# APPENDIX TWO

## PILOT TEST FORM

(English)

# APTITUDE TEST IN SCIENCE

Sections I to VII

Please read the following instructions carefully :

1. This test booklet contains seven sections. Please answer them in serial order.

2. Each section contains a number of items - Omit no item. Instructions and illustrations are given for your guidance, kindly go through them very carefully and answer the items.

3. Answer the test items in the booklet as rapidly as you can in the separate answer-sheet given to you.

4. Write your name, name of the school and other requested information in the proper places in the answer sheet.

5. When you complete your work, please return the test booklet along with the answer sheet.

DO NOT MAKE ANY MARK IN THIS TEST BOOKLET

## : S E C T I O N - 1 :

DIRECTIONS: - After carefully studying the number series given on the left below, tick off the correct succeeding number in the Answer sheet, out of the given numbers on the right.

EXAMPLE:- 1, 4, 9, 16, 25 .... a) 32 b) 34 c) 36 d) 38

The numbers given on the left are the squares of the natural numbers 1,2,3,4,5, the succeeding number should be the square of 6. So the answer to be ticked off out of the given numbers on the right is 36.

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| | | a | b | c | d |
|---|---|---|---|---|---|
| 1. | 1, 6, 11, 16..... | 20, | 21, | 22, | 23 |
| 2. | 3, 6, 12, 24..... | 46, | 47, | 48, | 49 |
| 3. | 2, 4, 6, 8..... | 9, | 10, | 11, | 12 |
| 4. | 1, 8, 27, 64..... | 120, | 125, | 130, | 135 |
| 5. | ½, 1, 1½, 2..... | 3, | 3/2, | 5, | 5/2 |
| 6. | ½, ¼, 1/8, 1/16..... | 1/28, | 1/30, | 1/32, | 1/34 |
| 7. | 0.5, 0.55, 0.6, 0.65..... | 0.85, | 0.65, | 0.7, | 0.75 |
| 8. | 0.2, 0.4 , 0.6, 0.8 ..... | 0.9, | 1.0 , | 1.1, | 1.2 |
| 9. | 0.1, 0.01, 0.001, 0.0001..... | 000001, | .0000001, | .00001, | .00000001 |
| 10. | 8181, 2727, 909, 303..... | 404, | 202, | 101, | 505 |

DIRECTIONS:- In each of the following questions you find two series of numbers. Some relationship exists between the corresponding numbers in the two series. The correct relationship is shown by one of the four alternatives given on the right hand side. Tick off the correct one.

EXAMPLE:- If A = 0, 1, 2, 3.....
and
B = -1, 0, 1, 2.....

a) B = A+1
b) B = A+2
c) B = A-1
d) B = A-2

The numerical values of A = 0,1,2,3 when substituted in the relation B = A-1 give values -1,0,1,2 for B. This is the only relation that satisfies the values of A and B and hence the right answer to be ticked off is B = A-1.

11. If A = 2, 3, 7, 8
B = 9,11,19,21

a) B = A + 7
b) B =2A + 3
c) B =2A + 2
d) B =2A + 5

12. If A = 1, 3, 5, 7
B = 5, 9,13,17

a) B =2A - 3
b) B =2A + 3
c) B = A + 4
d) B =2A - 1

13. If A = 1, 2, 3, 4
B = 2, 5, 8,11

a) B =3A + 1
b) B =2A + 1
c) B =2A
d) B =3A - 1

14. If A = 2, 3, 4, 5
B = 1, 3, 5, 7

a) B = A + 3
b) B = 2A- 3
c) B = 2A+ 5
d) B = 2A+ 3

15, If $a^3$ = 729 then the value of 'a' is given by

a) 8 b) 9 c) 10 d) 13

16. If $x^3$ = 1.331 then the value of 'x' is given by

a) 1.21 b)1.11 c)1.01 d)1.1

17. The fraction 13/20 can be expressed as a percentage as

a) 55 b) 60 c) 65 d) 70

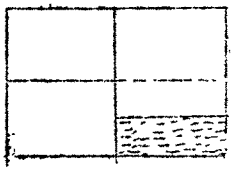
18. The fraction 19/20 can be expressed as a percentage as

a) 95 b) 90 c) 85 d) 80

19. The fraction 1/6 can be expressed as a percentage as

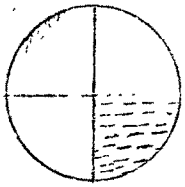
a) $16\frac{3}{4}$ b) 16 2/3 c) $16\frac{1}{2}$ d) $16\frac{1}{4}$

20. The area shown with dots in the figure is equal to



a) $\frac{1}{4}$ b) 1/8 c) 1/16 d) 1/32

21. The percentage of the area shown with dots in the figure is equal to



a) 20 b) 25 c) 40 d) 60

22. One day the day temperatures recorded are given below.

| Morning | Temperatures |
|---|---|
| 10-00 A.M. | $30^{\circ}$ c |
| 11-00 A.M. | $35^{\circ}$ c |

If the rise of temperature is uniform, the temperature at 10.45 A.M. is given by:

a) $30^{\circ}$ c b) $33.25^{\circ}$ c c) $33.5^{\circ}$ c d) $33.75^{\circ}$ c

23. The temperatures recorded on the following day during the day time are as follows:

| Morning | Temperatures |
|---|---|
| 11-00 A.M. | $32^{o}$ c |
| 12-00 noon | $36^{o}$ c |

The temperature reading at 11-30 A.M. is given by

a) $34^{o}$ c b) $35^{o}$ c c) $36^{o}$ c d) $37^{o}$ c

24. The atmosphere exerts a pressure of 15 lbs per square inch. The total force on the lid of a box 5" long and 2" wide is given by

a) 15 lbs b) 75 lbs c) 90 lbs d) 150 lbs

25. If 1 x 9 + 2 = 11
12 x 9 + 3 =111
123 x 9 + 4 =1111

Then. . . . . .

. . . . . .

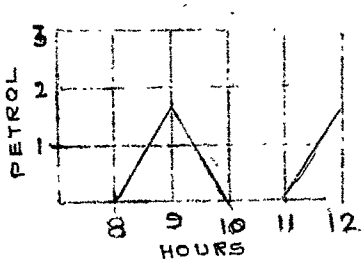
12345 x 9 + 6 is equal to

a) 1111 b) 11111 c) 111111 d)1111111

26. If 1 x 8 + 1 = 9
12 x 8 + 2 = 98
123 x 8 + 3 = 987
- - - - - - - - - - -
then the value of:-
12345 x 8 + 5 is given by

a) 9876 b) 98765 c) 987654 d) 9876543

27. A motorist started from Warangal to Hyderabad at 8-00 A.M. As there was some engine trouble during the journey, he spent some time to set it right. From the figure it can be inferred that the engine trouble started between the hours.



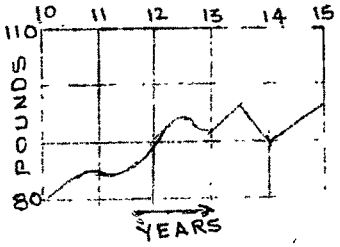

a) 8-00 to 9-00 A.M.

b) 9-00 to 10-00 A.M.

c)10-00 to 11-00 A.M.

d)11-00 to 12-00 noon.

28. The graph indicates a boy's weight in different years up to the age of 14. The boy lost his weight most in between the years.




a) 10-11 Years

b) 11-12 Years

c) 12-13 years

d) 13-14 years

29. The previous graph indicates that the boy weighs exactly 90 lbs at the age of

a) 11 Years

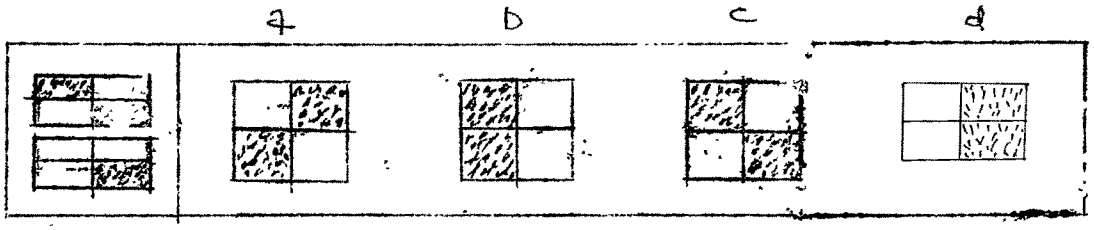
b) 12 Years

c) 13 Years

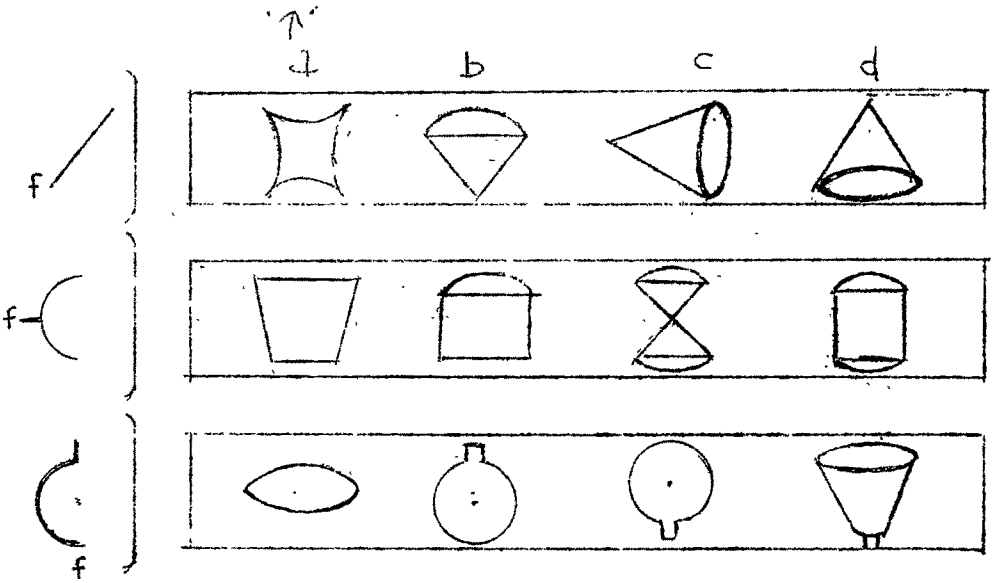
d) 14 years

## : S E C T I O N - 2 :

30. Two drawings are given on the left side. Drawing number '1' is super-imposed on drawing number '2' as it is without changing its position. Tick off the correct superimposed drawing out of the given 4 figures on the right.

