

# Dr Homi Bhabha Bal Vaidyanik Exam

Year 2017 Test Paper

*All Success begins with YOU !*

1. Odd man out.

- (A) Radio (B) Television  
(C) Cinema (D) Puppet theatre

2. Complete the co-relation :

Idli: Fermentation Action:: Rotting of leaves :

\_\_\_\_\_

- (A) Stabilization of Nitrogen (B) Combination  
(C) Disintegration (D) Oxidation

3. Bunds are built by digging trenches in draught stricken region collectively by the people, so that \_\_\_\_\_

- (A) Subsoil water level rises  
(B) Rain water stopped by bunds, seeps in these trenches.  
(C) It stops erosion of soil.  
(D) All the above benefits.

4. Which among these is the fastest way to send written messages and photographs?

- (A) Speed Post (B) E-mail  
(C) Courier (D) By messenger

5. Who am I ?

I rotate around myself. I revolve around a planet and a star also.

- (A) Dwarf planet (B) Planet  
(C) Satellite (D) Comet

6. Why our throat itches, when we eat 'colocasia' vegetable?

- (A) Latex is present in leaves  
(B) Gum is present in leaves  
(C) Leaves have a layer of some material, which is similar to wax  
(D) Needles like crystals are present in the leaves.

7. A stationery shop is 2.5 k.m. away from the school. To draw a map, the scale is 1 cm = 500 m. How much will be the distance on the map,

from school to shop?

- (A) 0.5 cm (B)  $2\frac{1}{2}$  cm

- (C) 5 cm (D) 50 cm

8. Find the improper statement with respect to eco-friendly house.

- (A) There are many electrical lights to have proper light in the house.  
(B) There is a place, to prepare compost, near the house.  
(C) House is built on barren land.  
(D) The house is built with the material, available in the nearby area; i.e. stones, wood, soil etc.

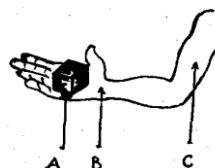
009. What is the similarity between mushroom and algae?

- (A) Both are flowering plants  
(B) Both are parasites  
(C) Both do not have organs like other plants.  
(D) Both are poisonous plants.

10. Select the correct order of regions.

- (A) Taluka, Village, State, District  
(B) Village, Taluka, District, State  
(C) District, Taluka, State, Village  
(D) State, District, Village, Taluka

11. What will be the correct option for points A,B,C, in the given figure?



- (A) A-fulcrum, B-effort, C-load  
(B) A-effort, B-load, C-fulcrum

(C) A-load, B-fulcrum, C-effort

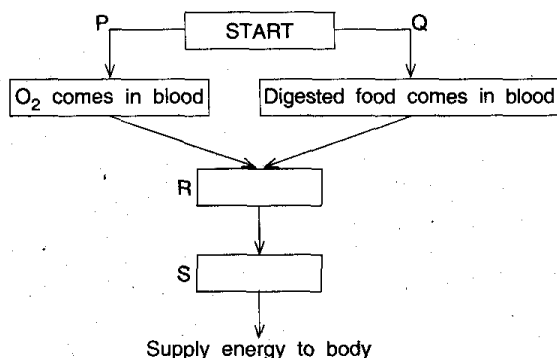
(D) A-effort, B-fulcrum, C-load

12. Intensity of sound is measured in -

(A) Richter (B) Decibel

(C) Calorie (D) Hertz

13. How our body gets energy is shown by a flow-chart. Select the proper alternative.



P Q R S is

(A) Respiratory system, Circulatory system, Blood circulation, Production of  $O_2$

(B) Circulatory system, Digestive system, Slow burning, Blood circulation.

(C) Respiratory system, Digestive system, Blood circulation, Slow burning

(D) Digestive system, Respiratory system, Slow burning, Blood circulation

14. On which day the number of hours in a day and night are equal?

(A) 21<sup>st</sup> April (B) 21<sup>st</sup> June

(C) 22<sup>nd</sup> September (D) 22<sup>nd</sup> December

15. Pitcher plant satisfies its need of which nutrient, from insects?

(A) Carbohydrates (B) Fats

(C) Proteins (D) Salt

16. In maps, \_\_\_\_ is/are used to show the depth and height of terrain.

(A) Contour line method

(B) Layer tinting method

(C) Digital elevation method

(D) All of the above

17. Dew drops are seen on grass, in winter.

What kind of change of state, is this?

(A) Melting

(B) Sublimation

(C) Freezing

(D) Condensation

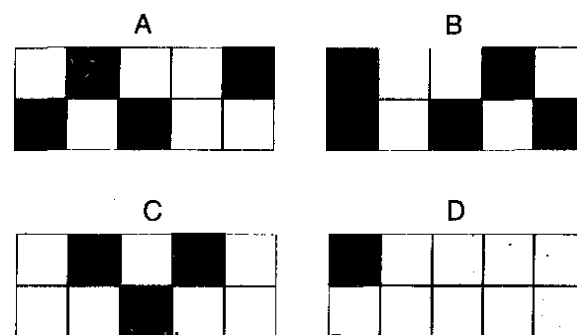
18. A, B, C, D are four cities situated on the banks of four different rivers. The table given below, indicates some factors, in the water of these four rivers. Find the river near which city, is least polluted; using the table.

City	No. of microbes	Level of oxygen	Green vegetation	Animals
P	less	more	less	less
Q	more	less	more	more
R	more	less	less	less
S	less	more	more	more

(A) P (B) Q

(C) R (D) S

19. Which one of the following figures show proportion of oxygen in the air?



(A) A (B) B

(C) C (D) D

20. Moon on Shukla Ekadashi (11<sup>th</sup> day of fortnight of 'waxing moon') will be \_\_\_\_\_

moon on Krishna Ekadashi {11<sup>th</sup> day of fortnight of 'waning moon')

(A) Same (B) smaller than

(C) Greater than

(D) Different in different Lunar month

21. Which must be the habitat of plants having characteristics as given below?

Root-long tap root, Stem-muscular green color, Leaf-small/fleshy/in form of thorns,

(A) Water

(B) Air

(C) Desert

(D) Marshyland

22. Beaker 'A' contains water and Beaker 'B' contains coconut oil. If one wooden block is dipped in them, one by one, what will happen?

