for the most interesting, identifiable, arresting characters. A young working professional unable to find love in his life because of his blind hunger for money and career growth — an example of a classic inner conflict that will make the character compelling. Through history, if you dissect the most-iconic characters in literature, you will find they are deeply-flawed people with at least one striking conflict within. Within the construct of a story, a plot usually comprises a combination of conflicts that presents different situations for the story to move forward.

ACTIVITIES: Ask students to enact an act from a Shakesperean play and show a scene of conflict: internal and external; Ask students to write poems expressing conflicts

MATHS

CALIBRATION

Sandeep Srivastava, educator for 20 years, specialises in making Maths easy and fun

Counting is how we precisely quantify things because '1', the unit of counting, is very definite. Let's count (erasers) in

You couldn't count the erasers ? Two of the erasers didn't match the unit of counting ? Indeed, we need another way of counting when the things to be counted include things smaller than the unit of counting, in this case and .

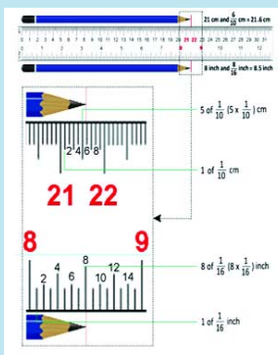
Measurement is what we do to quantify things smaller/less than the chosen unit. We calibrate the chosen unit to measure such quantities. Calibration is the C of math. To calibrate a unit means creating a new unit out of the unit to precisely measure something. For example, metre as a unit may be calibrated to accurately measure 1 dm, 1 cm, 1 mm, and even 1 foot and 1 inch (lengths less than 1 metre).

UNIT IS UNIVERSAL

Nothing can be quantified without using a unit. Everything is a multiple of the chosen unit of counting.

WHAT'S MEASUREMENT?

Measurement is counting the number of units that exactly equals a given physical characteristic of things.



UNIT IS AT THE HEART OF MEASUREMENT

Called the unit fraction, it's the 1 part of the many equal parts of a unit. 1/10th cm and 1/16th inch are common unit fractions to measure less than 1 cm and 1 inch. Units of measure could be any equal part of a chosen unit.

UNIT OF COUNTING VS UNIT OF MEASUREMENT

Measurement is also counting but the unit will almost always involve a fractional unit too; counting is always about just one unit.

COUNTING VS MEASUREMENT

Together they complete the means to quantify everything.

MEASUREMENT SUPPLEMENTS COUNTING

Most things in everyday living require the use of a fractional unit to completely and exactly measure, and express, physical qualities; no one may be 'exact' 6-foot-tall, it's a fraction of inch more, or less. Try measuring the length, weight, space (area, volume), etc. of anything, or speed, acceleration, etc. of a motion. None of the measurements will be complete without using a well-chosen fractional count of the unit used.

MEASUREMENT COMPLEMENTS COUNTING

Measurement and counting exclusively create numbers – by counting the quantity of given things that match the chosen unit, or by measuring to count the units and fractional units that specifically equal a physical quality.

Measurement is the source of fractions

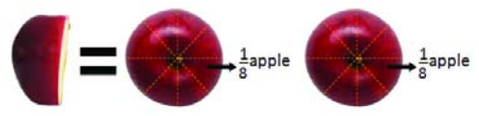
Above all, fractional numbers, the rational numbers — the real world's quantities — are what we get when we measure things. The only way to know half an apple is to measure that it's half of 1 apple.

FRACTIONAL UNITS GIVE NATURAL NUMBER COUNTS

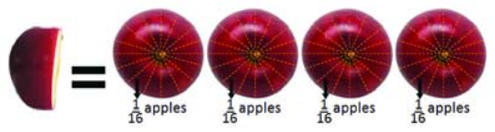
Importantly, fractional units are so chosen that the measure of the fractional part is:

Natural number x Fractional unit

We best not create more fractional part while measuring fractional parts.



1/4 apple = 2 of 1/8 apple



1/4 apple = 4 of 1/16 apple

It can't be 2.5 of 1/10 apple, or 4.5 of 1/18 apple.

Next, we will discover all about numbers that counting and measurement produce.

HISTORY

COLD WAR

Have you ever worked on a project with someone you didn't like? This was like the relationship the USA and the USSR (or the Soviet Union) had during the World War II. Both countries agreed Germany and Japan were dangerous countries, and needed to be stopped, but once they stopped them, the USA and USSR. could not agree how to work together anymore.

