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** _____

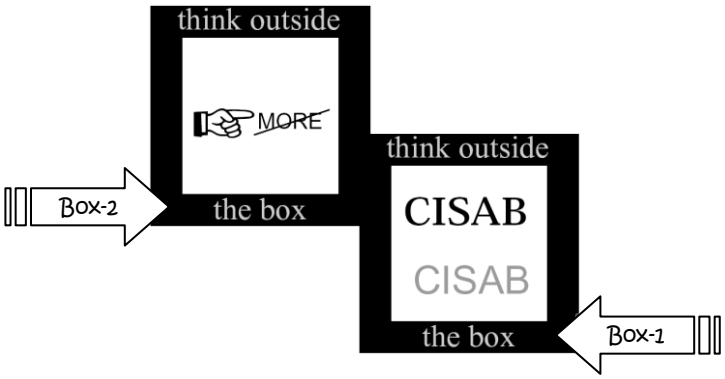
City _____

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.

Encircle

1. Which car shared its name with a clan of Japanese fighters?
2. You are running in a race and you overtake the second place runner, what position are you in now?
3. The more you take away from me, the bigger I become. What am I?
4. How many month(s) have 28 days?
5. In which country one should wait for the hostess to tell you to eat three times before you start eating?
6. He has married many women but has never got married. Who is he?
7. I look at you, you look at me. I raise my right you raise your left. What is this object?
8. What is that goes with a car, comes with a car, is of no use to the car, and yet the car cannot go without it?
9. How many times can you subtract a 5 from 25?
10. My birthday fell on Monday in January 2008. On what day would it fall in the year 2010?



Comprehension

C-1) Indian Airlines operates non-stop flights between Guwahati and Dubai, which are separated by an aerial distance of 3000 kilometres. Guwahati is located east of Dubai and both of them are in different time zones. Indian Airlines has a certain free luggage allowance and charges for excess luggage at a fixed rate per kg. Two students from Dubai, Aasma and Shaariq chose to visit Guwahati for the purpose of taking part in Technothlon. They returned by flight after three days of thrill and enjoyment, taking back with them many prizes and lifetime memories. They had 60 kg of luggage between them, and were charged Rs 1200 and Rs 2400 respectively for excess luggage on their way back to Dubai. Had the entire luggage belonged to one of them, the excess luggage charge would have been Rs 5400. Their journey schedule was as given below:

Arrival day	Dubai	Guwahati
	8.00 am	3.00 pm

Departure day	Guwahati	Dubai
	4.00 pm	8.00 pm

Assume that planes cruise at the same speed in both the directions. However, the effective speed is influenced by a steady wind blowing from east to west at 50 km per hour. Now answer the following questions based on this passage:

Q1. What is the time difference between Guwahati and Dubai (calculate it as per the data given in the above passage)?

1) 2 hours **2) 2 hours and 30 minutes** **3) 1 hour** **4) 1 hour and 30 minutes**

Q2. What was the plane's cruising speed in km per hour in still air?

1) 550 **2) 600** **3) 500** **4) 700**

Q3. What was the weight of Shaariq's luggage?

1) 20 kg **2) 25 kg** **3) 30 kg** **4) 40 kg** **5) 35 kg**

Q4. What was the free luggage allowance?

1) 10 kg **2) 15 kg** **3) 20 kg** **4) 30 kg** **5) 25 kg**

C-2) F-1

Formula One, abbreviated to F1, is the highest class of Auto racing sanctioned by the Fédération Internationale de l'Automobile (FIA). The F1 World Championship season consists of a series of races, known as Grande Prix, held on purpose-built circuits.

Formula-One cars race at high speeds, up to 360 km/h with the engine revving up to 19,000 RPM. The cars are capable of pulling 5g in some corners. The average speed of a F-1 car while turning is about 200 km/p and in the pits it is about 80 km/h.

Early designs linked wings directly to the suspension, but several accidents led to rules stating that wings must be fixed rigidly to the chassis. The cars' are aerodynamically designed. The FIA is hoping to rid F1 of

small winglets and other parts of the car (minus the front and rear wing) used to manipulate the airflow of the car.
The fuel used in F1 cars is fairly similar to ordinary gasoline, albeit with a far more tightly controlled mix. Formula One fuel can only contain compounds that are found in commercial gasoline.
By regulation, the tyres feature a minimum of four grooves in them. Since the start of the 2007 season Bridgestone is the sole tyre supplier and have introduced four compounds of tyre, two of which will be made available at each race.
Here's are fun fact for all of you F-1 fans out there, The acceleration of a F-1 car is usually 1.45 g (14.25 m/s^2) up to 200 km/h (124 mph), which means the driver is pushed back in the seat with 1.45 times his bodyweight.