- (A) The block will sink in both the liquids.
- (B) Block will sink in liquid A and float in liquid 'B'.
- (C) The block will float in both the liquids.
- (D) Block will float in liquid 'A' and it will sink in liquid 'B'.

23. Choose the incorrect (false) statement.

- (A) Balanced diet keeps body fit and healthy
- (B) Over cooking decreases the nutritive value of food.
- (C) Cheese is an animal product.
- (D) Nutritional value of packed food is more than fresh food.

24. Which of the following phenomena is not affected by the atmosphere on the earth?

- (A) Rain
- (B) Suneclipse
- (C) fog
- (D) snowfall

25. Which .one of the following, is the plant source of 'calcium'?

- (A) Milk
- (B) Rice
- (C) Maize
- (D) Raggy

26. 'P' and 'Q' are densities of wooden and aluminum block respectively. Blocks are weighing 500 gm each. What will be the relation between 'P' and 'Q'?

- (A)  $P < Q$
- (B)  $P < Q$
- (C)  $P > Q$
- (D)  $P > Q$

27. Rainfall in Chandrapur district is very high. What could be the main crop of this district?

- (A) Rice
- (B) Bajara
- (C) Jowari
- (D) Maize

28. At the beginning of evolution, the human beings realized the need to wear clothes because.

- (A) Man started walking on two legs.

(B) During this period, the hair on his body became less.

(C) Man wanted to show that he was different from others

(D) He wanted to protect his body from insects and animals.

29. Find the odd substance, according to its source.

- (A) Lac
- (B) Silk
- (C) Honey
- (D) Rubber

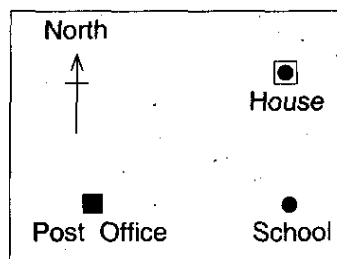
30. Which joint is telling lie?

- (A) Hinge joint - I can move only in one direction
- (B) Ball and socket joint - I can move in more than one directions.
- (C) Gliding joint - I can move in  $360^\circ$ .
- (D) Immovable joint - I cannot move.

31. I am transparent, hard, brittle and bad conductor of heat, who am I?

- (A) Plastic
- (B) Sunmica
- (C) Acralic
- (D) Glass

32. According to given figure, find the direction of home and school respectively, in respect with Post office.



- (A) North East, East
- (B) North East, West
- (C) South-West, East
- (D) South-West, West

33. Recognize the co-relation and write:

Hollow stem : Lotus :: Fleshy stem :

- (A) Cactus
- (B) Onion
- (C) Yam
- (D) Carrot

34. If you hear the noise of thunder storm, 6 seconds after seeing the lightening, on how much distance, the Lightening must have shone? (speed of sound in air = 340 m/s.)

- (A) 346m (B) 56 m  
(C) 334 m (D) 2040 m

35. \_\_\_\_\_ is a dwarf planet.

- (A) Uranus (B) Neptune  
(C) Pluto  
(D) A band of astronomical bodies between Mars and Jupiter.





36. Which one of the following is scavenger?

- (A) Goat (B) Jackal  
(C) Monkey (D) Vulture

37. What is the relation between melting point (m.p.), boiling point (b.p.) and freezing point (f.p.) of any substance.

- (A) b.p. > m.p. and f.p. < m.p.  
(B) b.p. > f.p. and m.p. = f.p.  
(C) b.p. = m.p. and m.p. > f.p.  
(D) b.p. > f.p. and f.p. < m.p.

38. Some Icons used on mobile are given, some expressions are given. Match them properly.

(I)		P)	Cheer up
(II)		Q)	Congratulation / well wishes
(III)		R)	Appreciation
(IV)		S)	Regards

- (A) I – R, II – P, III – S, IV – Q  
(B) I – S, II – R, III – P, IV – Q  
(C) I – Q, II – R, III – S, IV – P  
(D) I – S, II – R, III – Q, IV – P

39. Softening of bones and possibility of fractures are/the symptoms of which disease?

- (A) scurvy (B) pellagra  
(C) Rickets (D) night blindness

40. Recognize the co-relation and select the alternative.

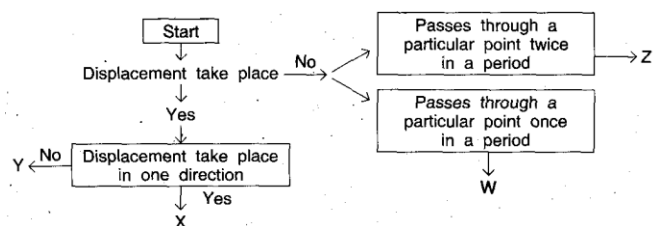
Heart : Cage of ribs : Brain : \_\_\_\_\_ .

- (A) Cage of ribs (B) Abdomen  
(C) Pelvic (D) Skull

41. Lakshadweep is in

- (A) Indian Ocean (B) Arabian sea  
(C) Bay of Bengal (D) Atlantic Ocean

42. Read the following flow chart carefully and find which type of motion is represented by W, X, Y, Z.



	W	X	Y	Z
A	Oscillatory	Linear	Random	Circular
B	Oscillatory	Random	Linear	Circular
C	Circular	Random	Linear	Oscillatory
D	Circular	Linear	Random	Oscillatory

43. Arrange the given liquids in ascending order, as per their fluidity.

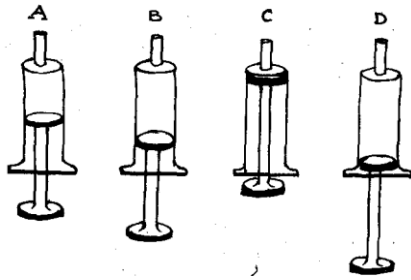
honey, milk, edible oil, water

- (A) water, milk, honey, edible oil  
(B) water, milk, edible oil, honey  
(C) honey, edible oil, milk, water  
(D) honey, edible oil, water, milk

44. Which of the following disasters can be minimized by public awareness?

- (A) Cyclone (B) Earthquake  
(C) Forest fire (D) Tsunami

45. With different position of piston, figures of syringes are given here. In which figure maximum medicine can be sucked in it.