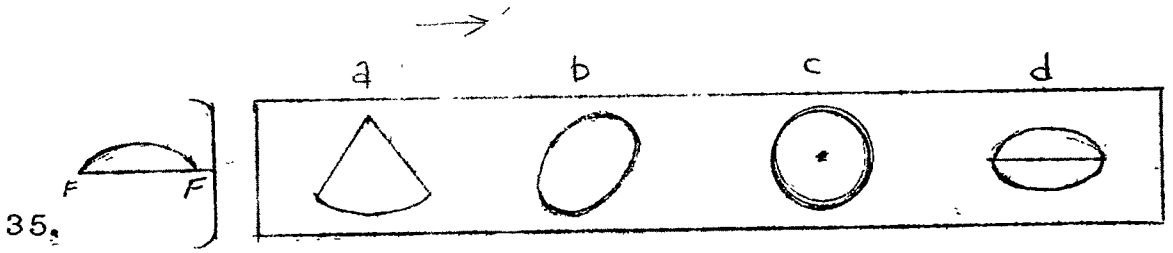



31. A wire shown on the left, is rotated about 'y' axis ( ↑ ). Tick off the correct shape given by the rotation of the wire. The fixed end is denoted by the letter 'f'.

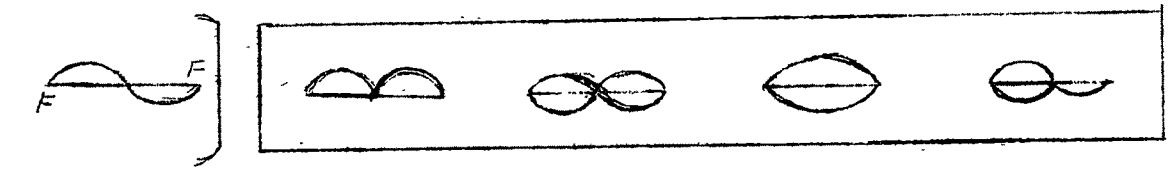



(Contd....7...)

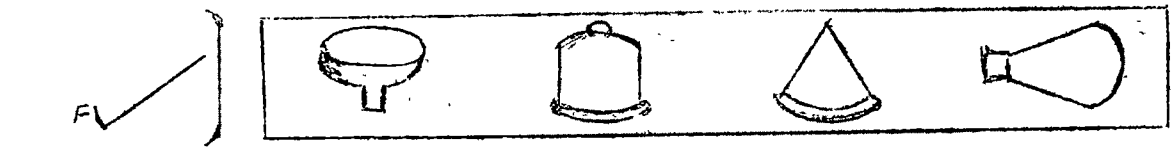
34. A wire twisted in the form of a curve shown on the left, is rotated about its X- Axis ( → ). Tick off the correct shape of the curve in its rotating position. The fixed end is denoted by the letter 'f'




35.

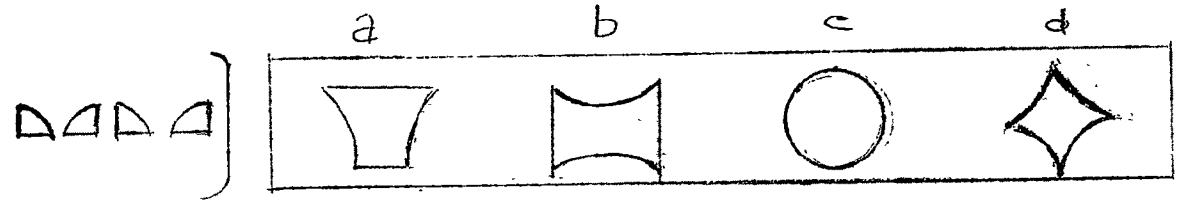



36.



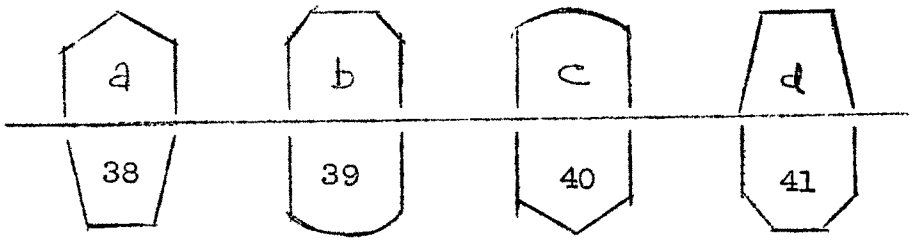

37.

From the four corners of the square, four pieces ( sectors) of paper from the four corners are cut as shown in the figure on the left side. Tick off the correct shape of the remaining paper that would look like, from the shapes given on the right.

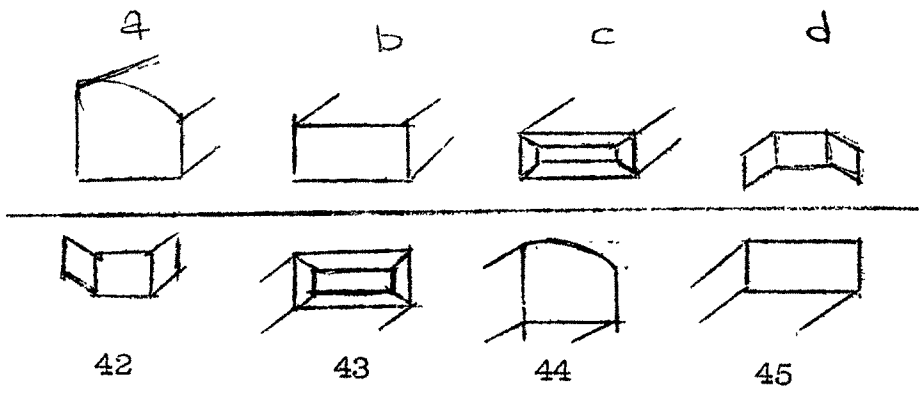



( Contd.....8.....)

38 to 41. Match the **following** figures given in halves in the first row below with the **remaining** halves of the second row. Tick off the correct figure from the alternatives given (for items 38 to 41 & 42 to 45).



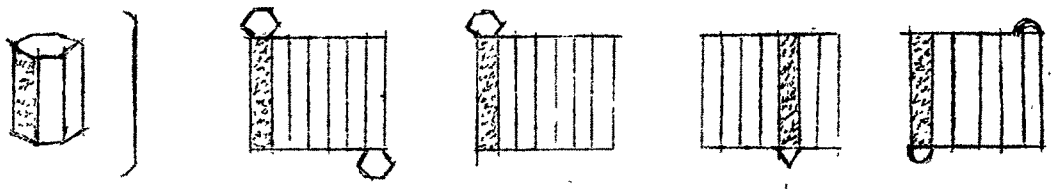

42 to 45.



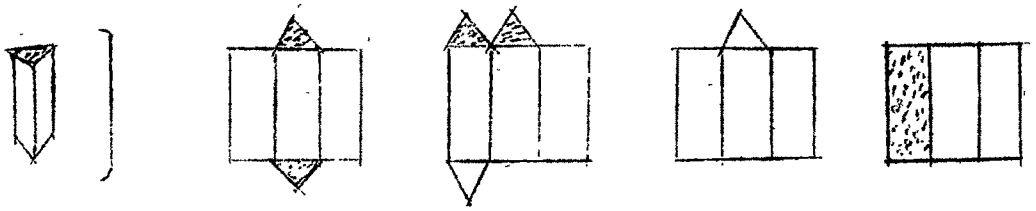

DIRECTIONS: Paper models given on the left side (on the following page ), closed at both ends and hollow, when opened assume one of the shapes shown on the right side. Tick off the correct shape from the figures given on the right hand side.

