Appendices

Appendix – A

Measure of Intuition
PLEASE FILL IN THE FOLLOWING INFORMATIONS

Name : ________________________________
Age : ________________________________
Class : ________________________________
Sex : ________________________________
Name of School : ________________________________

The following test was created by psychologist and author of “the intuitive edge” Dr. Philip Goldberg. For each item, choose the alternative, A or B, that best applies to you.

Website: www.psychicvista.com/articles/intuitquiz.htm.17k
1. When I don’t have a ready answer, I trend to be:
   A. Patient
   B. Uneasy

2. When face with uncertainly, I usually:
   A. Become disoriented
   B. Remain comfortable

3. In challenging situations, I am highly motivated and deeply committed:
   A. Most of the time
   B. Infrequently

4. When my intuition differs from the facts, I usually:
   A. Trust my feelings.
   B. Follow the logical course

5. When working on a difficult problem I tend to:
   A. Concentrate on finding the solution
   B. Play around with possibilities

6. When I disagree with others, I tend to:
   A. Let them know about it
   B. Keep the disagreement to myself

7. Generally speaking I:
   A. Prefer the safe way.
   B. Enjoy taking risk

8. When working on a problem I change strategies:
   A. Seldom.
   B. Often

9. I prefer to be told:
   A. Exactly how to do things
   B. Only what needs to be done

10. When things get very complicated, I:
    A. Become exhilarated.
    B. Become insecure

11. When faced with a problem, I usually:
    A. Create a plan or outline before getting started.
    B. Plunge right in.
12. In most cases:
   A. Change makes me nervous
   B. I welcome unexpected changes.

13. My reading consists of:
   A. A variety of subjects, including fiction.
   B. Factual material mainly related to my work.

14. When my opinion differs from the experts, I usually:
   A. Stick to my beliefs
   B. Defer to authority

15. When faced with a number of tasks:
   A. Tackle them simultaneously
   B. Finish one before going on to another

16. When learning something new, I:
   A. Master the rules and procedures first.
   B. Get started and learn the rules as I go long.

17. At work I prefer to:
   A. Follow a prearranged schedule.
   B. Make my own schedule.

18. At school I was (am) better at:
   A. Essay questions.
   B. Short-answer questions.

19. Basically, I am
   A. An idealist
   B. A realist.

20. When I make a mistake, I tend to:
   A. Second-guess myself.
   B. Forget it and go on.

21. The following statement best applies to me:
   A. I can usually explain exactly why I know something
   B. Often I can’t describe why I know something

22. When offering a description of explanation, I am more likely to rely on
   A. Analogy anecdote
   B. Facts and figures.
23. I can usually be convinced by:
   A. An appeal to reason
   B. An appeal to my emotions.

24. When I am wrong, I:
   A. Readily admit it
   B. Defend myself

25. I would rather be called:
   A. Imaginative
   B. Practical

26. When faced with a difficult problem, I am likely to:
   A. Ask for advice.
   B. Tackle it myself

27. Unpredictable people are:
   A. Annoying
   B. Interesting

28. When setting an appointment for the following week, I am likely to say:
   A. “Let’s set an exact time now”
   B. “Call me the day before.

29. When something spoils my plans, it
   A. Get upset.
   B. Calmly make a new plan.

30. When I have a hunch, I usually react with:
   A. Enthusiasm
   B. Mistrust

31. Most of my friends and colleagues:
   A. Believe in the value of intuition
   B. Are skeptical about intuition

32. I am best known as:
   A. An idea person
   B. A detail person
Appendix – B

Measure of Higher Mental Abilities
INSTRUCTIONS

The main purpose of the test is to measure the Higher Mental Abilities in Science. Higher Mental Abilities like, Application, Analysis, Synthesis and Evaluation can be measured by this test. You are requested to read the instructions given in each question carefully. These instructions will help you in solving the questions. **You have to solve all the questions. Keep in mind that none of the questions should remain unanswered.** Your answers will be kept confidential.

Thank you very much for the cooperation.
Q. 1. You saw a fish at the beach struggling for life. What will you do for the fish?

Direction: Choose an inference from the following and put a tick mark (√) on it.