(A) A (B) B (C) C (D) D

46. Neev covered a distance of 1 km in a running competition, in four minutes and ten seconds.

Find his running speed.

- (A) 4 m/s (B) 40 m/s  
(C) 50 m/s (D) 60 m/s

47. Find the dissimilar group.

- (A) Flute, shahnai, trumpet  
(B) Tabla, duff, mridangam  
(C) Guitar, turkish guitar, one stringed musical instrument  
(D) Bugle, tabla, guitar

48. Which clothes will be appropriate for good health in summer?

- (A) Dark colored cotton clothes  
(B) Dark colored nylon clothes  
(C) Light colored nylon clothes  
(D) Light colored cotton clothes

49. All phenomenon related to weather (i.e. cloud formation storm) takes place in troposphere, because \_\_\_\_\_

- (A) In this layer air is rare.  
(B) Maximum water vapor of the atmosphere is in this layer.  
(C) This layer is nearest to earth.  
(D) Ozone is present in this layer.

50. Guess who am I?

I am a cause for Tsunami. Movements in the interior of the tectonic plates are the cause for my occurrence.

- (A) Storm (B) flood  
(C) earthquake (D) volcano

51. If same volume of river water and sea water is heated with the same amount of heat, which water will boil earlier than the other?

- (A) River water (B) Sea water  
(C) Both at the same time (D) Not certain

52. Odd man out

- (A) Skin (B) Nose  
(C) Ear (D) Hand

53. What will be useful to get heat on moon?

- (A) Cowdung cakes (B) Kerosene  
(C) windmill (D) Solar cells

54. What is the source of water in well?

- (A) Rain (B) Ocean  
(C) Ground water (D) River

55. One object of mass weighing 5 kg. is thrown down from a high building. While falling down, what will be the change in the potential energy of that object?

- (A) Increases (B) become less  
(C) remain as it is (D) cannot say certainly

56. Which one characteristic is common among a chameleon, a snake, a crocodile and a worm?

- (A) They lay eggs.  
(B) They have scally cover on their body  
(C) They are reptiles  
(D) They have four legs.

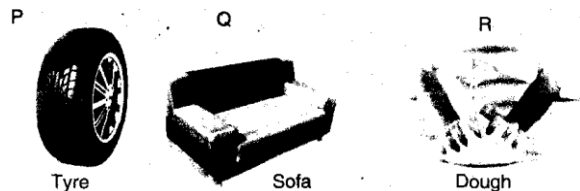
57. Plants are part of each food chain because \_\_\_\_\_

- (A) Plants grow in abundance  
(B) Plants are found everywhere  
(C) Only plants prepare their own food.  
(D) Many animals eat only plants and nothing else.

58. P, Q, R, S are four similar tankers having capacity of 5000 litres. They are filled with petrol, diesel, water and oil respectively. Wheels of which tanker will have to bear the maximum weight?

- (A) P (B) Q (C) R (D) S

59. From the given examples, which one has less elasticity?



- (A) P (B) Q (C) R  
(D) All examples have same elasticity

60. Which statement is correct regarding the effects of extra use of mobile, T.V., Tab etc. on our health?

- (A) By sitting at one place our body becomes healthy  
(B) Digestion improves  
(C) Eyes brightens up  
(D) Lack of physical activities leads to health problems.

61. Aman has moved, a box weighing 12 kgs by one meter. Raman has moved a box weighing 2 kgs by 7 meters. Work done by Aman is \_\_\_\_\_ work done by Raman.

- (A) > (B) < (C) = (D) ≤

62. Who am I?

My leaves are used as a vegetable and my seeds to produce oil.

- (A) Onion (B) Radish  
(C) Fenugreek (D) Mustard

63. Which procedures are done before sending freshly prepared waffers for sale?

- 1) Disinfect waffers
- 2) Packets are filled with gas like nitrogen
- 3) Packets are made airtight

- (A) 1, 2 (B) 1, 3  
(C) 2, 3 (D) 1, 2, 3

64. Which substance is mixed in rubber to increase its hardness?

- (A) Sulphur (B) Sodium  
(C) Iron (D) Carbon

65. In a sugarcane crusher, what is the type of motion of sugar cane and that part of crusher which crushes it?



- (A) Linear motion, oscillatory motion  
(B) Oscillatory motion, Linear motion  
(C) Circular motion, Linear motion  
(D) Linear motion, circular motion

66. If same object is kept on different planets, its weight changes. Because each planet

- (A) is at different distance from sun  
(B) has different size  
(C) has different gravitational force  
(D) has different speed

67. We get vitamins and minerals if we eat

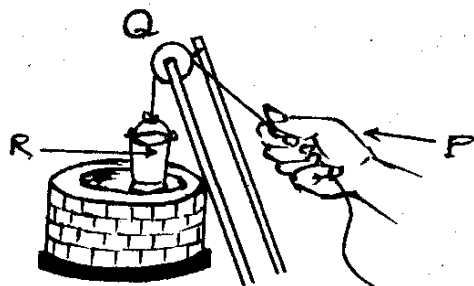
- (A) Vegetables (B) Fruits  
(C) Milk (D) All of these

68. Arrange the writing material as per chronology.

- (1) Bhurjpatre (2) Computer  
(3) Paper (4) Stone slate  
(A) 2, 3, 1, 4 (B) 1, 4, 3, 2  
(C) 3, 4, 1, 2 (D) 1, 2, 3, 4

69. Melbourne will have minimum average temperature in the month of
- (A) December (B) March  
(C) July (D) September

70. In the given picture, which forces are acting at points 'P' 'Q' 'R' respectively



- (A) Gravitational, muscular, frictional  
(B) Gravitational, mechanical, muscular.  
(C) Muscular, frictional, gravitational  
(D) Frictional, gravitational, muscular.