( Contd.....9-----)

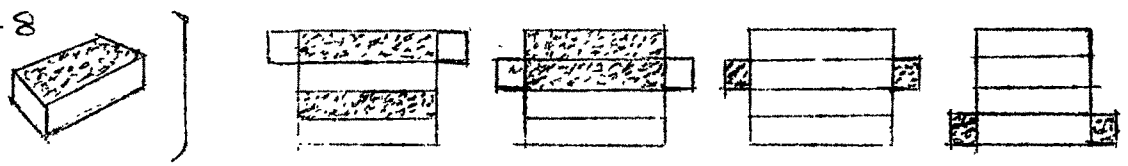
46



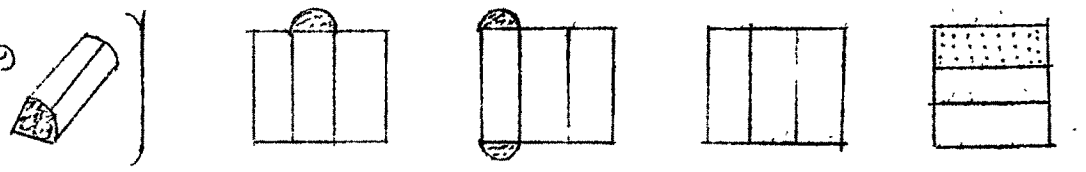
47



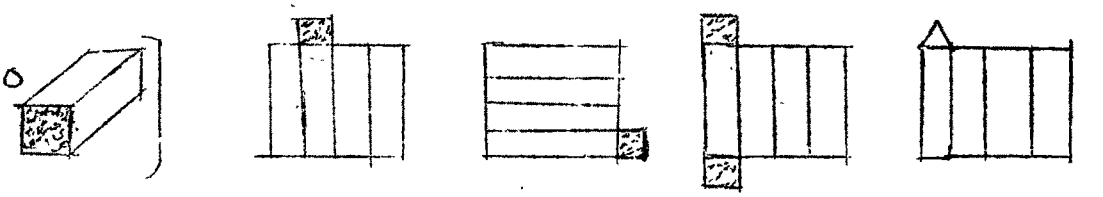
48



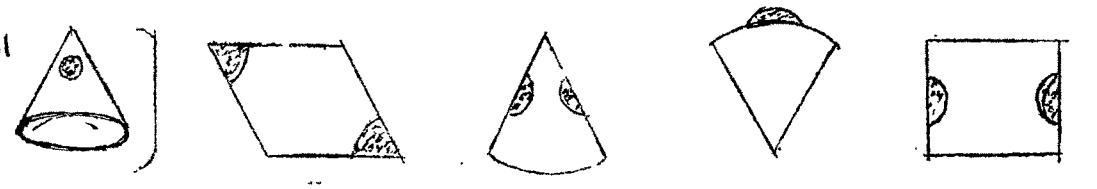
49



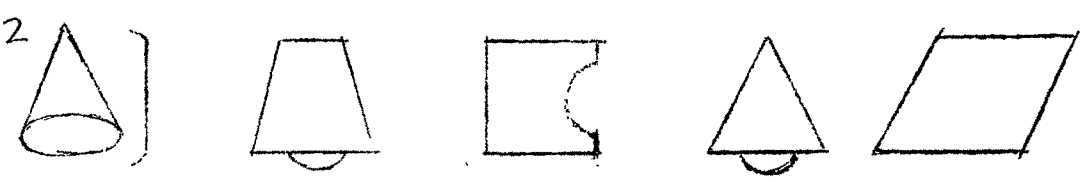
50



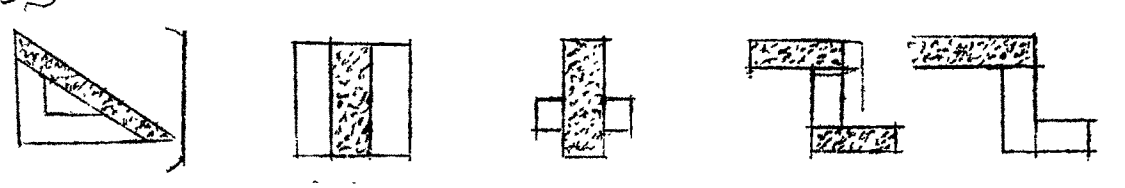
51



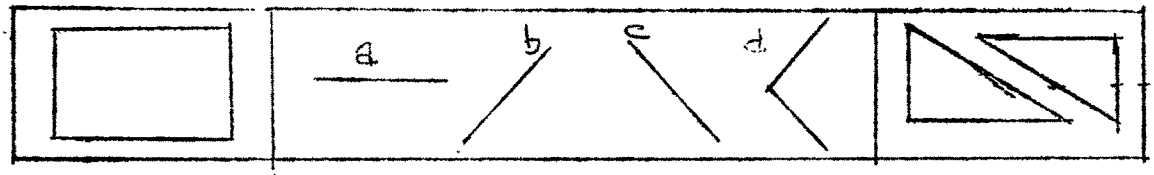
52



53



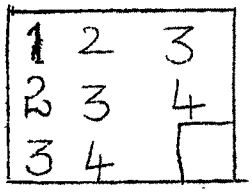
54. DIRECTIONS: The figure given on the left side is cut into two parts shown on the extreme right. Tick off the direction in which the figure is cut from the alternatives given.




## : S E C T I O N -3 :

DIRECTIONS: In the matrices given below study carefully the columns and rows and tick off the correct number or symbol that should be written in the blank space from the given set of alternatives on the right.