WORLD WAR II ENDS

During the World War II, Germany and Japan were invading other countries. Once the war ended and they were defeated, the invaded countries, as well as Germany and Japan, were left in ruins and needed to be rebuilt. The US wanted to create governments in these countries based on democracy.

THE COLD WAR

This conflict between the US and the Soviet Union is known as the Cold War because neither country ever directly attacked each other. This was because each country had nuclear weapons. During the Cold War, the US and the Soviet Union competed to see which country could develop the most-destructive weapons. This competition came to be known as the Arms Race.

ACTIVITIES

- Ask students to collect photos of leaders associated with the Cold War.
- Prompt students to read through different sources to decide who was to blame for the Cold War.
- Create a scrap book of the World War facts.

COMPUTER

CODING

ASCII BINARY ALPHABET

A	1000001	N	1001110
B	1000010	O	1001111
C	1000011	P	1010000
D	1000100	Q	1010001
E	1000101	R	1010010
F	1000110	S	1010011
G	1000111	T	1010100
H	1001000	U	1010101
I	1001001	V	1010110
J	1001010	W	1010111
K	1001011	X	1010111
L	1001100	Y	1011001
M	1001101	Z	1011010

Coding is basically the computer language used to develop apps, websites and software. Without it, there would have been no Facebook on our smartphones, browser we choose to view our favourite blogs on PC, or even the blogs themselves. It all runs on a code.

HOW TO CODE YOUR NAME

Using the ASCII code, anyone can write their name in binary. In fact, you can write your name using the numbers themselves, or, you create a cool keychain, bracelet or necklace.

To create a keepsake using binary code, assign a separate colour for 0, 1, and spaces. This is a great way to learn about how computers process numbers and symbols. What may seem like an ordinary bracelet, is actually a sequence that spells out a complete thought. Did you know that braille is another form of binary code? So is Morse code! So, go coding.

"I kept telling myself this word, process.
Focus on my process, don't care about the result."
Rory McIlroy, professional golfer

WHY ENGLAND'S T20I SIDE IS A TOUGH NUT TO CRACK

England may have lost the Test series badly, unable to put up any resistance, but the T20 International side that will take the field in Ahmedabad at the Narendra Modi Stadium from Friday in the five-match series is likely to give India a tough fight

"We've been in great form in T20 cricket. We've had some confidence along the way and picked up some serious wins over the last two years, which is great. But also we need to develop our game and go into a World Cup with as few weaknesses as possible. I think having the strongest squad available to us, which doesn't really happen that often, allows us to play around with any plans we might foresee using in the World Cup as well.
EOIN MORGAN, England's limited-overs skipper

English players have proved their mettle in IPL

- Besides being packed with white-ball cricket specialists, the 16-member T20I squad comprises 13 players who have experience in the Indian Premier League with the likes of Ben Stokes, Jos Buttler, Jofra Archer, Jonny Bairstow and Eoin Morgan being the match-winners in their respective sides. England are among the toughest sides in white-ball cricket primarily because they have some big-hitters that are in huge demand in the T20 franchise leagues, especially IPL.
- In many ways, they have surpassed the Australians and South Africans in giving hard-hitters and X-factor players for the IPL sides. It came as no surprise that many top English players were retained by their respective IPL franchises ahead of this season and even among those released, Moeen Ali was bought for as big a sum as ₹7 crore.
- All-rounder Sam Curran, who represents Chennai Super Kings had admitted that IPL in 2020 in UAE helped him become a better player. "I definitely felt I came back a much better player from the IPL last year. I think it's benefited my game," said Curran.

Even Livingstone, just 2 matches old, got picked up in IPL

- Only Dawid Malan, Adil Rashid and Reece Topley among the squad of 16 have no IPL experience but Malan too has a contract this year. The left-handed batsman is the world's top T20I batsman and it was no surprise that Punjab Kings splurged ₹1.5 crore on him.

Morgan cleared the air regarding where all-rounder Ben Stokes will bat in the upcoming five-match series against India after his IPL franchise Rajasthan Royals used the English batter as an opener. "I'm happy with the structure I have. Ben has done really well for us there (in the middle order) and hopefully, that will continue."