Inference:
1. You will give O₂ to the fish. □
2. You will take it to the doctor. □
3. You will immediately put the fish in water. □
4. You will keep it on bed. □

Direction: There will be some reason for your answer. Select the reason from the following reasons that most nearly expresses the logic of the inference you have drawn and put a tick mark (√).

Reason:
1. Fish respires in water with the help of gills. □
2. Fish needs moisture. □
3. Fish gets food in water. □
4. Atmosphere of water is appropriate for fish. □

Q. 2. You have read about ‘Matter’ in previous classes. Write down any THREE facts about the structure of matter.

1. ...
2. ...
3. ...

Q. 3. Measures of the four arms of a quadrilateral are as follows. Make a quadrilateral.
AB - 4 Cm.  Diagram:
CD - 2.5 Cm
BC - 3 Cm.
AD - 2.0 Cm.
Q. 4. You are watching a cinema in a theatre. Suddenly the fire burst-out. What will you do?

Direction : Choose a correct answer from the following and put a tick mark (√) on it.

Answer : 1. You will run outside. □
          2. You will hide yourself in a tank. □
          3. You will cry and make a crowd. □
          4. You will use fire extinguisher. □

Direction : Choose from the following reasons the most appropriate reason for your answer and put a tick mark (√) on it.

Reason : 1. Because you know people will be safe if they run outside the theatre. □
         2. Because you know water doesn’t catch fire. □
         3. Because you know that people will help in extinguishing fire. □
         4. Because you know that carbon dioxide of the fire extinguisher helps to extinguish the fire. □

Q. 5. When a glass rod is rubbed with silk, positive charge is produced on the rod. In the same way when abonite rod is rubbed with fur, negative charge is produced on the rod. If a ball is touched to the positively charged glass rod, by induction, positive charge is also induced on the ball. In this case if a negatively charged abonite rod is kept near the ball, the ball is attracted towards abonite rod.

Direction : In the above passage some information about charge is given. Choose the statement from the following which represents the information and put a tick mark (√) on it.

1. All over the glass rod gravitational force is the same. □
2. Opposite charges attract each other. □
3. There is only one charge on a body. □
4. None of the above. □
Q. 6. By doing an experiment electrolysis of water was done by Halfman's voltameter. On passing electric current Oxygen and Hydrogen gas was liberated at the anode and cathode respectively. After some time it has been seen that when 24 CC of Hydrogen was liberated at cathode only 12 CC of Oxygen was liberated at anode.

Question: What is the volumetric ratio of Hydrogen and Oxygen in water?

Direction: Choose the correct answer and put a tick mark from the following, which shows the correct ratio of Hydrogen and Oxygen in water.

1. The ratio of Hydrogen and Oxygen is 1:2.
2. The ratio of Hydrogen and Oxygen is 1:8.
3. The ratio of Hydrogen and Oxygen is 2:8.
4. The ratio of Hydrogen and Oxygen is 1:4.

Q. 7. If we make curd from milk at 50° C. What will happen?

Direction: Select the most appropriate conclusion from the following and put a tick mark on it.

Conclusion: 1. The composition of milk will be disturbed.
2. The curd will not set properly.
3. Milk will be turned into water.
4. Milk becomes thick.

Direction: Choose the most appropriate reason for your conclusion from the following and put a tick mark.

Reason: 1. This is not the proper situation to make curd.
2. More bacteria are produced.
3. The bacteria which make curd remain active only upto the temperature of 34° C.
4. There is less reproduction in bacteria.
Q. 8. Following table represents the use of fertilizer and production of wheat.

<table>
<thead>
<tr>
<th>Quantity of fertilizer</th>
<th>Production</th>
</tr>
</thead>
<tbody>
<tr>
<td>200 Kg.</td>
<td>4 tons</td>
</tr>
<tr>
<td>400 Kg.</td>
<td>6 tons</td>
</tr>
<tr>
<td>800 Kg.</td>
<td>12 tons</td>
</tr>
<tr>
<td>1 ton</td>
<td>20 tons</td>
</tr>
</tbody>
</table>

Conclusion: If the quantity of fertilizer is increased, the production of wheat is also increased.

Direction: Which one of the following assumption would be necessary to justify this conclusion. Put a tick mark (✓) on the most appropriate assumption.