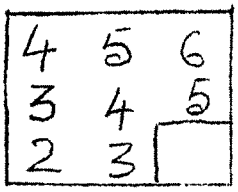
55




a b c d

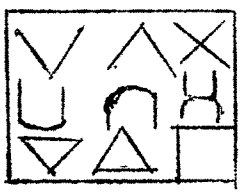
6 5 4 3

56

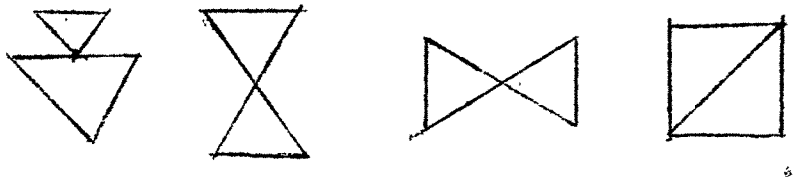



5 4 3 2

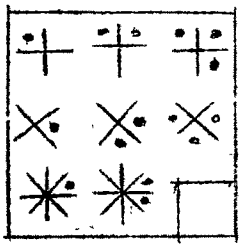
57



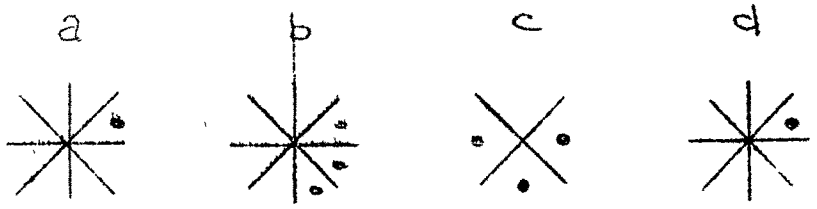
a b c d



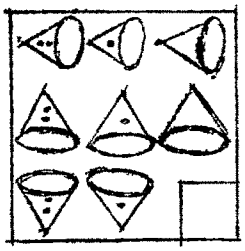
58



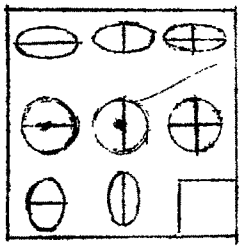
a b c d



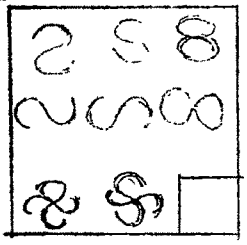
59



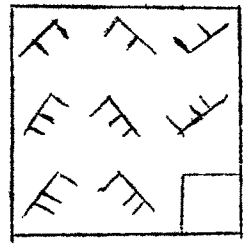
60



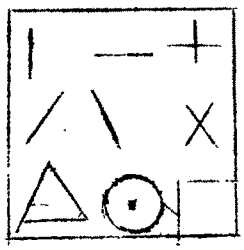
61



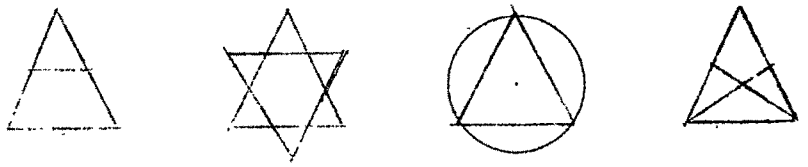
62



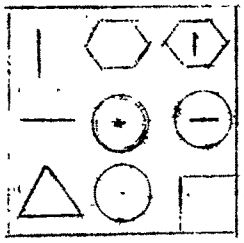
63

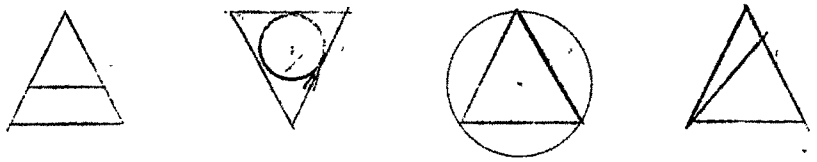


a b c d

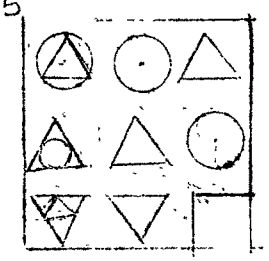


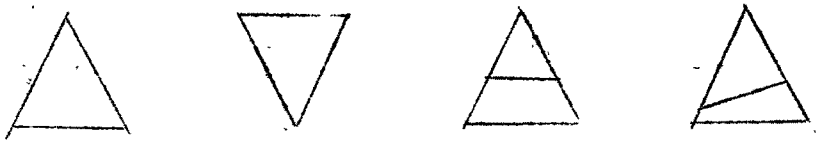
64



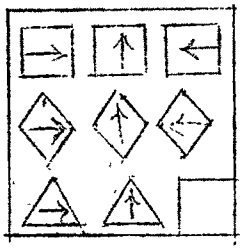


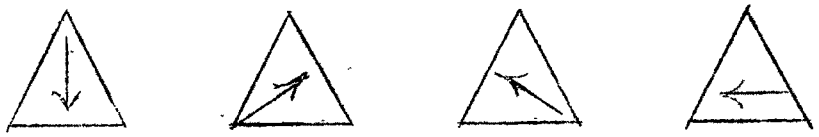
65





66





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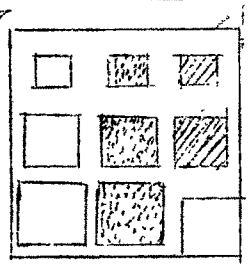
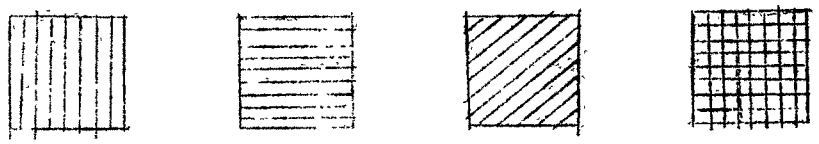
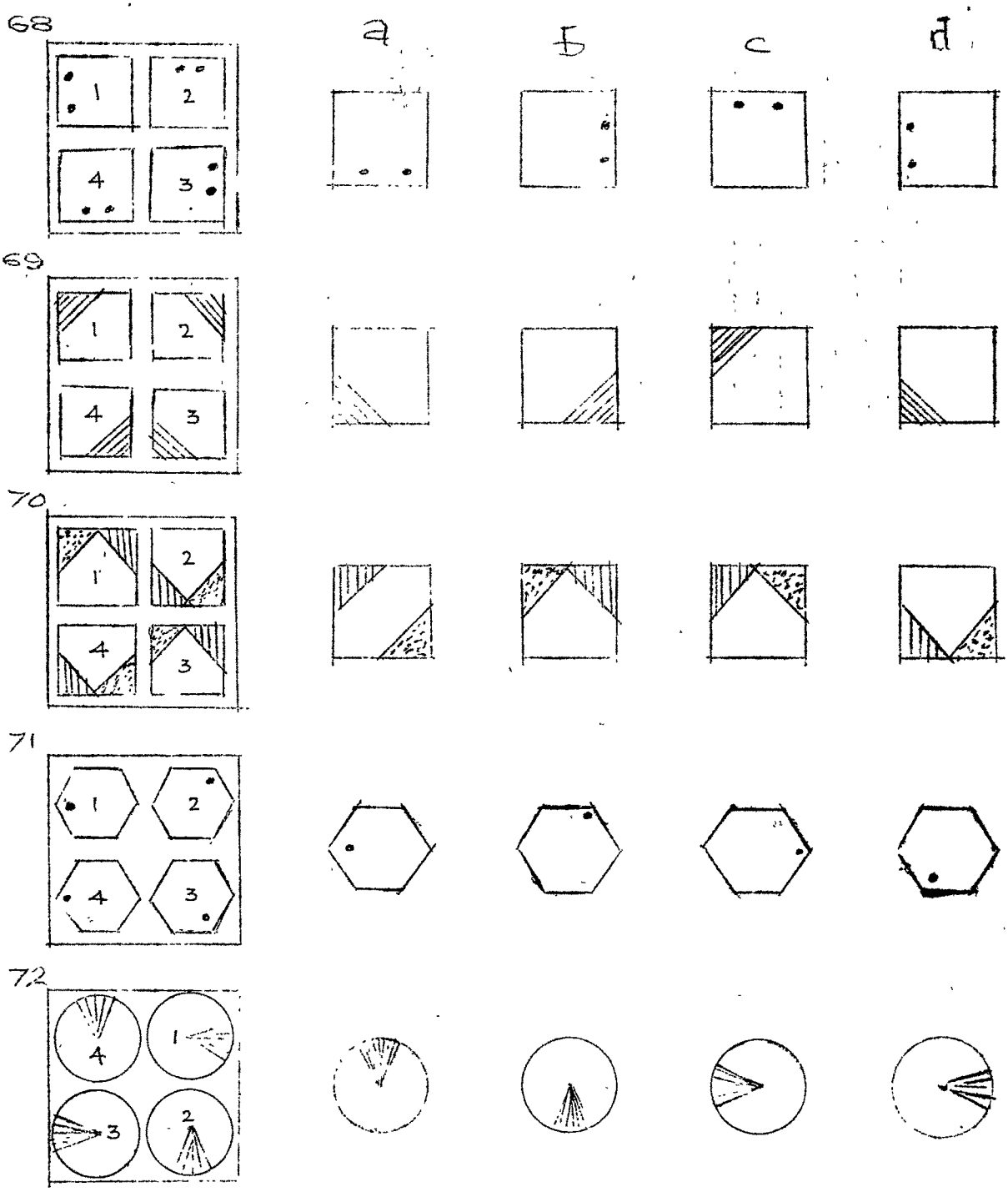


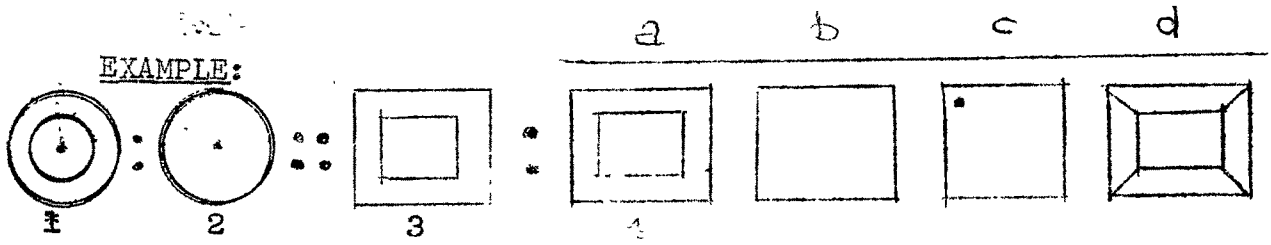



68
a
b
c
d
1
2
4
3
69
1
2
4
3
70
1
2
4
3
71
1
2
4
3
72
4
1
3
2

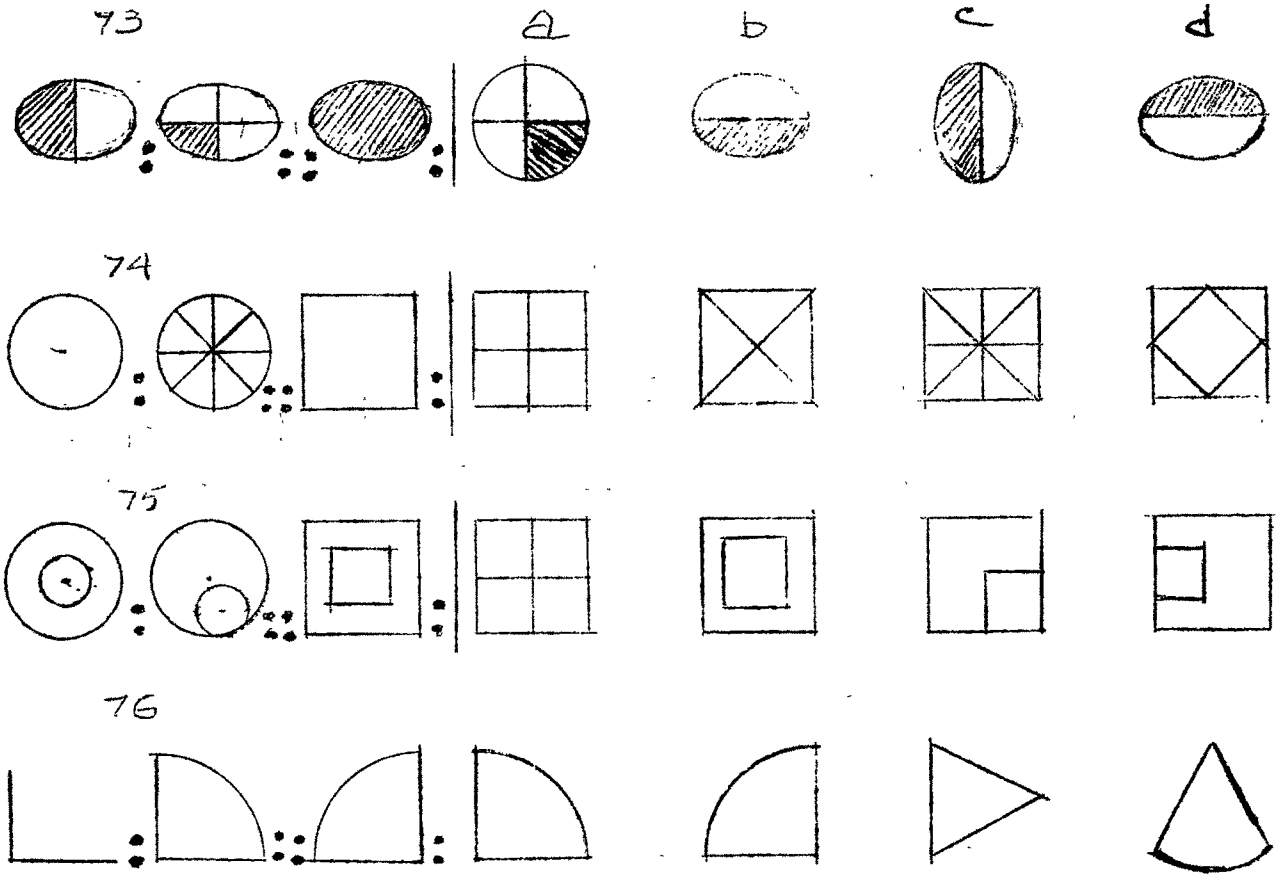
## : S E C T I O N - 4 :

DIRECTIONS: - In the following items closely observe and study the relationship that exists between the first two figures and suggest a fourth one. The relationship of 3 and 4 should be the same as the one that exists between 1 & 2.