Q1. What is the need for wings in a F-1 car?

a.) To create maximum downward force and minimum drag
b.) To create minimum downward force and minimum drag
c.) To create minimum downward force and maximum drag
d.) To create maximum downward force and maximum drag

Q2. What is the average speed of a formula one car? (Assuming that the average time spent on the tracks is 20mins, cornering time is 10mins and pit stop time is 5mins.)

a.) 274 km/h
b.) 200 km/h
c.) 260 km/h
d.) 280 km/h

Q3. While cornering the magnitude of average force experienced by the formula 1 driver is about 5.5g – 7g. Which of these forces causes this?

a.) Force of gravity.
b.) Force of wind acting against the driver
c.) Force directed towards the centre
d.) Force directed away from the centre

Q4. What is the use of extra treading in F-1 cars?

a.) To increase friction and improve grip
b.) To decrease friction and improve grip
c.) To increase friction and reduce wear and tear of the tyre
d.) To decrease friction and reduce wear and tear of the tyre

Play with Numbers

1. There is a four digit number, which when written in reverse order, becomes 4 times itself. Find the number.

2. You have a truck which has a full tank of 10 litres. You also have two 45 litre barrels of fuel. In order to make room for the load carried by the truck, only one of the barrels can be carried at a time. While you can't transfer fuel between barrels, you can refill the tank from the barrels. Assume that the truck can get 12 miles per litre, regardless of the load it carries. What is the maximum distance you can cover? (Assume that the truck can go forward or backward at any point of time and, while you are driving you know the exact amount of fuel which is left in the fuel tank at that moment.)

3. A 8-digit number is such that its 1st digit specifies the number of zeroes, 2nd digit specifies the number of ones and so on. Find the number.

4. Four children were asked to think of a four digit number each. They were then asked to put the last digit of the number in front and add the new number (so formed) to the original number (for example: 3412+2341=5753). They wrote down their results as:

   Mohit: 6843
   Siddharth: 12705
   Gaurav: 7853
   Paranjay: 10542

   Everyone except one had written the wrong answer! Who answered correctly?

5. Mr. and Mrs. Srivastava threw a dinner party, and invited four other couples: the Shobhanes, the Patnis, the Mukherjees, and the Umbarkars. When all the guests had arrived there were ten people in the house. Some of these people had met before and some hadn't. All the people who had never met before shook hands. Then Mr. Srivastava asked every guest and his own wife how many hands each of them had shook. To his surprise every person gave a different answer. How many hands did Mrs. Srivastava shake?

6. considEr thE twO linEs **AO** and **BO**. ThEsE twO lInEs IntErsEct At pOInt **O** And ArE pErpEndIcUlAr tO EAch OthEr. yOU drAw A cIrclE thAt IntErsEcts thEsE twO lInEs Only At pOInts **A** And **B**. fInd thE smAllEst IntEgrAl sIzE Of thE AnglE sUbtEndEd by thE lArgEr Arc **AB** At thE cEntrE Of thE cIrclE.

PRACTICAL OBSERVATIONS

1. Birds generally fly in which formation?
   a) **Λ**
   b) ****
   c) **|**
   d) 

2. As the revving (acceleration) of the scooter is increased, the intensity of its headlight:
   a) Increases
   b) Decreases
   c) Remains constant
   d) May increase or decrease

3. Which of the following colour is **not** present in a rainbow?
   a) Magenta
   b) Midnight Blue
   c) Deep **Purple**
   d) Ebony Brown
   e) Tuxedo Black

4. While riding a cycle friction acts
   a) Forwards on rear wheel and forwards on fore wheel
   b) Backwards on rear wheel and backwards on fore wheel
   c) Forwards on rear wheel and backwards on fore wheel
   d) Backwards on rear wheel and forwards on fore wheel

5. Why is the colour of ice white?
   a) Due to dissolved salts in water
   b) Due to trapped air bubbles in water
   c) Because water is white in colour
   d) Due to a combination of polarization and capillary-effect.

6. While walking in the road your foot applies force in which direction
   a) Backward
   b) Forward
   c) Backward and down
   d) Forward and up

7. What is dry ice?
   a) Water
   b) Frozen water
   c) Carbon dioxide
   d) Nitrogen

8. The Rs. 1000 currency note of India has the signature of:
   a) Governor
   b) Secretary of finance

c) Minister of finance
d) It has no signature, only a stamp.

9. Where is all the data of the World Wide Web stored?
a) In one mega super computer
b) In several super computers kept at one place
c) In several computers all over the world
d) It is a virtual data not physically present anywhere

10. If you dial 100 on your cell phone,
a) It will connect even without network
b) It will call this number only if your keypad is unlocked
c) It will connect without sim card
d) It will get dialled even if keypad is locked

11. What all information is given to a tube light?
a) Voltage rating and ampere rating
b) Voltage rating and power rating
c) Ampere rating and power rating
d) Voltage rating, ampere rating and power rating

12. What is the basic principal involved in a woollen blanket?
a) It acts as an insulator
b) It traps the air
c) It heats up the inner side
d) Wool present in it generates heat to keep you warm.