1. Plants only depend upon fertilizer. ☐
2. Soil needs fertilizer. ☐
3. Fertilizer has a quality to increase the production. ☐
4. Soil gets essential nutrients from fertilizers which are absorbed by the plants and so they grow. ✓

Q. 9. Galileo investigated the problem of the acceleration of falling bodies by rolling balls down on very smooth planes inclined at increasing angles; since he had no means of determining very short intervals of time. From the data obtained he extrapolated for the case of free fall, which of the following is an assumption implicit in the extrapolation?

Direction: Put a tick mark (✓) on the correct answer from the following:

1. Air resistance is negligible in free fall. ✓
2. Objects fall with constant acceleration. ✓
3. The acceleration observed with the inclined plane is the same as that involved in free fall. ☐
4. The planes are frictionless. ☐
Q.10. A man wants to take a sun bath. At what time should he take bath so that he can get maximum heat? Perhaps at the mid day (from 12.0 a.m. to 2.0 p.m.) he can get maximum heat, because:

Direction : Put a tick mark (√) on the correct answer from the following :-

1. In the morning we are nearer to the sun than in evening.
2. Mid day sun gives more intense light than noon and evening sun.
3. At mid day sun-rays fall straight on the earth and give more energy, while the sun-rays at the morning and evening fall slanting and give less energy.
4. The air at the mid day is hotter than the air in evening and morning.
5. Ultraviolet rays of sun are responsible for more energy.

Q.11. Some points are given below. Join these points in such a way that you can get a figure of cock.
Q.12. When a burning magnesium wire is brought in a gas jar filled with oxygen, it burns intensively. When the burning wire is brought in a gas jar filled with carbon dioxide, it remains burnt and carbon is deposited. The same wire is put off in a hydrogen gas jar but a sound is heard and the gas itself burns. If the burning wire is brought in a chlorine gas jar, the gas itself burns.

Question: There is a gas jar. The burning magnesium wire is put in this jar. Consequently magnesium wire stops burning and the gas itself burns with a pop sound. Identify and name the gas.

Q.13. You have seen that if anything is thrown upward, after some time it falls on the ground. Fruits from the tree also fall downward. What is the reason behind this phenomenon?

Q.14. When a spoonful of sugar is mixed with water and stirred, it disappears, obtained liquid is sweet in taste. The liquid, which is obtained on mixing sugar and water, is called solution. The solid which is dissolved in the solution is called solute and the liquid in which the solid is dissolved is called solvent.

Conclusion: In a solution two things are necessary - a solute and a solvent. Sugar and water make a solution because:

Direction: Choose a correct reason and put a tick mark (✓) from the following conclusions.
Q.15. An electric iron (110 Volts, 1000 Watts) has been used for some time and plug contacts have burnt, thus introducing additional resistance. How will this affect the amount of heat which the iron produces?

**Direction**
Choose the conclusion which you believe is most consistent with the facts given above and most reasonable in the light of whatever knowledge you may have and put a tick mark (✓) on it.

**Conclusion**
1. The iron will produce more heat than when new. □
2. The iron will produce the same heat as when new. □
3. The iron will produce less heat than when new. □

**Direction**
Choose the reason from the following you would use to explain or support your conclusion and put a tick mark (✓) on it.

**Reason**
1. The heat developed by an electric iron when connected to 110 Volts is independent of the flow of current.
2. The current which flows through the iron is reduced when the resistance is increased.
3. An increase in resistance increases the heat developed.
4. Increasing the resistance in an electric circuit increasing the current.
5. Electric current of same voltage always produce same amount of heat, and burnt contacts do not decrease the amount of electricity entering the iron.
6. An increase in electric current increases the heat.
On the handle of a tea kettle, presence of wood does not make the handle hot. In cold regions the houses are also made-up of bamboo. Wood dust prevents melting of ice cubes. Iron utensils also have wooden handles. What is the principle behind all these facts?

Direction: Give the answer in one line.

7. See the following graph carefully. This graph shows the import of rice.

![Graph showing import of rice from 1966 to 1972.]

Question: On the basis of graph, write down the position of import of rice in 1972 in comparison to 1966.

Q.18. Matter is made-up of small molecules. There is intermolecular space between the molecules. All the molecules attract each other. Intermolecular force in solids is greater than intermolecular force in liquids and gases.
Question: Give reason, why the milk placed in a plate become cold earlier than the milk placed in a glass?