- England players being in huge demand was also exemplified well with batting all-rounder Liam Livingstone being picked at the auction this year. The 27-year-old, who has played just two T20 Internationals back in 2017, was bought by Rajasthan Royals for this season following a brief stint in 2019.
- He had a great Big Bash League where he scored 426 runs and hit 28 sixes for Perth Scorchers. That helped him return to the England side after well over three years as well as make an IPL comeback after two years. He had played just four games in 2019 but he exemplifies England players' growing interest in the T20 format.
- "I am a different player and a different person from back then (2017). The experience that you get by playing franchise cricket around the world is pretty valuable when you come back to playing international cricket," said Livingstone. "For the first time in my career, I feel I belong to this environment. I was pretty immature back then. I am back to enjoying my cricket," the opening batsman added.

"We all know the benefits of IPL. It's a huge tournament and monetary rewards are obvious and also the experience you gain and it has its pluses too. And it's obvious in the upturn of white ball game in England, and number of players participating in it and how beneficial it is to all of us. It is also a big feather in the cap for the England side that 12 players were in demand in the world's biggest tournament.
JOS BUTLER, England batsman

Photo: GETTY IMAGES

WILL VIRAT KOHLI RETURN TO FORM?

Kohli failed to impress with the bat in the recently concluded four-match Test series as he accumulated just 172 runs in six innings, including two half-centuries

As the focus shifts towards white-ball cricket after India clinched the Test series 3-1 to reach the World Test Championship (WTC) final, former India batsman VVS Laxman feels that skipper Virat Kohli should play freely and express himself against England bowlers in the T20I series. Kohli had an ordinary Test series against England. Things will not be any different in the white-ball format as Jofra Archer, Mark Wood, Ben Stokes, Moeen Ali and Adil Rashid will look to add pressure on him to dismiss him cheaply.

NOT NECESSARY FOR VIRAT TO PLAY THE ANCHOR ROLE

"I definitely think it's a strong fast bowling unit as far as England is concerned because they have got a lot of variations; they've got pace in the form of Mark Wood and Archer. Good death bowling options in the form of Jordan; Ben Stokes can be their all-rounder. But their spin department looks a little weak compared to their fast bowling department. But as such, I feel that Kohli is a class batsman, he's an outstanding batsman and with depth and quality in the Indian batting line-up, I think he should go and express himself.

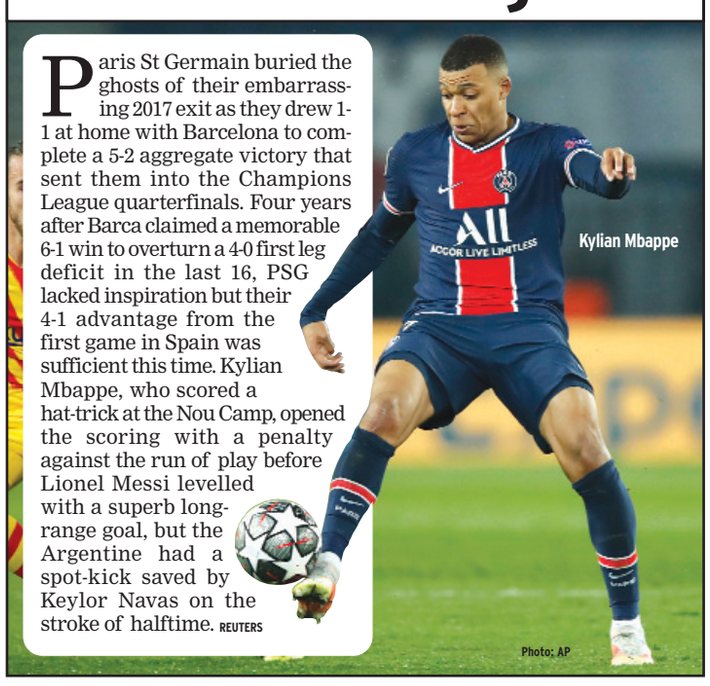
It's not necessary for him to play the anchor role, because we know that he's a stroke player. If he plays with positive intent, if he plays his high percentage shots, not only will his strike rate be high, but his consistency also will be there for everyone to see, he's a match-winner. With Rohit Sharma and K L Rahul opening the innings, and then you have got Shreyas Iyer, Hardik Pandya, Rishabh Pant, I think they have a lot of depth.

So, Kohli should go out and express himself and play with a lot of freedom, and that's when he's very dangerous.