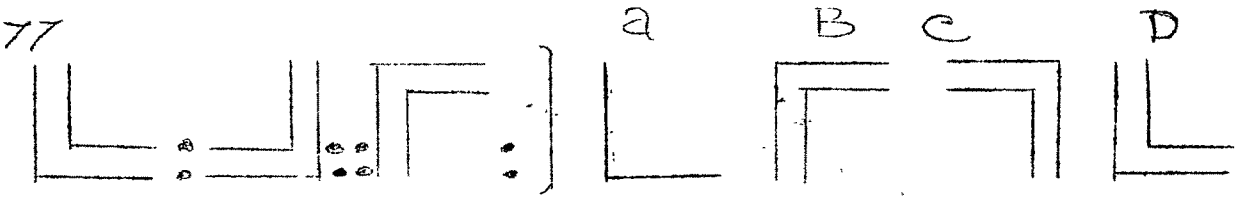
EXAMPLE:



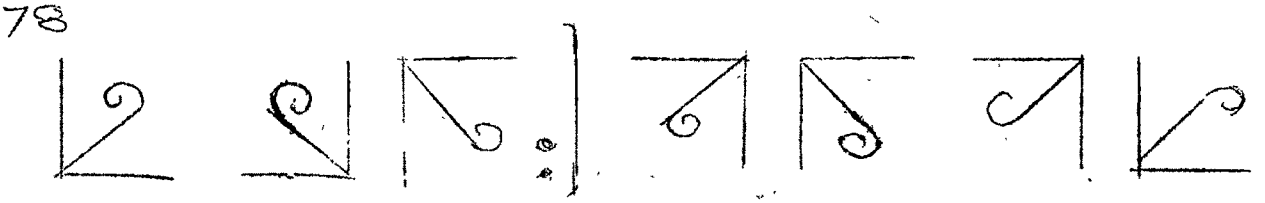

A close study of the figures 1 and 2 shows that the second figure does not contain the inner circle as the first one. So a fourth figure that is selected from the given four alternatives a,b,c,d should be such as to match with the figure 3 having the same relationship as 1 and 2. So the figure indicated under 'b' the rectangle, is to be ticked off for the correct answer.



77




78



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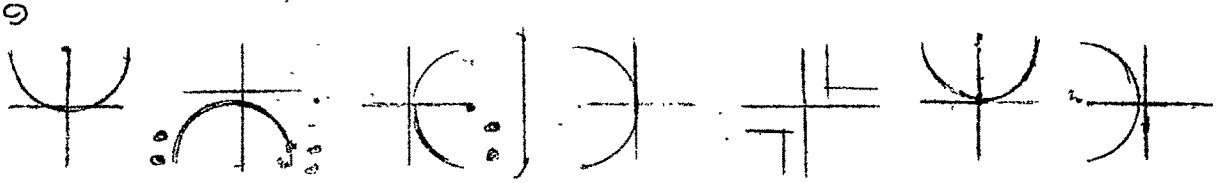

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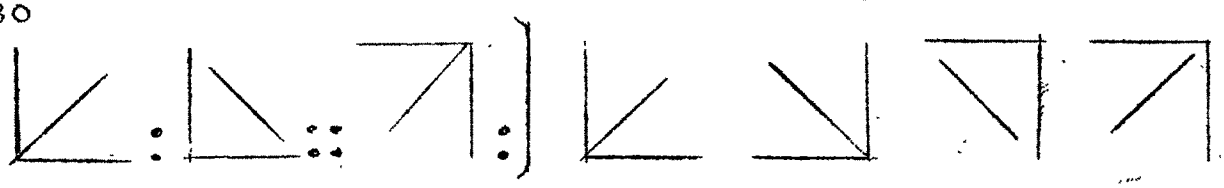
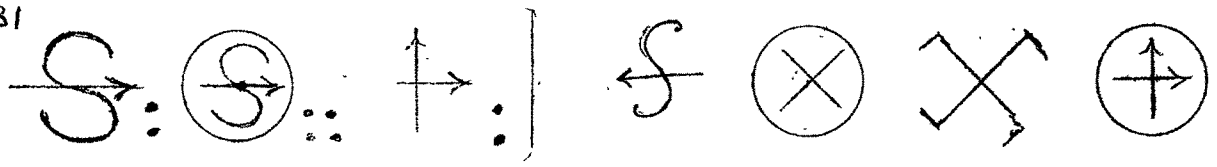
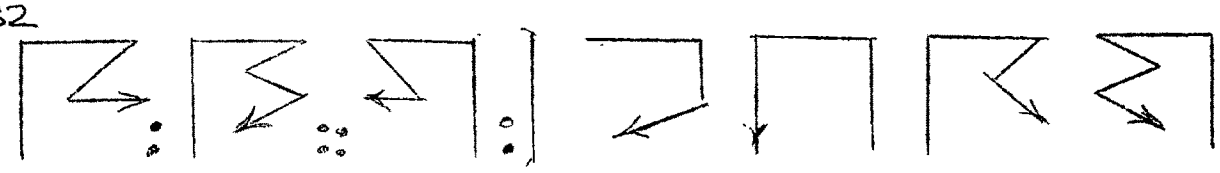


