

CONCEPT[™]
BRAINSTORM
Scholarship Test  2016

Date : 27th of March

Roll No:

Name : _____

School : _____

Address : _____

Phone : _____

e-mail : _____

Instructions

- Total marks is 64.
- Total time is 120 minutes.
- All questions are compulsory.
- Answers without explanations will not be evaluated.
- Explanations can be of mathematical, logical or analytical type.
- If you have used extra sheets for explanations get your sheets stapled with your answer booklet before submission.
- Try and make the answer book readable and comprehensible.

Note : All questions and their solutions will be explained post exam in the interactive session.

Q.1. GRILLED ISSUE

Paul's iron grill was turning brownish. His father told him it was getting rusted. Apparently when iron is kept out in open for a long time, this phenomenon happens. Paul is still not sure what rust is and comes to you for help. You would tell him that rust is..... (pick the correct option from the ones given below to fill in the blank) (2)

- (A) an element
- (B) a mixture of iron, water vapour and oxygen
- (C) a compound
- (D) mixture of iron and dust

Ans:

Q.2. BIRTHDAY BLAST

Tia had 8 best friends. They bought her a cake on her birthday and asked her to cut it. She was allowed to make three wishes, one wish after slicing the cake once. Suggest a way she can manage to cut the cake in 8 pieces by three slices? (2)

Ans:

Q.3. LILY, NOT POTTER

Indian ponds are good for lily cultivation. A lily doubles itself every day, until it fills a certain pond on 30th day. How long will it take for two lilies to fill the same pond? **(3)**

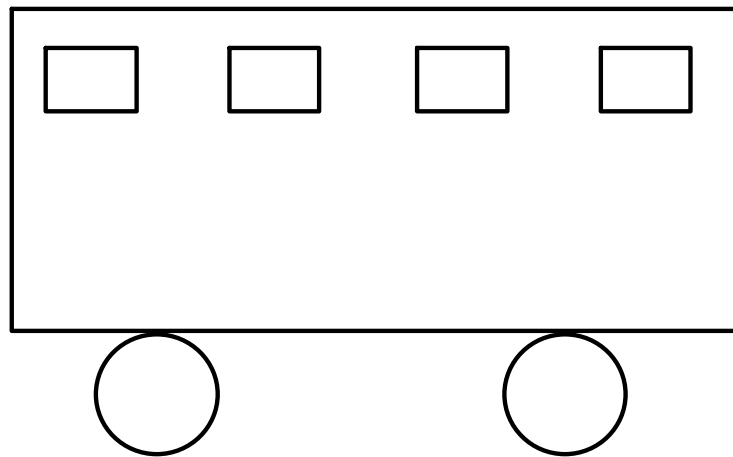
Ans:

Q.4. DIRECTION DILEMMA

Dhruv is three years old and lives in Guwahati, Assam. One day he was out walking with his grandfather when he saw a travelling bus go past him. When he came back home, he drew the bus. The painting is shown below. Which way was the bus moving?

Mention your answer as "Left" or "Right" as per the picture.

(2)



Ans:

Q.5. THE BURNING SENSATION

You have two ropes; each burn for exactly 1 hour. You don't have a clock or any device to calculate time. How can 45 minutes be accurately calculated using the equipments given to you? There are enough matchsticks but cutting the rope is not permitted. (3)

Ans:

Q.6. CHEMICAL MENACE

Two chemists walk into a restaurant. The waiter serving them is a student of Chemistry. The chemists are in a mood to flaunt their knowledge. The given conversation follows:

Waiter: What will you have, Sir?