71. As far as possible, Amla, Kiwi, Tomato, Orange etc. must be eaten raw. Because \_\_\_\_\_

- (A) They take more time for cooking.  
(B) Cooking spoils their taste.  
(C) Large proportion of vitamins present in these fruits are destroyed while cooking  
(D) Dietary fibers of fruits are destroyed while cooking.

72. Suppose a new temperature scale system is prepared with melting point of ice at  $40^\circ$ ; and boiling point of water at  $140^\circ$ . What would be the normal temperature of human body, above scale?

- (A)  $47^\circ$  (B)  $57^\circ$   
(C)  $67^\circ$  (D)  $77^\circ$

73. Complete the analogy.

Iron : Anaemia :: Sodium, Potassium

- (A) Goiter (B) Beriberi  
(C) Bad teeth (D) inefficiency of muscles

74. Find improper statement regarding sprinkle irrigation.

- (A) Sprinklers are used in this method.  
(B) In this method water is given to every plant separately.  
(C) Water is given to circular area by this method.  
(D) This method is cheaper than the drip irrigation.

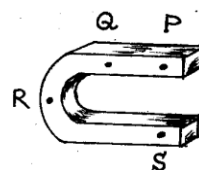
75. Which force cannot act on a substance without the actual touch with it?

- (A) Gravitational (B) Frictional  
(C) Static electrical (D) Magnetic

76. If man had no spine, what would have happened?

- (A) Unable to walk  
(B) Unable to stand straight  
(C) Spinal cord would have been un-protected  
(D) All above

77. If a horse shoe magnet is kept on a paper and iron fillings are sprinkled over it. On which point of magnet, minimum iron fillings will stick?



- (A) P (B) Q (C) R (D) S

78. What are the reasons of malnutrition?

- (1) Poverty  
(2) junk food  
(3) improper eating habits  
(4) Improper food procedures

- (A) 1, 2, 3 (B) 1, 2, 4  
(C) 2, 3, 4 (D) 1, 2, 3, 4

79. Now a days, organic fertilizers are used with chemical fertilizers because \_\_\_\_\_

- (A) Chemical fertilizers are costly  
(B) Crops do not grow properly, if only chemical fertilizers are used.  
(C) Organic fertilizers are easily available

(D) Productivity of soil decreases if we use only chemical fertilizers

80. Why do we always see only one side of moon?

- (A) Size of moon is smaller than earth.
- (B) Moon rotates around the earth and the sun.
- (C) The rotation and revolution time of moon is the same
- (D) Moon is satellite of earth

81. What is the purpose of the slogan, "Use paper sparingly"?

- (A) Papers make a lot of rubbish
- (B) Paper is in a lot of demand
- (C) Paper production requires a lot of electricity
- (D) Trees are cut in large quantity for making paper.

82. Which one of the following animals does not have gliding joint?

- (A) Monkey
- (B) Bull
- (C) Fish
- (D) Horse

83. The convex mirror is kept near the car driver. Which statement is false about the image in this mirror?

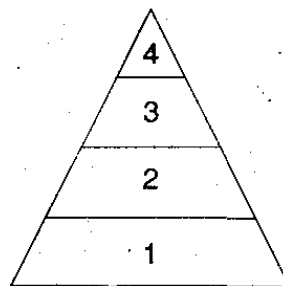
- (A) The image seen in mirror can be taken on screen
- (B) The image in this mirror is smaller than the object
- (C) Sides of the objects are interchanged in the image
- (D) The image in this mirror is erect.

84. If a drum (Dhol) is played on the moon and on the earth, which one of the following statements about it will be true?

- (A) Membrane of the drum will vibrate at both the places.
- (B) It will vibrate only on earth.
- (C) It will vibrate only on moon.
- (D) It will not vibrate at both the places.

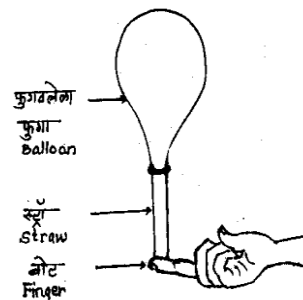
85. A balanced diet pyramid is given. Arrange the following substances in the pyramid at the proper places respectively.

Paneer, Banana, Rice,



- (A) 1, 2, 3, 4
- (B) 3, 2, 1, 4
- (C) 4, 3, 2, 1
- (D) 4, 2, 1, 3

86. After removing the finger from the lower side of straw, in which direction the balloon will go?



- (A) downwards
- (B) to the right
- (C) upwards
- (D) to the left

87. The shape of shadow of an object depends upon which factor?

- (A) Intensity of light source
- (B) Smoothness of substance of screen
- (C) Size of screen
- (D) Distance between the object and screen

88. Which bones are not included in the axial skeleton?

- (A) Hand bones
- (B) Skull bones
- (C) The spine bones
- (D) The rib cage bones.

89. If a fire cracker is ignited at a distance, it's light is seen first, thereafter, the sound is heard because \_\_\_\_\_

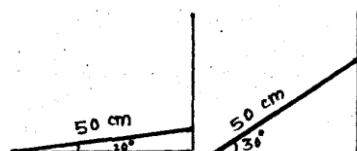
- (A) capacity of eyes > capacity of ears
- (B) capacity of eyes < capacity of ears



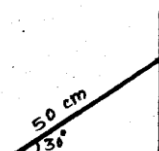
(C) speed of light > speed of sound

(D) speed of light < speed of sound

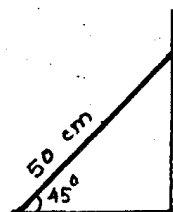
90. As shown in the figures, a plank measuring 50 cm in length is kept in four different ways. In which arrangement, the substance sent from the top of plank will reach the ground earliest?