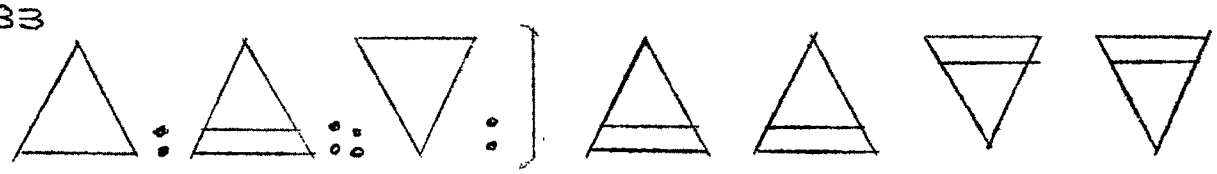
81



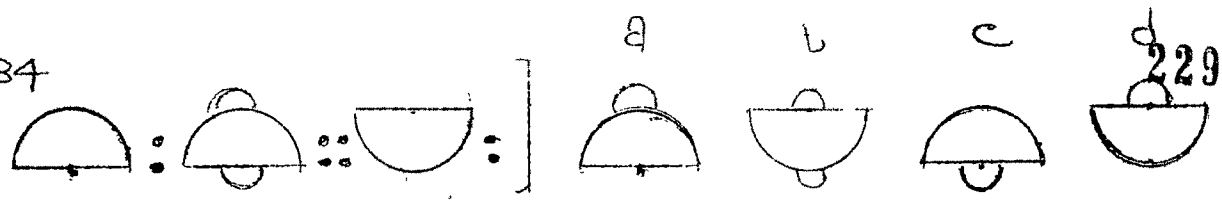
82



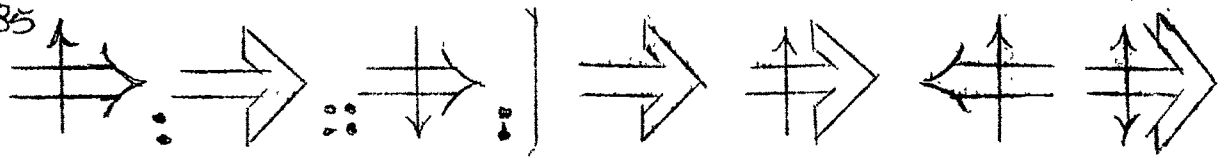
83



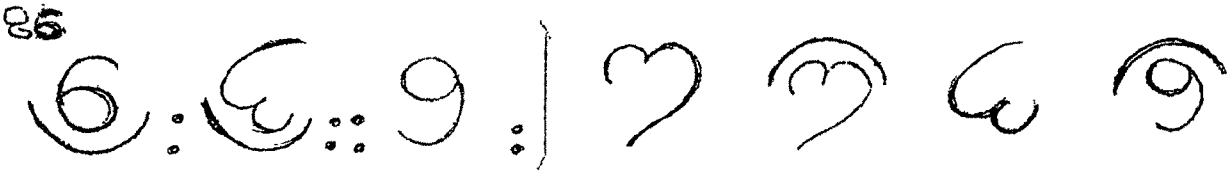
84



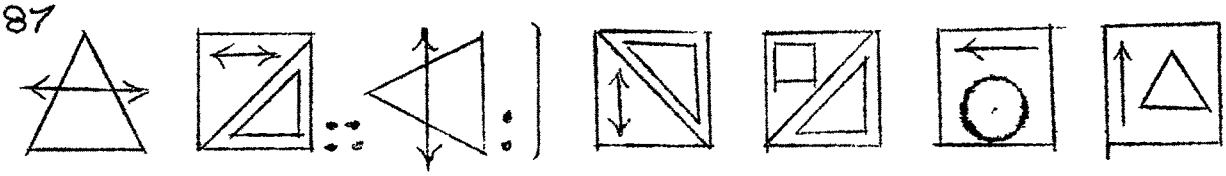

85



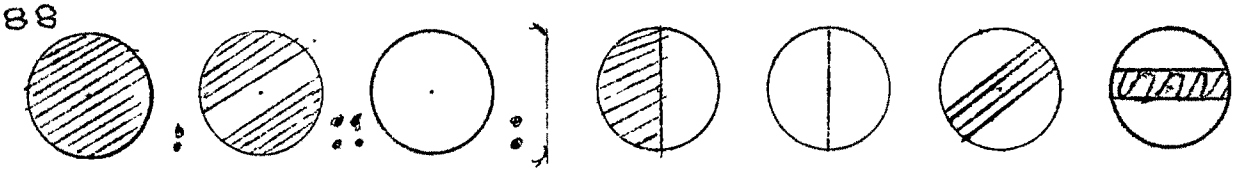
86



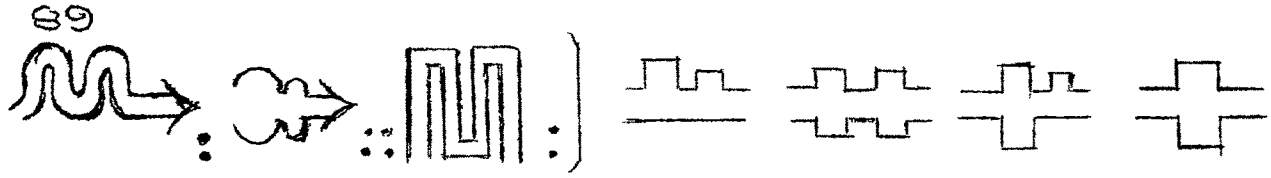
87



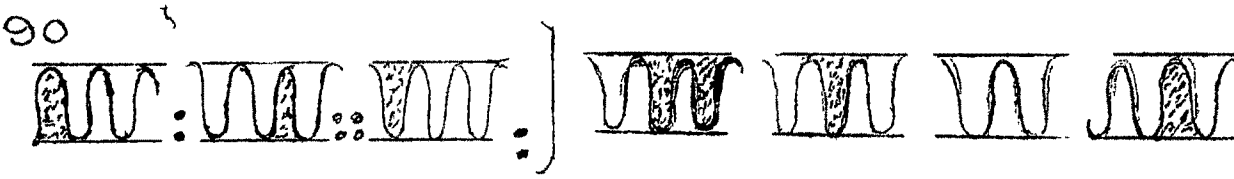
88



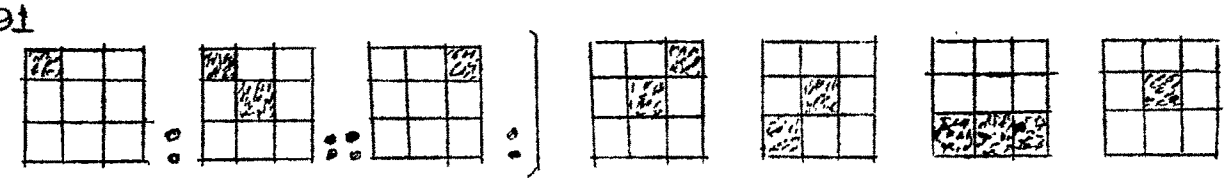
89



90

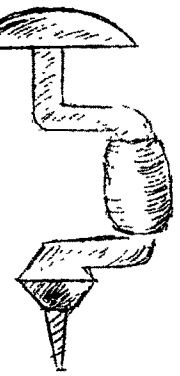


91



## : S E C T I O N - 5 :

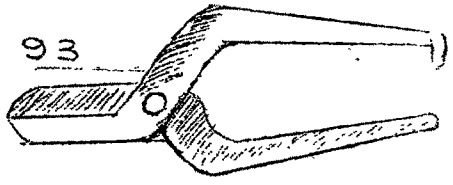
92



With the instrument shown holes are drilled by

a) rotating the point needle
b) hammering the handle
c) merely piercing the needle

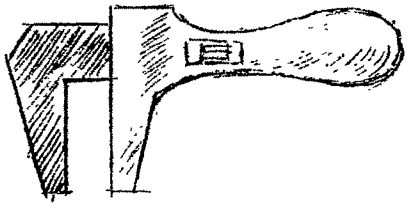
93



The applieance shown is used for cutting

a) Paper
b) metals
c) wood

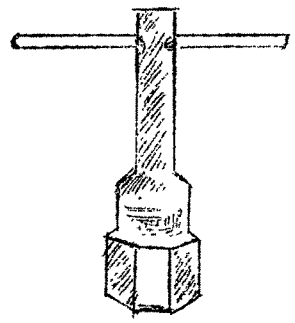
94



The instrument works with

a) One of the jaws fixed
b) two adjustable jaws
c) No adjustable means.

95



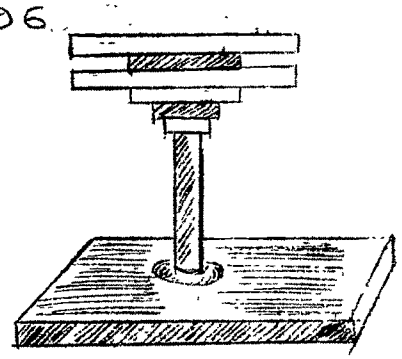
The appliance is helpful to

a) make small holes of different sizes.

b) unwind screws and nuts of different sizes.

c) fix nails of varied sizes.

96



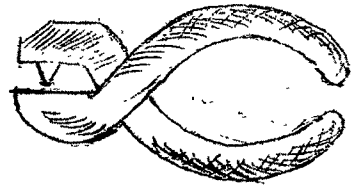
The appliance is used for making

a) large holes of varied type

b) holes of fixed diameter

c) small holes of varied diameters.

97



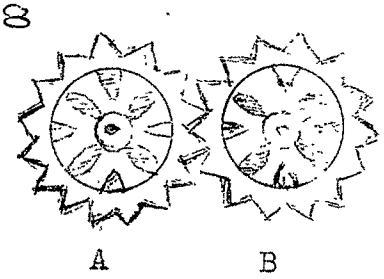
The instrument is used for boring holes in

a) metallic plates

b) wooden blocks

c) sheets of paper

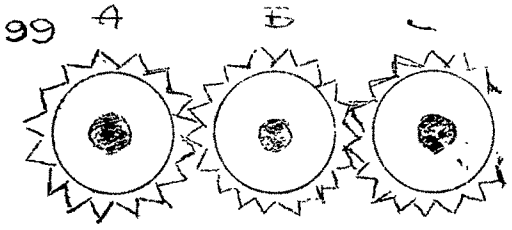
98




The toothed wheel 'B' moves as per direction shown, how does the wheel 'A' rotate?

a) ↷ b) ↶ c) ↗

99



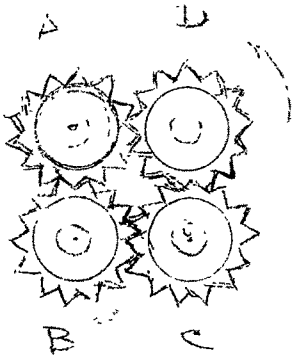

When the toothed wheel 'A' rotates in the anticlockwise direction the wheel 'C' rotates

a) in the direction as 'A'

b) Opposite to the direction of 'A'

c) in the direction of 'B'

100



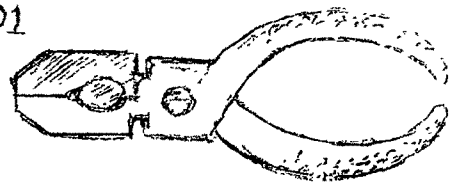

As the wheel 'D' rotates in the direction shown how do the wheels A and B move?

a) ↙ ↙

b) ↑ ↖

c) ↑↑

101



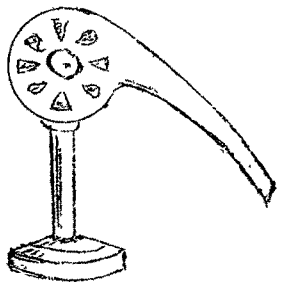
The appliances is helpful to

a) have a firm grip on substances

b) cut metallic wires

c) cut narrow metallic tubes.

102



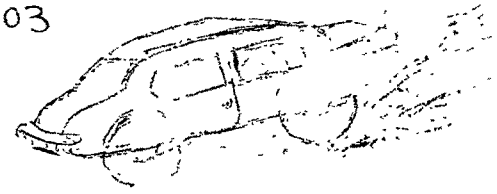
The instrument is used for

a) blowing out air

b) sucking in air

c) pumping out water.

103



A B

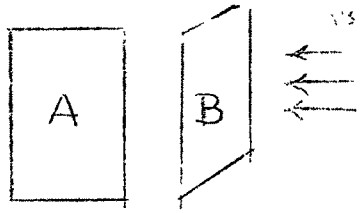
Which of the wheels of the car experience down-ward thrust?

a) A

b) B

c) None of them

104



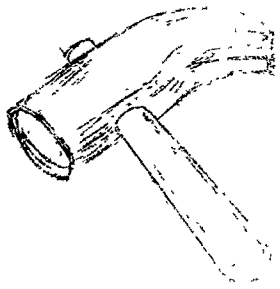

The pressure due to the wind will be a maximum on the card board.

a) A

b) B

c) None

105.



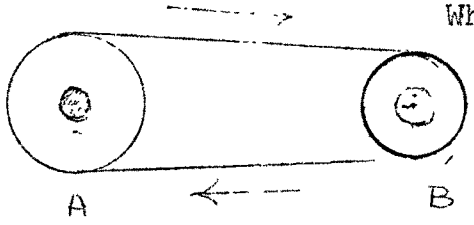
The instrument shown on the left is used to

a) pick up nails

b) make holes

c) break open things.