Chemist 1: I will have H_2O

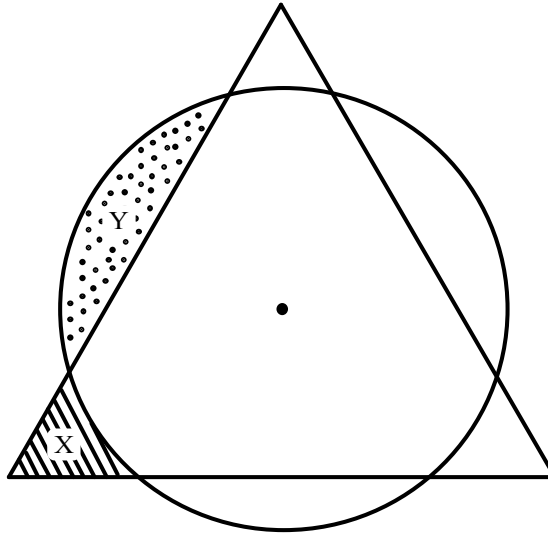
Chemist 2: I will have H_2O too

He then brought their orders to them. On consumption, Chemist 2 dies but Chemist 1 stays fine

What went wrong? (2)

Ans:

Q.7. DEATHLY HALLOWS GONE WRONG



An equilateral triangle and a circle share the same centre. Side length of the triangle is 5 units. Radius of the circle is 2 units. X and Y are the area of the shown shaded portions. Find $(X - Y)$. (3)

Ans:

Q.8. SUPER VILLAINS

The Amoeba boys were much more evolved than humans. To get rid of the chaos created by them, Professor X had to create Powerpuff Girls. Why did Professor X think that Amoeba are much more evolved than humans? (5)

Ans:

Q.9. SHERLOCKED

Sherlock is called upon on a crime scene. A woman has been killed and there are only three suspects to the murder, the three people who were present on the scene.

Alice, the best friend of the woman, who was present for a night out.

Debra, who was accompanying Alice.

Sia, who is the house maid.

A note is found in the hands of the victim, which reads 'Second of January, third of July, Fourth of April, Second of October, Fourth of December'

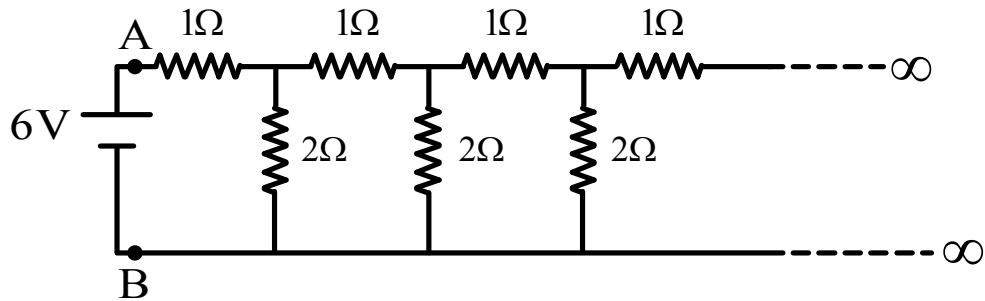
The note was all Sherlock needed to find out who the killer was. Find who the killer was? (3)

Ans:



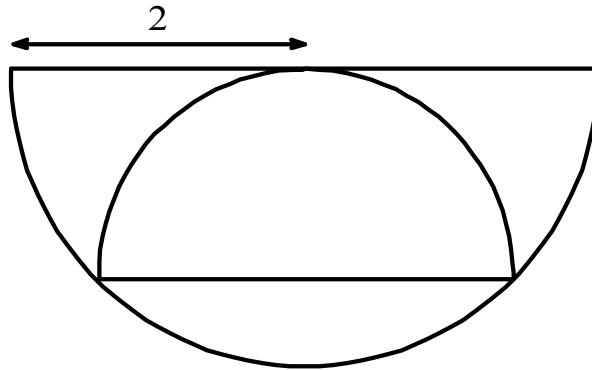
Q.10. PROJECT INFINITY

This is an infinite ladder circuit. Find the effective resistance between the points A & B (5)



Ans:

