

TECHNOTHLON

Question paper for **Junior squad** (classes 9th-10th)

TEAM DETAILS:

Names of Candidates 1. _____
2. _____
3. _____

Team Registration No: _____

Name of School: _____

Place: **State** _____

City _____

INSTRUCTIONS:

1. Candidates must **fill the Team Details** above before starting to attempt the questions.
2. This Question Paper consists of **6 parts** and carries a total of **100 Marks**.
3. **NO Question** contains negative marking.
4. Each section contains details on **how to attempt the question** of that section and the **marks that they carry**.
5. **ALL ANSWERS** must be written in the **answer space provided at the end of this booklet**. No extra space will be provided.
6. **ALL ANSWERS** must be **clear and legible**. In case of any ambiguity, the decision of the evaluator is final.
7. In case an answer has to be changed, **neatly cross out the initial answer** before writing the next one.

A - Comprehension

This section consists of 5 questions. Each question carries **one mark**.

1 x 5 = 5 Marks

1. A great scientist in search of a new chemical discovered a chemical X on this very day many many years ago. In his journal, he reported the following observations about chemical X.

1.1 The chemical X is taken up by the plants and comes out of the leaves through the _____.

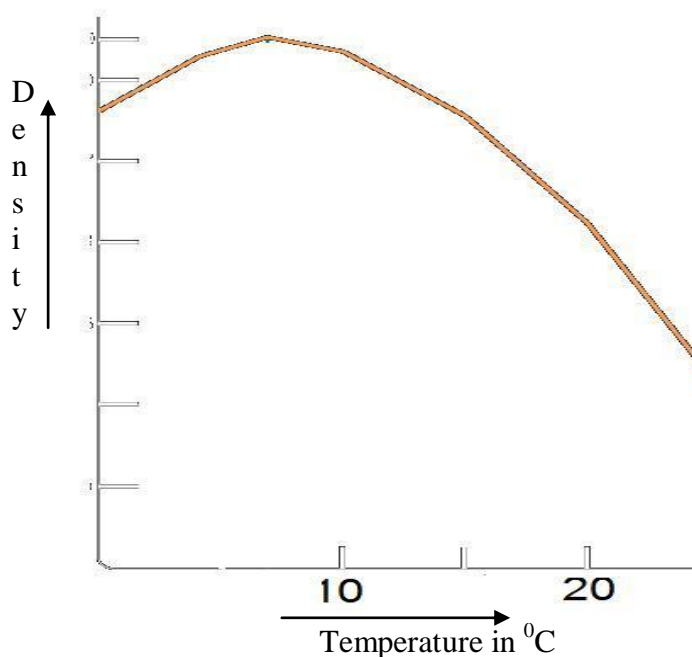
1.2 Planet _____ has maximum abundance of this chemical X in the Solar System.

1.3 The planet appears mostly _____ in colour, due to the presence of this chemical X.

1.4 Combustion of _____ gas produces only chemical X.

1.5 Chemical X is commonly called as _____.

Hint: The chemical X has the following density versus temperature relation:



C - Play with Numbers

This section consists of 7 questions. Each question carries **five marks**.

5 x 7 = 35 Marks

1. There are 8 coins out of which 7 weigh the same and the other one weighs lesser. Given a physical balance, what is the least number of weighing you need to find the odd one?
2. In a race course there are 5 tracks .In how many minimum number of chances can you find out the fastest three horses, if there were 25 horses initially.
3. In a factory there are 7 machines that produces tablets(medicines).Out of the 7 ,6 of them are produce tablets of exact weight, the other one produces tablets that weigh 1gm less. All the machines are numbered from 1 to 7.In how many minimum chances (chances refers to the number of times you use the balance) can you find out the faulty machine if you are given a balance that displays the weight digitally.
4. Find the missing number:

2	6	12
63	99	143
420	?	506

5. I have a number of roses for sale. The first buyer bought half of my roses then I gave him additional one for free. The second buyer bought half of the remaining roses then I gave him additional one also for free. The third buyer also bought half of the remaining roses then I gave him additional one also for free, this time all of my roses have been sold out. How many roses did I have?

6. A teacher of mathematics used an unconventional method to measure time for a test lasting 15 minutes. He used just a sand-glass, which spills in 7 minutes and a second sand-glass, which spills in 11 minutes. During the whole time he turned sand-glasses only 3 times. Explain how the teacher measured 15 minutes.