106



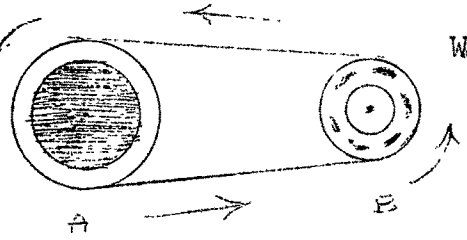

Which of the wheels makes more number of rotations?

a) A

b) B

c) Equal in both

107



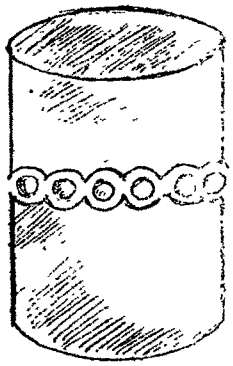

Which of the wheels moves faster?

a) A

b) B

c) None

108



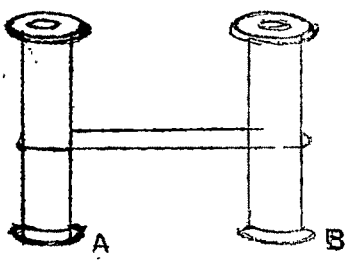
The use of marbles between the two boxes helps the box 'A' to have

a) smooth rotation.

b) slow movement

c) unstable motion

109



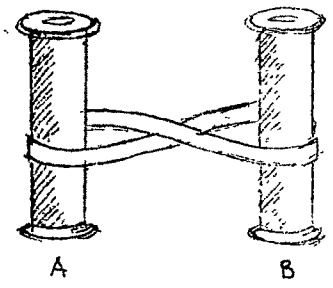

As the pulley 'A' rotates, the second pulley rotates in

a) the same direction

b) the opposite direction

c) no fixed direction

110



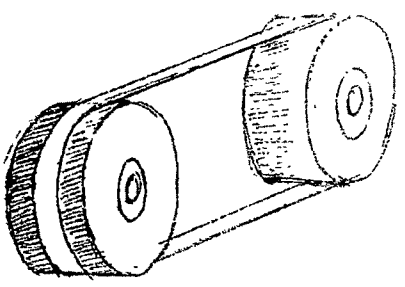

As the second pulley 'B' rotates in clockwise direction the first one

a) remains unaffected

b) moves in clock wise direction

c) moves in anti-clockwise direction.

111



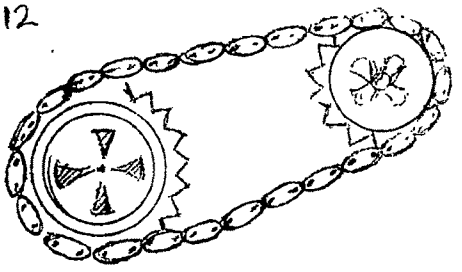
The belt driven mechanism is used because of its

a) smooth and fast run

b) steady and uniform speed

c) inexpensive nature

112



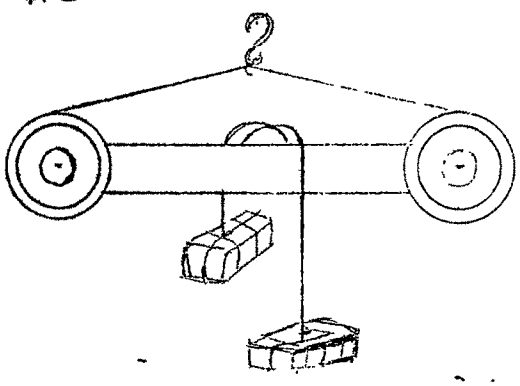
The chain driven machanism shown in the figure.

a) resists wear and tear

b) works quite smoothly

c) helps carrying heavy load.

113



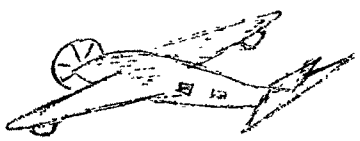
The pulley mechanism helps to

a) reduce the friction

b) change the direction of motion

c) lift the load smoothly

114



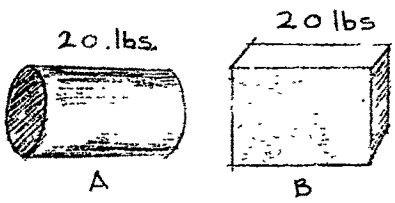
If the bomb is released from a moving aeroplane by which track will it fall to the earth

a)

b)

c)

115




Which of these solid blocks will be easier to move?

a) A

b) B

c) None of them

## : S E C T I O N -6:

DIRECTIONS:- Study the given situation carefully, tick off. the correct cause of the situation out of the three given alternatives.

116. An egg that was floating in a glass of fresh water suddenly sank to the bottom when salt was added. It was because of the

a) solubility of water

b) increase in the density of water

c) low denisity of water

117. A boy who used to gaze at the sun daily in the afternoon lost his eye sight because of the

a) intensity of light

b) ultraviolet rays

c) infra-red rays

118. A rocket is being launched into space, the effect of the fuel being fired backwards is that the rocket

a) followed the direction of firing

b) moves forward with full speed

c) remains in its position un-changed

119. An educational film was shown in a school. The different stages of a situation projected on the screen created an impression of continuity. It is because of the

a) Projection of the film roll in quick succession

b) principle of persistence of vision

c) fast motion pictures

120. On a stormy day there was thunder and lightning. Lightning was first seen before the sound of the thunder was heard. The cause being that the

a) the atmospheric distrubances obstructed sound waves

b) Sound waves have to travel longer distances

c) Light travels faster than sound.

121. A vistory who was at the gate was coming towards the room unobserved by any one. The dog suddenly pounced on the visitor even before he entered the door. It was because,

a) the animals hear very low vibrations of sound.

b) dogs can smell very easily.

c) the dog imagined the presence of the visitor

122. It was summer. The Telephone wires appeared to be a bit loose. It was due to the

a) defect in the material of the wires

b) contraction of molecules in the wire

c) expansion of wires due to heat

123. A boy was writing a letter to his friend. Suddenly the smooth flow of the ink stopped. It was flowing in thick big drops. The cause being

a) the defective nib of the pen

b) the defective tongue obstructing the free flow

c) the ink is exhausted in the barrel

124. A washerman uses electric iron to clean the clothes. He is complaining of heavy electric bills since its use. It is due to the

a) incomplete connections in the main circuit

b) heavy drawal of current by the instrument

c) Defective parts of the electric iron.

125. In big dams large sheets of copper will be used in their construction. They are used to

a) conduct away the extra heat

b) give stability to construction

c) support the strength of the material used.

126. On a windy day there were gusty winds. The weather bulletin indicated the heavy inflow of winds in a particular area. It was due to the

a) high pressure in the area

b) temperature difference

c) low pressure created

127. While passing through a city, one would come across a number of buildings having on its top a pointed rod connected to the earth by copper cables. The rods

a) are kept for the absorption of heat.

b) carry the lightning charges to earth.

c) form a part of the design building construction.

128. On a rainy day it was quite sultry, there was lot of perspiration. It was due to the

a) presence of plenty of humidity in air

b) still and motion less wind

c) evaporation process being at a slow rate

129. We were listening to music from a radio, the music was not clear and there was lot of disturbance. The radio was in good condition . Scientists all over the world were complaining about the sun-spot activity. It is because of that

a) the radio communication got dislocated

b) the lower layers of the atmosphere are disturbed

c) one of the valves got weakened

130. A boy got sun-burnt while going to the school on a sunny day during noon. It is because

a) sun rays travel shorter distance at noon

b) the rays of the sun fall normal to the surface at noon

c) intensity of illumination will be at its maximum

131. In some lakes one would come across solid sheets of ice floating on water. It is due to

a) the density of water at $4^{o}c$ being greater than the density of ice.

b) the density of water being always greater than that of ice.

c) the contraction of water while changing its state to ice.

132. My friend possesses an interesting clock where in the numbers can be seen even during night. It is due to the

a) self illuminating device

b) presence of Radium coating

c) numbers being painted white

133. A boy came home fully drenched in rain. While combing his hair he was remarking about the elongation of hair in its length. It is because

a) the hair appears elongated while combing

b) it gets elongated in presence of water

c) it gets elongated even when dry

134. We are told that even a cement concrete road expands slightly on a hot day. But inspite of it the road is not at all damaged. The cause being that, to make allowance for expansion,

a) spaces filled with tar are built into the concrete

b) space is left at regular intervals on the surface

c) sufficient space is left at the edges.

135. Helicopters are used at places where aeroplanes are inaccessible specially hilly areas and used for rescue operations. It is because

a) it is inexpensive to use

b) the propellers rotate horizontally

c) It rises vertically without the need of a run away

136 When a liquid drop splashes the drop splits into a number of small drops always assuming a spherical shape. It is due to the

a) the gravitational force of attraction

b) internal pull of the molecules

b) the tension on the surface of the drops.

137. A cyclist in motion going at top speed along a road took a sudden turn towards a curved path. He was leaning heavily towards the centre of curvature. It is only to balance the

a) jerky motion along the curved path

b) force throwing away from the centre of curvature

c) pull towards the centre of curvature

138. An accident took place on a hot day near a 'Cool drink shop'. The soda bottles got burst and many people were injured. The bottles were not kept in a cool place. It is due to the

a) expansion of the glass material of the bottles

b) glass material being quite brittle

c) pressure caused on account of the gaseous expansion inside

139. The use of umbrellas of black cloth is a common feature observed in our daily life. They are also used in summer. It is because it

a) radiates heat

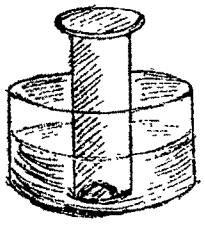
b) takes in lot of dirt

c) absorbs outside heat giving some relief

## : S E C T I O N - 7 :

DIRECTIONS:- The examples given contain facts about simple experiments. Tick off the correct interpretation of facts from the given set of alternatives.