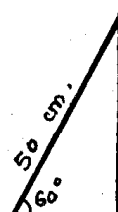
P



Q



R



S

(A) P (B) Q (C) R (D) S

91. In India, who is known as the pioneer in the field of Atomic Energy?

(A) Dr. Homi Jahangir Bhabha

(B) Dr. Meghnad Saha .

(C) Dr. A.P.J. Kalam

(D) Dr. C.V. Raman

92. 'Ban on junk food in school' is the Government policy. What is the correct reason for this policy?

P) Junk food is costly

Q) Junk food salesman are careless about cleanliness and hygiene

R) Junk food consists of lot of calories, salts and fats.

S) Junk food causes obesity

(A) R and S (B) P and S

(C) Q and R (D) P and Q

93. What will happen if all the planets in the solar system stop rotating?

(A) All planets will collide

(B) Planets will go away from sun

(C) All the planets will be pulled towards sun.

(D) Sun facing side of planets will become very hot and their back side will become very cold.

94. Which of the following plants, gets purple colored flowers after every eight years?

(A) Bamboo

(B) Cactus

(C) Carvy

(D) Mimosa

95. Which one substance from the following is explosive?

(A) DDT (B) TNT (C) CFC (D) CFL

96. People who come to India from cold countries, face skin problems because

(A) They have thin skin

(B) They have less hair on their body

(C) Their skin has less proportion of melanin pigment.

(D) Their skin does not have sweat glands.

97. Rita was injured and her friend gave her an immediate first-aid treatment. She was made to lie down .with legs raised so that her head was lower than her body. Rita may have \_\_\_\_

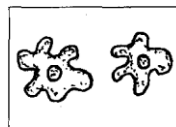
(A) got electric shock

(B) fainted

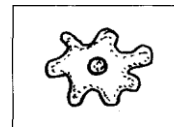
(C) got an insect bite

(D) got burned

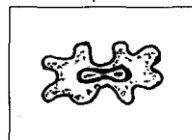
98. Arrange the figures of steps in binary fission of amoeba in correct order.



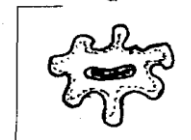
P



Q



R



S

(A) Q, S, R, P (B) P, Q, R, S (C) Q, R, S, P (D) Q, P, R, S

99. \_\_\_\_ is affected by Jaundice.

(A) Pancreas

(B) Stomach

(C) Intestine

(D) Liver

100. 99. When is the World Ozone Day celebrated?

(A) 11<sup>th</sup> July

(B) 6<sup>th</sup> August

(C) 16<sup>th</sup> September

(D) 7<sup>th</sup> October

(A) 6<sup>th</sup> May

(B) 9<sup>th</sup> May

(C) 15<sup>th</sup> May

(D) 19<sup>th</sup> May

**ANSWERS**

QUE.	1	2	3	4	5	6	7	8	9	10
ANS.	A/D	C	D	B	C	D	C	A	C	B
QUE.	11	12	13	14	15	16	17	18	19	20
ANS.	C	B	C	C	C	D	D	D	D	C
QUE.	21	22	23	24	25	26	27	28	29	30
ANS.	C	C	D	B	D	B	A	B	D	C
QUE.	31	32	33	34	35	36	37	38	39	40
ANS.	D	A	A	D	C	D	B	B	C	D
QUE.	41	42	43	44	45	46	47	48	49	50
ANS.	B	D	C	C	C	A	D	D	B	C
QUE.	51	52	53	54	55	56	57	58	59	60
ANS.	A	D	D	C	B	A	C	C	C	D
QUE.	61	62	63	64	65	66	67	68	69	70
ANS.	B	C/D	C	A	D	C	D	B	C	C
QUE.	71	72	73	74	75	76	77	78	79	80
ANS.	C	D	D	B	B	D	C	D	D	C
QUE.	81	82	83	84	85	86	87	88	89	90
ANS.	D	C	A	A	B	C	D	A	C	D
QUE.	91	92	93	94	95	96	97	98	99	100
ANS.	A	A	C,C/D	C	B	C	B	A	D	C

\* Solutions of this test paper will be provided separately in mean time.

**A. 1. (D)** Explanation: Latest technology and electric power is required to operate a radio, television set or cinema, while puppet show does not need either.

**A. 2. (C)** Explanation: In case of *Idli* flour fermentation is done by microorganisms, whereas in case of rotting of leaves disintegration is done by microorganisms,

**A. 3. (D)**

**A. 4. (B)** Explanation: E-mail is sent through electromagnetic waves. It travels faster than the other modes of sending messages.

**A. 5. (C)** Explanation: Satellites revolve around themselves as well as around the planet to which they belong and around the star.

**A. 6. (D)** Explanation: Needle like crystals are present in the leaves of 'Colocasia'. So while swallowing this vegetable, these sharp points get rubbed on the throat skin and throat itches.

**A. 7. (C)** Explanation:

1 km = 1000 m

$2^{1/2}$  km - 2500 m

Ratio is 1 cm = 500 m

The distance between the school and the shop =  $2500/500 = 5$  cm

**A. 8. (A)** Explanation: Options B, C, and D are environmental friendly. To get adequate light, use of many electrical lights is wastage of electricity.

**A. 9. (C)** Explanation: Algae is an autotrophic plant and mushroom is a heterotrophic plant. Both are flowerless microplants. They do not have root, bark or leaf.

**A. 10. (B)** Explanation: State is divided into districts. District is divided into Talukas. A Taluka consists of many Villages.

**A. 11. (C)** Explanation: In the given figure, weight is placed at point 'A', on the palm is load. We use muscular force of upper arm at point 'C' to lift this weight. Therefore, effort is at point 'C'. At point 'B' near the wrist, there will be some movement of the palm. Therefore fulcrum will be at point 'B'.

**A. 12. (B)** Explanation: Richter, Calorie, Hertz are units of intensity of earthquake, heat, and frequency respectively. Decibel is the unit of sound intensity.