It's a great opportunity for Team India because you are playing five matches in your home condition, followed by IPL and Asia Cup before the T20 World Cup. It's a great opportunity to test your bench, which is why I feel the squad is very formidable, as far as the Indian squad is concerned.
VVS LAXMAN, former India cricketer

Photo: GETTY IMAGES

CL: PSG bury Barcelona demons to reach last eight



Paris St Germain buried the ghosts of their embarrassing 2017 exit as they drew 1-1 at home with Barcelona to complete a 5-2 aggregate victory that sent them into the Champions League quarterfinals. Four years after Barca claimed a memorable 6-1 win to overturn a 4-0 first leg deficit in the last 16, PSG lacked inspiration but their 4-1 advantage from the first game in Spain was sufficient this time. Kylian Mbappe, who scored a hat-trick at the Nou Camp, opened the scoring with a penalty against the run of play before Lionel Messi levelled with a superb long-range goal, but the Argentine had a spot-kick saved by Keylor Navas on the stroke of halftime. REUTERS

Kylian Mbappe

Photo: AP

QUIZ TIME!

Q1. In which year did Badminton become a part of the Summer Olympics, with the men's and women's events added to the roster?
a) 1984 Los Angeles Oly ❑
b) 1988 Seoul Oly ❑ c) 1992 Barcelona Oly ❑
d) 1996 Atlanta Oly ❑

Q2. In the year 2010, against which country did Muttiah Muralitharan play his last Test?
a) India ❑ b) West Indies ❑
c) Australia ❑ d) England ❑

Q3. In which year did Lionel Messi become the captain of FC Barcelona?
a) 2016 ❑ b) 2019 ❑ c) 2017 ❑ d) 2018 ❑

Q4. Ashleigh Barty won the 2019 Women's French Open title. Who was the runner-up?
a) Victoria Azarenka ❑
b) Marketa Vondrousova ❑
c) Garbine Muguruza ❑ d) Petra Kvitova ❑

Q5. Prakash Padukone's first major international title came when he won the Commonwealth Games men's singles gold. In which year did he win it?
a) 1977 ❑ b) 1979 ❑ c) 1978 ❑ d) 1975 ❑

Q6. After Brett Lee, who took the fastest 350 ODI wickets?
a) Muttiah Muralitharan ❑ b) Waqar Younis ❑
c) Glenn McGrath ❑ d) Wasim Akram ❑

Q7. During which games did Saina Nehwal play her maiden Olympics?

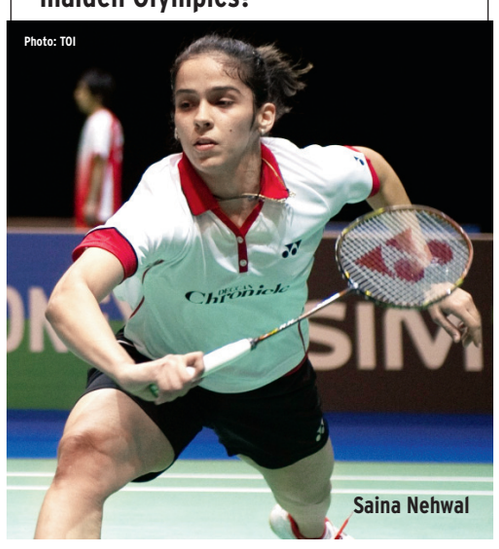


Photo: TOI

Saina Nehwal

a) 2016 Rio Oly ❑ b) 2012 London Oly ❑
c) 2008 Beijing Oly ❑ d) 2004 Athens Oly ❑

Q8. Which of the following players has made the fastest 5000 runs in One Day Internationals?
a) Virat Kohli ❑ b) Hashim Amla ❑
c) Viv Richards ❑ d) David Warner ❑

Q9. In which year did Naomi Osaka win her maiden US Open title?
a) 2018 ❑ b) 2019 ❑ c) 2020 ❑ d) 2021 ❑

Q10. During which games did Pullella Gopichand make his only Olympic appearance?
a) 2004 Athens Games ❑
b) 1992 Barcelona Games ❑
c) 1996 Atlanta Games ❑
d) 2000 Sydney Games ❑

Q11. After Rashid Khan, who took the fastest 100 ODI wickets?
a) Mitchell Starc ❑ b) Saqlain Mushtaq ❑
c) Shane Bond ❑ d) Mustafizur Rahman ❑

Q12. How many FIFA Club World Cup titles has FC Barcelona won?
a) One ❑ b) Two ❑ c) Three ❑ d) Four ❑

ANSWERS: 1 c) 1992 Barcelona Games
2 a) India 3 d) 2018 4 b) Marketa Vondrousova
5 c) 1978 6 b) Waqar Younis
7 c) 2008 Beijing Olympics 8 b) Hashim Amla
9 a) 2018 10 d) 2000 Sydney Games
11 a) Mitchell Starc 12 c) Three