Direction: Choose the correct reason from the following and put a tick mark (√) on it.

Reason:
1. Because the intermolecular space is less.
2. Attraction force between the molecules is less.
3. The plate is big and cold.
4. More and more molecules come in contact with air and lose more heat.

Q.19. By combining the following parts,

(i) Make an instrument and label any four parts of it.
(ii) Write the name of the instrument.

Diagram:

![Diagram](image)

Name of the apparatus .................................................................

Q.20. A room is 20 feet in length and 15 feet in breadth. You want to fit the tiles on the floor. The size of the tile is 1x1 foot. What will be the total expenditure, you have to bear to fit the tiles? The cost of one tile is Rs. 2.0.

Direction: Choose the correct answer from the following and put a tick mark (√) on it.

1. Rs. 300
2. Rs. 600
3. Rs. 400
4. None of the above.
Appendix –C

Measure of Creative Problem Solving
Please fill up the following informations:

<table>
<thead>
<tr>
<th>Name (नाम)</th>
<th>Age (आयु)</th>
<th>Sex (रूप)</th>
<th>Caste (जाति)</th>
<th>Religion (धर्म)</th>
<th>School (शैक्षणिक)</th>
<th>Dated (दिनांक)</th>
</tr>
</thead>
</table>

Instructions (निदेश):

This test includes seven interesting problems and we wish how you will solve these problems? Your solutions should be different from that of others as far as possible. Your ideas may turn out to be brilliant and interesting in solving these problems. You please attempt all the seven items with new ways of thinking. All the responses are to be given through sketches and for each item, draw only one brilliant solution.

Show one sample problem example as given below:

Sample Problem: Show how you would stop a cat and a dog from fighting?

Solution: By making separate cages, one for cat and other for dog.

- Vandita is of 14 years old. She has solved the sample problem but has given a traditional and a common solution.
- This is a traditional way of stopping two different groups from fighting, i.e., to put cat and dog in separate cages or within their boundaries or keeping them apart. It does not always work, particularly when the two groups cannot be separated in this way.
- We are interested to find brilliant solutions.
- Vandita should have tried “interesting and brilliant” solutions.

1. All the responses should be in drawing or nonverbal.
2. You may use pencil, pen and colour pencils to draw your responses.
3. The responses should be as clear as possible in idea as well as in expression.
4. The designs should be as interesting and unusual as possible. Try to give an elaborate picture with many details.
5. You may write down a brief description about the design and name its parts.
6. The time limit is 40 minutes.

Give all the answers by drawing sketches for each of the items.
You may use additional paper sheets if need be
Give your best answer for each item by drawing the sketch.
1. Show how you would stop a cat and dog from fighting.

आप एक बिल्ली तथा एक कुत्ते को लड़ने से किस प्रकार रोकेंगे?

2. If you were zoo-keeper and wanted to find how heavy an elephant is, how would you weigh it?

यदि आप पशुवाणिक (zoo) की रखरखाव करते हैं तथा आप यह जानना चाहते हैं कि एक हाथी का भार कितना है तो आप किस प्रकार से उसे लेनेंगे?
3. Design a special bed for people who have the problem of less sleep.

एक ऐसे व्यवित के लिए आप विशेष प्रकार के पलंग का निर्माण करें जो कि कम सोने की समस्या से पीड़ित है।

4. Design a special rocket in which astronauts can live on the moon for three weeks.

एक ऐसे विशाल प्रकार के रॉकेट का निर्माण करें जिसमें कि अंतरिक्ष यात्री (astronauts) तीन सप्ताह के लिए चंद्रमा पर रह सकें।
5. Draw a picture showing how you could improve the design of your body.

एक ऐसे चित्र का निर्माण करे जिसमें यह दिखाया जाये कि आप अपने शरीर को कैसे विकसित करेंगे।

6. Design a special bicycle for a postman.

पोस्टमैंन के लिये विशेष प्रकार की साइकिल की रचना कीजिये।

7. If you were a policeman, how would you deal with bad men?

यदि आप पुलिसकर्मी होते तो आप किस प्रकार से बुरे लोगों के साथ पेशा आते?