ARBIT

Q1) Bertram Thomas, the famous explorer wishes to cross the khal ali desert. It is a 6 day march across the absolutely barren desert and one man can carry only four days worth of food and water for a single person. Assuming no one has to sacrifice their life, how many assistants should he set out with?

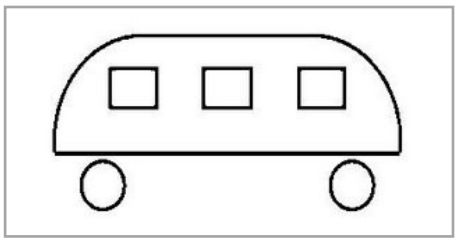
Q2) What occurs in the middle of a minute as well as a month but never in a year?

... 1024 2104 4012 1042 2410 2140 0421 0124 0214 4210 1024 2104 4012 1042 2410 2140 0421 0124 0214 4210 1024 2104 4012 1042 2410 2140 0421 0124 0214 4210 1024 2 ...

Q3) An eagle, an elephant and a walleye each have two. A tiger, a moose, a bear, a turtle and a snake have one. Humans, birds, cats and dogs don't have any. Name this.

Q4) If the puzzle you solved before you solved the puzzle you solved after you solved the puzzle you solved before you solved this one, was harder than the puzzle you solved after you solved the puzzle you solved before you solved this one, was the puzzle you solved before you solved this one harder than this one?

Q5) In which direction is this bus going, left or right (it is not in reverse neither is it stationary)?



Q6) When asked for the time Rohan replies “The big hand and the little hand are midway between 1 and 2, lying on top of each other”. What is the time?

Q7) Bruce, the head dog at the North Pole, had three sons. The eldest was named mo, the middle one curly. What is the third dog’s name.

Answer:	**_____ is the eldest son. _____ is the second born son. _____ is the youngest son.**

Q8) When asked her 3 children's ages, Mrs. Muddled said that Alice is the youngest unless Bill is, and that if Carl isn't the youngest then Alice is the oldest. Who is the oldest and who is the youngest?

Q9) A man built a rectangular house, each side having a southern view. He spotted a bear. What colour was the bear?

Q10) A pregnant lady named her children: Dominique, Regis, Michelle, Fawn, Sophie and Lara. What will she name her next child?

a) Jessica b) Katie c) Tilly

Q11) See the house? It is the purple house. The purple house is one story and every thing in it is purple. The doors are purple, the sofa is purple, the refrigerator is purple (go on as long as you like) now what colour are the stairs?

Q12) Translate the following into the common phrases they are?

1. If a large solid-hoofed mammal becomes available to you without compensation, refrain from casting your faculty for seeing into the oral cavity of such a creature.
2. Each vaporous mass suspended in the firmament has an interior decoration of metallic hue.
3. It is not advantageous to place the sum total of your barnyard collections into the same wicker receptacle.
4. Feathered bipeds of a kindred mind in their segregated environment associate with a high degree of amiability.

Q13) Two soldiers have been ordered to do the following;

1. peel potatoes
2. do the dishes
3. mown the lawn

The soldiers can leave only when all three are done. Each takes one hour when done by one person. They have only one knife, one lawn mower and one sink with room for one person. If they start at 8 a.m. how soon can they finish?

Q14) What is it that when you take away the whole you still have some left over?

Q15) Name an eight letter word that has kst in the middle, in the beginning, and at the end.

Q16) A police officer saw a truck driver clearly going the wrong way down a one-way street, but did not try to stop him. Why not?

Q18) Using a 5 letter anagram fill up the blanks:

A farmer with hundreds of _ _ _ _ _, deeply _ _ _ _ _ about the amount of rainfall, and _ _ _ _ _ around with watering the ground because it is dry enough to _ _ _ _ _ him about the possibility of crop failure.

Q19) Count No. of F's excluding this one:

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Q20) Not far from Madrid, there is a large wooden barn. The barn is completely empty except for a dead man hanging from the middle of the central rafter. The rope around his neck is ten feet long and his feet are three feet off the ground. The nearest wall is 20 feet away from the man. There is a puddle of water nearby. It is not possible to climb up the walls or along the rafters. The man hanged himself. How did he do it?

Q21) It was a dark stormy night and a couple were in a car racing madly through a foreign city. The car broke down and the husband had to go get help from someone who spoke his language. He was afraid to leave his wife alone in the car so he pulled up the windows and locked the car before leaving. When he came back, the car was in the same state as he had left it but his wife was dead, there was blood on the floor and there was a stranger in the car. What happened?

Q22) A farmer has 15 cows, all but 7 die. How many does he have left?

3.14+1

Q23) Brad stared through the dirty soot-smeared window on the 62nd floor of the office tower. Overcome with depression he slid the window open and jumped through it. It was a sheer drop outside the building to the ground. Miraculously after he landed he was completely unhurt. Since there was nothing to cushion his fall or slow his descent, how could he have survived the fall?

Q 24) A woman gave natural birth to two sons who were born on the same hour of the same day of the same month of the same year. But they were not twins and she had no access to a time machine. How could this be?