**A. 13. (C)**

**A. 14. (C)** Explanation: We know that the day and night are not always equal. It happens due to Earth's inclined axis. In the northern hemisphere between 22<sup>nd</sup> March to 23<sup>rd</sup> September, the days are longer than nights. Whereas, in southern hemisphere, nights are longer than days. Exactly opposite happens in both hemispheres during 23<sup>rd</sup> September to 22<sup>nd</sup> March. On 22<sup>nd</sup> September, both the poles are at equal distance from the Sun. Therefore on this day, the number of hours in a day and night are equal.

**A. 15. (C)** Explanation: Pitcher plant (*Ghataparni*) is an autotrophic plant found in hilly areas where it rains heavily. The soil on which it grows has deficiency of nitrogenous salts. Therefore this plant does not get enough proteins. To fulfill its protein requirement, Pitcher plant eats insects.

**A. 16. (D)**

**A. 17. (D)** Explanation: In winters, temperatures are very low in the early mornings. At such temperatures, the air can hold very little water vapour in it. Hence, excess water vapour gets condensed and water droplets are formed. They fall on the Earth because of their weight. We find them on the grass or on leaves.

**A. 18. (D)** Explanation: In less polluted water, percentage of dissolved Oxygen is more. As a result, in such waters, growth of aquatic animals/plants is more.

**A. 19. (D)** Explanation: The air contains 20% of the Oxygen. In fig D, 2 parts of 10 is oxygen.  $\therefore 2/10 \times 100 = 20\%$  is Oxygen

**A. 20. (C)** Explanation: Each fortnight of a lunar calendar is of 15 days. In the fortnight of the 'Waxing' moon (*Shukla Paksha*), the moon appears to be bigger and bigger. On the 11<sup>th</sup> day of 'Waxing' moon it appears to be bigger than the half crescent. In the fortnight of the 'Waning' moon (*Krisna Paksha*), the moon appears to be smaller and smaller. On the 11<sup>th</sup> day of 'Waning' moon, it appears to be smaller than the half crescent. Therefore, the moon of 11<sup>th</sup> day of waxing moon appears to be bigger than the moon of 11<sup>th</sup> day of the waning moon.

**A. 21. (C)** Explanation: Certain changes occur in components of plants as per their habitat. Due to scarcity of water in desert region, the roots of the plants in this region go deep inside the soil in search of water. To lessen the transpiration, the leaves are modified into small leaves, or thorns. To do the function of food production of leaves stem becomes green.

**A. 22. (C)** Explanation: Density of wooden block is approximately  $0.6 \text{ g/cm}^3$ . Density of wood is less than density of oil ( $0.8 \text{ g/cm}^3$ ) and density of water ( $1 \text{ g/cm}^3$ ). Therefore the block will float in both liquids.

**A. 23. (D)** Explanation: Packaged food has to be preserved for a long time. Hence, it requires higher concentration of salt, sugar and other chemical preservatives. Therefore, nutritional value of packaged food decreases to some extent.

**A. 24. (B)** Explanation: Rain, fog, and snowfall occur due to atmosphere on the Earth. Solar eclipse is a natural astronomical phenomenon and it is no way concerned with the atmosphere.

**A. 25. (D)** Explanation: Milk and Raggi both are sources of calcium. But, milk is animal origin source whereas Raggi is plant origin source.

**A. 26. (B)** Explanation: Here the relation between density of wood (P) and density of Aluminum (Q) is asked. As wood is lighter than aluminum,  $P < Q$ . Mass of the block is not concerned with the answer.

**A. 27. (A)** Explanation: Rice crop requires more water than *Bajra*, Jowar and Maize crops.

**A. 28. (B)** Explanation: Early humans used to live in forests. They had rich hair on their entire body like the other animals. During evolution, amount of body hair got reduced and due to this, he realised the need of clothes to protect himself from wind, heat and rain.

**A. 29. (D)** Explanation: Lac, silk, and honey are animal origin substances, whereas rubber is a plant origin substance.

**A. 30. (D)** Explanation: Gliding joint moves to and fro. It cannot move through an angle of  $360^\circ$ .

**A. 31. (D)** Explanation: Some type of plastic and acrylic may be transparent. However, plastic, acrylic and sunmica are brittle and not hard.

**A. 32. (A)**

**A. 33. (A)** Explanation: Cactus has a thick and fleshy stem. Among the other three options, onion is a leaf, whereas carrot and yam are roots.

**A. 34. (D)** Explanation: Speed of sound in air =  $340 \text{ m/s}$

Time required to hear the noise of thunder =  $6 \text{ sec}$  / Distance = Speed  $\times$  Time =  $340 \text{ m/s} \times 6 \text{ s} = 2040 \text{ m}$

**A. 35. (C)**

**A. 36. (D)** Explanation: Vulture does not hunt for its own prey, but it lives on the carcass. It eats decaying matter and keeps the environment clean. Hence it is called a scavenger.

**A. 37. (B)** Explanation: Melting Point M.P.

(solid  $\rightarrow$  liquid) and Freezing point F.P. (liquid  $\rightarrow$  solid) of any substance has the same value. But the boiling point B.P. (liquid  $\rightarrow$  gas) has much higher value than M. P. and F. P.

**A. 38. (B)**

**A. 39. (C)** Explanation: Bones become soft and brittle and get easily fractured because of deficiency of Vitamin 'D'. This disease is called Rickets.

**A. 40. (D)** Explanation: Heart is protected inside the rib cage. In the same way, the brain is well protected within the cavity formed by the skull bones.

**A. 41. (B)**

**A. 42. (D)** Explanation: In the given flow chart;

In 'X' motion, displacement of object takes place in one direction.

∴ X → Linear motion.

In 'Y' motion, displacement of object takes place in any direction.

∴ Y → Random motion.

In 'Z' motion, displacement does not take place but the object passes through a particular point twice in a period.

∴ Z → Oscillatory motion.

In 'W' motion, displacement does not take place but the object passes through a particular point once in a period.

∴ W → Circular motion.