7. What 5-digit number has the following features? If we put numeral 1 at the beginning, we get a number three times smaller, than if we gave the numeral 1 behind this number.

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D-Miscellaneous logic

This section consists of 10 questions. Marks allotted to each question are written alongside the question.

25 Marks

1. A cone when looked from the top looks like-_____ **2 Marks**
2. There is a room with 3-bulbs inside and the switches are outside the room. You make any combination of three switches and enter room only once. How do you find out the respective switches for these three bulbs. **2 Marks**
3. Rearrange the following letters to make the name of a famous personality- Hall, tie, ford!
(Any punctuation is only there to throw you off.) **3 Marks**
4. A man and his son met with a car accident. The father dies on the scene, but the child is rushed to the hospital. When he arrives the surgeon says, "I can't operate on this boy, he is my son!" How can this be? **2 Marks**
5. A cable, 16 meters in length, hangs between two pillars that are both 15 meters high. The ends of the cable are attached to the tops of the pillars. At its lowest point, the cable hangs 7 meters above the ground. How far are the two pillars apart? **3 Marks**
6. Two trains starting at same time, one from Bangalore to Mysore and other in opposite direction arrive at their destination 1 hr and 4 hours respectively after passing each other. How much faster is one train from other? **3 Marks**
7. Rearrange the following to make the name of a noted personality -
Uncrown this chill.
(Any punctuation is only there to throw you off.) **2 Marks**
8. A blind beggar had a brother who died. But the person who died did not have a brother! How was the blind beggar related to the person who died? **2 Marks**

9. The legendary king Midas possessed a huge amount of gold. He hid this treasure carefully in a building consisting of a number of rooms. In each room there were a number of boxes; this number was equal to the number of rooms in the building. Each box contained a number of golden coins that equalled the number of boxes per room. When the king died, one box was given to the royal barber. The remainder of the coins should be divided fairly between his sons. What is the maximum number of sons he can have?

3 Marks

10. There are two candles of equal lengths and of different thickness. The thicker one lasts of six hours. The thinner 2 hours less than the thicker one. Ramesh lights the two candles at the same time. When he went to bed he saw the thicker one is twice the length of the thinner one. How long ago did Ramesh light the two candles?

3 Marks

E-Practical Observations

This section consists of 5 questions. Each question carries one mark.

5 x 1 = 5 Marks

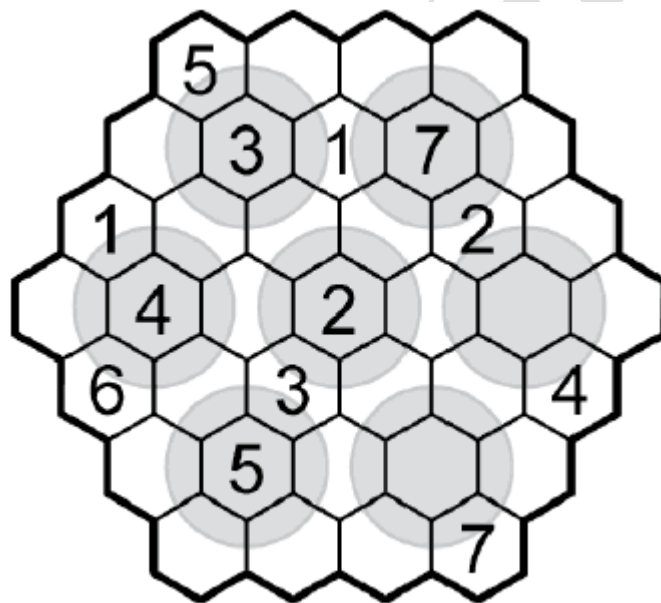
1. We know that when few drops of oil are put in a jug of water, the oil floats on water. What happens to oil when a jar having few drops of oil is filled completely with water?
2. A completely filled narrow necked bottle of water has to be emptied at the quickest possible rate. What should be the angle of inclination of the bottle with respect to horizontal?
3. In winter, why is iron felt colder than wood when touched?
4. Two cardboards are hung vertically from a ceiling. Explain what happens when a gust of air is passed through the two cardboards?
5. What is the percentage of lead in the lead pencil you are using?

F- Bee Hive

This section contains one question with 15 Marks.

The Rules go as follows:

- There are 21 rows (7 in each direction).
- Place the digits 1 to 7 in the empty cells so that there is no repetition of digits in any of the 21 rows.
- No digit should be repeated in each of the seven groups indicated by the highlighted circles



TECHNOATHLON