140 When one covers the cork floating on water with a gas jar, the cork comes down to the bottom. It denotes that the



a) cork is lighter than water

b) air presses down the cork to the bottom

c) water pressure forces the cork to the bottom

141. Pounded ice was placed in two test tubes separately. The ice in the test tube that was mixed up with some black soot and dirt

a) lowers the melting point

b) absorbs more heat

c) quickens the process of melting

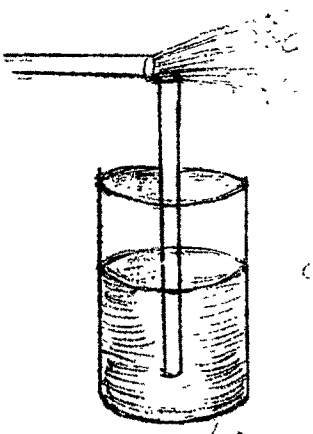
142 A full blown toy balloon is rubbed with fur briskly. When it is placed against the wall it stays where it is left. It shows that the

a) Charged balloon gets attracted towards the wall.

b) air pressure forces the balloon to one side.

c) upward pressure of air balances earth's gravity

145. Two soda straws, one placed in water vertically and the other kept horizontally normal to the first one and just above it. Through the straw kept horizontally, air is blown. Water gets sprayed. It denotes that the



144

a) Partial vacuum created in the first straw by the air jet forces water upwards.

b) atmospheric pressure forces the water in the first straw upwards

c) stream of air that blows across, sucks in water

In a snowy place boys were practising skating on the icy ground. The path carved out as they skated, soon disappeared. It showed that the

a) ice that melted under pressure during skating soon gets solidified

b) surrounding temperature freezes the ice that melts

c) path made is too narrow to be seen by the naked eye

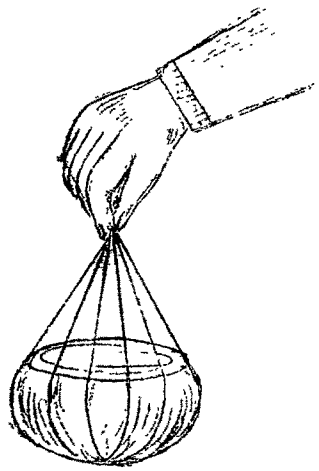
145 One day a motor driver purchased gasolene in the morning, a change from his old practice of purchasing it in the afternoon. He found its purchase more beneficial in the morning than in the afternoon. It only showed that the gasolene molecules

a) got expanded and occupied more space in the afternoon

b) occupied its normal space in the morning time

c) contracted to a much less volume in the morning

146. A small sized bowl is filled nearly with water. A wire is securely fastened to the neck of the bowl. It is swung round rapidly at arm's length. No water was spilt. It denotes that the



a) atmospheric pressure prevented water from spilling

b) force that acts away from the centre of rotation prevented the spill of the water

c) force acting towards the centre of rotation prevented its spill

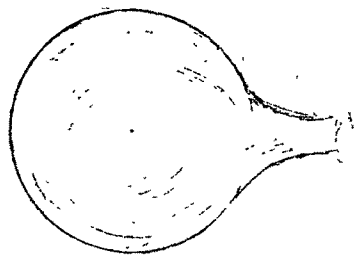
147 A model dam was constructed by students. Walls of the dam were made thick. They were advised to make the bottom of the walls much thicker. The advice was followed. It means that the thickness of the walls at the bottom

a) increases the stability of construction

b) is made to with-stand the increasing water pressure with depth

c) is made to with stand the outside atmospheric pressure

148 A balloon is inflated and its mouth closed with fingers. When the air contained in it is allowed to escape the balloon will be propelled forward. It is to be concluded that the

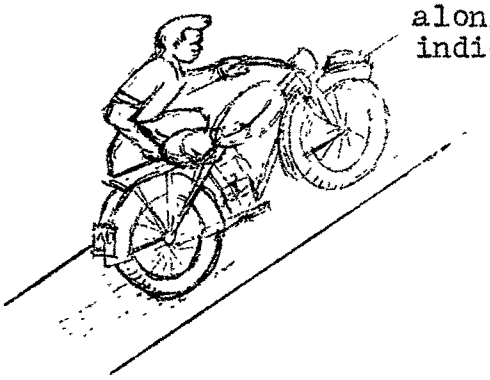


a) balloon moved forward due to the pressure inside

b) balloon movement is made possible by the law of action and reaction

c) elastic property of the balloon pushed it forward.

149 A motor cycle is to be taken to a platform at a particular height. It was seen to be easier to pull the cycle along a board kept inclined at an angle. The force required to pull it along the board is seen to be much less. It indicated that



a) up an inclined plane less force is exerted over a greater distance

b) work done up an inclined plane is more

c) the work done in lifting it vertically is less.

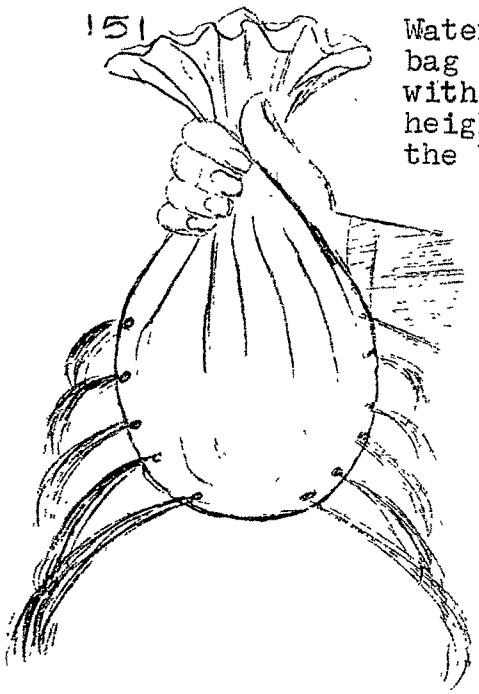
150 A co- passenger in the plane, during a flight complained about his clothes being spoiled by the ink spilt from his fountain pen. The pen was only half filled, when he boarded the plane. The incident revealed that

a) ink overflowed during the sudden movements of the plane

b) low atmospheric pressure at high altitude caused it to overflow

c) the density of the atmosphere was low at high altitudes

151



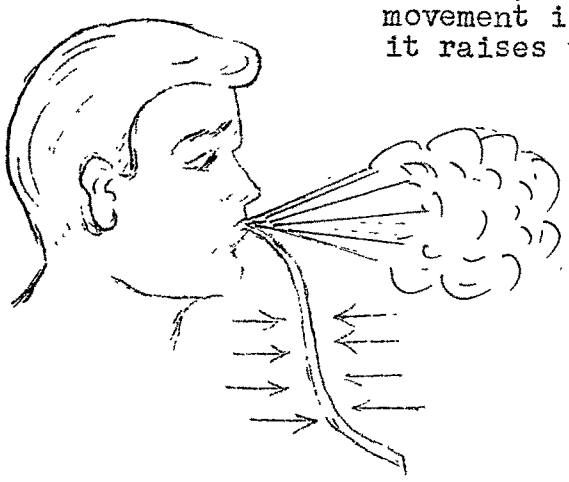
Water is poured into a heavy paper bag. The bag is lifted carefully and four holes are punched with a needle with 1" different at different heights on both sides. Water from the holes near the bottom is seen to gush farther. It shows that

a) sufficient air pressure is not exerted on the upper level

b) limited space at the bottom level compresses the water

c) pressure increases with depth

152



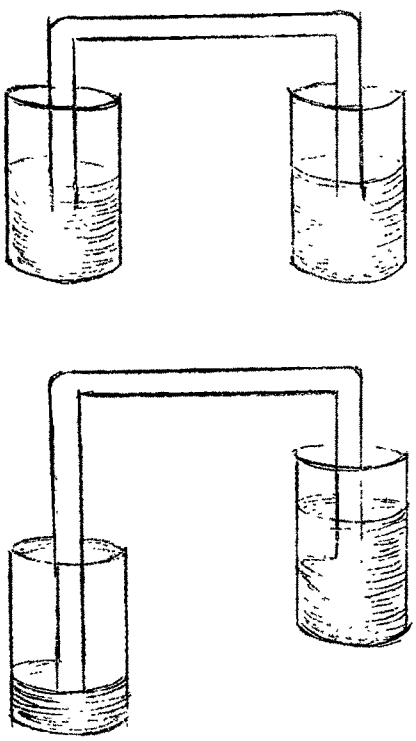
A paper is held infront of the chin with its upper surface curved as shown in the diagram, just below the lower lip. Breath is blown steadily across the paper. To start with no movement is observed in the paper but soon it raises up. It denotes that the paper

a) is very little influenced by air pressure below

b) raises as the breath of air reduces the air pressure above it

c) Is pressed down by the atmosphere above it

153



A bent glass tube when placed in the first position shown no water flowed. In the second position water continued to flow in the direction indicated. It is to be concluded that water

a) flows from a higher level to a lower level

b) flows if the levels are equal

c) does not flow if the bent glass tubes are of unequal length.

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