**A. 43. (C)** Explanation: Fluidity of Honey < edible oil < milk < water

**A. 44. (C)** Explanation: Cyclone, Earthquake and Tsunami are natural calamities. We cannot control them. But the forest fire is mostly caused due to human negligence. Therefore, it can be reduced by educating people. Similarly, wherever there is a possibility of occurring forest fire naturally, care can be taken by making special arrangements to restrict the fire.

**A. 45. (C)** Explanation: In syringe 'C', the piston is stuck to the farthest position of the cylinder. This means air is completely filled in the cylinder. If the plunger is pulled back, the air inside the cylinder will go out and the cylinder will be filled completely with the medicine.

**A. 46. (A)** Explanation: Distance travelled by Manoj by running = 1 km.

= 1 × 1000 = 1000 m

Time taken = 4 min. 10 sec. = 250 sees.

Now,

$$Speed = \frac{Distance}{Time} = 4m / s$$

**A. 47. (D)** Explanation: In Flute, Shahanai, and Trumpet sound is produced due to vibration in the layer of air. Whereas, in Tabla, Duff and Mridangam it is produced due to the vibrations in the stretched diaphragm. And in Guitar, Turkish Guitar and one-stringed musical instrument, the sound production is due to the vibration in stretched strings. Instrument in 'D' group do not have such similarity.

**A. 48. (D)** Explanation: Light colours reflect more light. Therefore, we get protection from heat. Cotton clothes also absorb sweat to a greater extent. Clothes mentioned in option A, B and C do not offer such protection.

**A. 49. (B)** Explanation: Troposphere is the lowest layer of the atmosphere from the Earth. Hence, it contains maximum amount of water vapour. Hence all weather related phenomenon such as formation of clouds, rain, storm and wind takes place in this layer.

**A. 50. (C)** Explanation: Movement in the tectonic plates causes an earthquake. If an earthquake occurs on the sea bed, it generates large waves and they hit the seashore with massive speed. This phenomenon is called 'Tsunami'.

**A. 51. (A)** Explanation: Sea water contains much more salts than the river water. Therefore boiling point of sea water is more than that of the river water. Hence, in the condition mentioned in the question, river water will boil earlier than the sea water.

**A. 52. (D)** Explanation: Skin, nose and ear are sensory organs. Hand is not a sensory organ.

**A. 53. (D)** Explanation: There is no atmosphere on the moon. Hence, oxygen required for burning kerosene or cow dung cakes or wind required to rotate windmill is not available on the moon. However, solar energy is available in abundance. We can get energy from solar cells.

**A. 54. (C)** Explanation: After reaching ground, some part of rainwater seeps into the soil. This seeped water is a source of ground water and underground streams. If wells are dug near the underground stream, they get water.

**A. 55. (B)** Explanation: Potential energy of an object at a height is directly proportional to its height from the ground. When the object is falling down from the building, its distance from the ground becomes lesser and lesser. Hence, potential energy also reduces gradually.

**A. 56. (A)** Explanation: Chameleon, snake and crocodile are vertebrates and worm is an invertebrate. Chameleon and crocodile have four legs while snake and worm do not have legs. Crocodile, chameleon and snake have scally cover on their body, but worm does not have such cover. However, all of them lay eggs.

**A. 57. (C)** Explanation: All food chain start with a 'Producer', a component of a food chain which produces its own food. Green plants are called 'producers' because only they can produce their own food by using sunlight.

**A. 58. (C)** Explanation: Density of water is greater than that of petrol, diesel and oil. If we compare liquids of equal volume, the liquid having high density has more weight. Therefore the tanker, which is filled with water, will have to bear maximum weight and its tyres will experience maximum load.

**A. 59. (C)** Explanation: Substances change their shape when force is applied to them. But, they regain their original shape and size when the force is removed. This property is called elasticity. When force is applied to tyre, sofa, their shape changes but they regain their original shape immediately after removing the force. Therefore tyre, sofa has more elasticity. However, dough does not regain its original shape completely after removing the applied force. Therefore dough has less elasticity.

**A. 60. (D)** Explanation: Extensive use of mobile phones, TV, Tabs cause strain to eyes. Sitting at one place affects digestion and increases risk of obesity. In addition to that, lack of physical activity leads to health problems.

**A. 61. (B)** Explanation: Aman and Raman are moving boxes on the ground.

Work done by both = Force required to move the box x displacement

Work done by Aman =  $12 \times 1 = 12$  Units. And, Work done by Raman =  $2 \times 7 = 14$  Units.

$\therefore$  Work done by Aman < work done by Raman.

**A. 62. (D)** Explanation: Onion, radish, spinach and mustard leaves are used for making vegetable. But, oil can only be extracted from mustard seeds.

**A. 63. (C)** Explanation: Since waffers are fried in boiling oil, it is not required to be disinfected. Waffer packets are filled with gas like Nitrogen to avoid contact with Oxygen and water vapour in the packet, which makes them soft, soggy and rancid. Packets are sealed to ensure that the outside air does not enter the packet.

**A. 64. (A)**

**A. 65. (D)** Explanation: While extracting sugarcane juice, sugarcane moves through the crusher in straight line. Therefore its motion is linear motion. At the same time crusher wheels rotate around themselves. Hence, their motion is circular motion.

**A. 66. (C)** Explanation: Gravitational force of planet acting on an object is

considered to be the weight of the object on that planet. Gravitational force of a planet varies according to the mass of the planet.

**A. 67. (D)**

**A. 68. (B)**

**A. 69. (C)** Explanation: Melbourne, Australia is located in the southern hemisphere. From the options given, in July, the Sun is near the tropic of cancer in the northern hemisphere. Therefore, during the month of July, Melbourne will have minimum average temperature.

**A. 70. (C)** Explanation: As per the given picture, to extract water from the well the rope has to be pulled. Therefore, 'Muscular force' has to be used at point 'P'. While the rope advances on the pulley, 'frictional' force acts upon the pulley at point 'Q'. Whereas, when the bucket is at point 'R', the Earth's 'gravitational force' act on it.