Q.11. THE NEXT IN-THING



A semi circle fits perfectly inside another semi-circle. If the radius of the larger semi-circle is 2 units, find the radius of the smaller one. (3)

Ans:

Q.12. INNER PEACE

When Oogway was a kid, he had an accident, and the doctors had to get rid of a certain gland of his. As a result of that, he never gets excited and always keeps his calm. Which gland did the doctors remove? Which particular hormone does the gland secrete? (2)

Ans:



Q.13. MENTOS MANIA

A bandit group once captured an electrician and tried testing his credibility. They blindfolded him and left him with three switches, each connected to a bulb. The electrician was asked to figure out which switch was connected to which bulb in 30 minutes. When Bandits returned after 30 minutes the electrician immediately gave them the right answer.

Explain what method the electrician must have used to find the correct answer. (5)

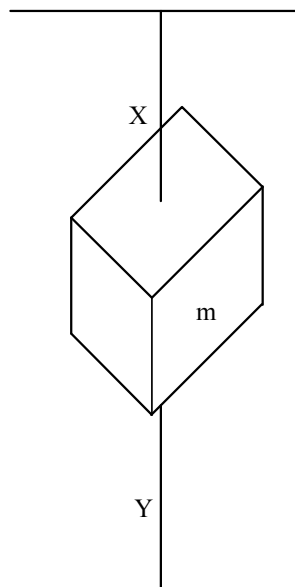
Ans:

Q.14. NO STRINGS ATTACHED

A heavy block of mass 'm' is supported by cord X from ceiling and another cord Y is attached to the bottom of the block. Person A has to break cord X and person B has to break cord Y.

However, they have to perform the task by holding the cord Y with their hands. How will they do that? Justify your answer.

It is given that the lengths of both the cords are equal. (5)



Ans:

Q.15. THE ANT-I MOVEMENT

A red ant is sitting on one side of the table (Point X) and a black ant is sitting on the other side of the table (Point Y). They decide on switching places and start walking towards each other in a straight line. On the way, both ants meet and after that it takes 20 seconds for the red ant to move to Point Y and 5 seconds for the black ant to move to Point X. Find the total time taken by the red ant and the black ant individually to make their journey. **(3)**

Ans:

Q.16. DEAD OR ALIVE

A prisoner sentenced to death was given a chance due to his good conduct in jail. He was supposed to be shot, but the jailer decided his death will be left to luck. So he put two consecutive bullets in a 6-hole revolver and spun it to make the placement of bullets random. Then he shot once, and the firing turned out to be empty. The jailer then asked the prisoner if he wanted the next shot as it is or does he want the jailer to spin the revolver again? The prisoner was smart, so he decided to choose the option that has better chances of him being alive. Which option did he choose? Mathematically justify your answer. (5)

Ans:

Q.17. A SHOCKING TIME FRAME

Scientists in 2050 invented time machine and decided to travel 20,000 years in future. What they saw shocked them. Humans in 22,050 are short, weak with small body organs but abnormally large head. Although shocked, they found the change predictable. Based on what reasoning did the time travellers find the weird observation predicatable? (3)

Ans:

Q.18. OBJECT & IMAGE

If an object far away from a concave mirror moves towards the mirror, the image also moves. Does it move faster, slower or at the same speed as compared to the object? **(3)**

Ans:



Q.19. ICY COLD DREAMS

Mr. Newton once dreamt that he was standing in the middle of a frozen lake with his bag of apples. The ice was so smooth that there was no friction anywhere. Suggest a way Mr. Newton can cross the lake. (2)

Ans:



Q.20. ROCK 'N' ROLL

Romus and Remulus were twins, they had equal muscle power. One day they were asked to take two rocks up the hill. Both rocks were equally big and heavy. Romus decided to roll it, however Remulus decided to slide it up the hill. Who found it easier to move the stone and why? (3)

Ans:

ROUGH PAGE

ROUGH PAGE

ROUGH PAGE