**A. 71. (C)** Explanation: *Amla*, kiwi, tomato, orange etc. have vitamin 'C' in abundance. Vitamin 'C' gets destroyed by heat. Therefore these fruits must be eaten raw.

**A. 72. (D)** Explanation: At standard temperature, freezing point of ice is  $0^{\circ}\text{C}$ , whereas boiling point of water is  $100^{\circ}\text{C}$ . Here, in the new scale, it is given  $40^{\circ}$  and  $140^0$  respectively. Hence it is measuring  $40^{\circ}$  more than the standard temperature. Normal temperature of a human body is  $37^{\circ}\text{C}$ ; the new measuring system will measure it  $40^{\circ}$  more. Therefore it will be  $37 + 40 = 77^{\circ}$

**A. 73. (D)** Explanation: Deficiency of iron causes anemia, similarly deficiency of sodium and potassium causes inefficiency of muscles.

**A. 74. (B)** Explanation: In sprinkle irrigation, water is sprinkled in circular area and all the plants in the area get irrigated at the same time. Therefore, in this method, it is not possible to irrigate every plant separately.

**A. 75. (B)** Explanation: Effect of frictional force is visible only when two objects come in physical contact with each other. The other three forces in the options given can affect the other object from a distance.

**A. 76. (D)**

**A. 77. (C)** Explanation: Magnetic force of a magnet is concentrated at the two poles and gets gradually reduced towards the centre. Point 'R' is at the centre of the magnet. Therefore, at this point minimum iron fillings will stick.

**A. 78. (D)**

**A. 79. (D)** Explanation: If only chemical fertilizers are used, the crop will grow better temporarily but fertility of soil will be reduced. Hence in order to improve soil fertility, it is necessary to use natural fertilizers along with chemical fertilizers.

**A. 80. (C)**

**A. 81. (D)** Explanation: Paper is made out of pulp of wood. If we don't use paper sparingly, large quantity of trees will be cut for making paper. This will affect environmental balance.

**A. 82. (C)** Explanation: In the gliding type of joint, the bones can slide over each other. These joints are mainly found in the wrist, ankle and finger bones. Fish does not have these organs. Therefore fish does not have a gliding joint.

**A. 83. (A)**

**A. 84. (A)** Explanation: If we strike a drum, the membrane of the drum will vibrate. But, as there is no air on the moon, even if the membrane is vibrated, sound could not be heard as it requires a medium (air) to propagate.

**A. 85. (B)**

**A. 86. (C)** Explanation: When the finger from the lower end of the straw is

removed, air from the balloon will escape with high velocity in the downward direction. As a result of this, force in the upward direction will be exerted on the balloon and it will go in upward direction.

**A. 87. (D)** Explanation: Size of shadow on the screen of an object does not depend on the intensity of light source, size of the screen or smoothness of the surface. It depends on the distance between the object and the screen. If the object is moved away from the screen, size of its shadow increases. However, when we move the object towards the screen, size of its shadow gradually decreases.

**A. 88. (A)** Explanation: Human skeletal system is divided into two parts, the axial skeleton and the appendicular skeleton. The axial skeleton consists of the skull, the spine and the rib cage. Whereas the appendicular skeleton is made up of arms and leg bones (upper and lower limb).

**A. 89. (C)** Explanation: Speed of light is 3 lakh km/s. That is  $3 \times 10^8$  m/s. On the other hand, speed of sound at normal temperature is 340 m/s. Thus, speed of light is several times higher than the speed of sound. When the fire cracker explodes, light and sound are produced at the same time, but because of enormous speed of light, it takes negligible time to reach us. Whereas sound require relatively much more time to reach us.

**A. 90. (D)** Explanation: As per the property of an inclined plane, if the slope of the plank is increased, the substance sent from the top will reach the ground in less time. Slope of inclined plane depends on the angle made by the bottom of the plank with the surface of the ground. Therefore, substance sent from the top of the arrangement 'S' will reach the ground in less time because this arrangement has maximum slope.

**A. 91. (A)** Explanation: Dr. Homi Jehangir Bhabha was a great scientist in 'Nuclear Physics'. He laid the foundation of Indian atomic energy development programme. Because of his persistent efforts, a number of atomic reactors have been built in India. He made India self-sufficient in production of 'heavy water' which is used in generation of atomic energy. Hence he is known as the pioneer in the field of atomic energy.

**A. 92. (A)** Explanation: Junk food contains excess calories, salts and fats. If consumed frequently, junk food causes obesity and creates other health problems in students at a very early age.

**A. 93. (C)** Explanation: Due to gravitational pull of the Sun, all the planets experience a pull towards the Sun. Because of their circular motion, with which they revolve around the Sun, centrifugal force is created. This enables the planets to overcome the Sun's gravitational pull. If the planets stop revolving around the Sun, due to lack of centrifugal force, they will get attracted towards the Sun.

**A. 94. (C)** Explanation: Cactus and Mimosa blossom every year, whereas Karvy blossoms every eight years with violet flowers.

**A. 95. (B)** Explanation: TNT means 'Trinitrotoluene', which is a yellow-coloured compound, highly explosive and inflammable in nature. It is used to create explosions.

**A. 96. (C)** Explanation: In cold countries, due to low intensity of sunlight, people living in these regions, naturally have less proportion of melanin pigment in their skin. Melanin protects us from severe sunlight. Therefore people, who come to India from cold countries, face skin problems.

**A. 97. (B)** Explanation: Fainting refers to sudden, temporary loss of consciousness. It is caused due to disturbance in blood supply to the brain. Blood supply to the brain can be restored by making the person lie down with his legs elevated than his head. In this position, the brain gets proper blood supply thereby helping the person to soon regain consciousness.

**A. 98. (A)** Explanation: In reproduction of amoeba by the binary fission method, nucleus of fully grown amoeba gets elongated. A furrow develops at the centre of the elongated nucleus and it takes the shape of a 'dumb-bell'. At the same time a furrow develops on the cytoplasm and it deepens. After some time nucleus and cytoplasm undergo division and two new baby amoebas are born.



A. 99. (D)

A. 100. (C)