

# SAMPLE PAPER



TALENT HUNT EXAM

2015

JUNIOR

(Class VIII Studying Students)

Science, Mathematics & Mental Ability



Aakash

Medical | IIT-JEE | Foundations

(Divisions of Aakash Educational Services Pvt. Ltd.)

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# **Aakash National Talent Hunt Exam 2015 (Junior)**

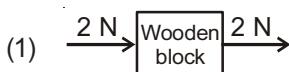
## **(For VIII Studying)**

**Time : 2 Hours**

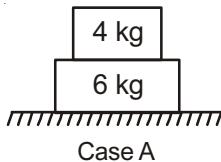
MM : 320

## **SECTION-A : SCIENCE**

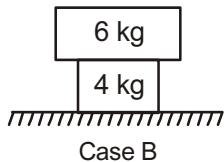
1. In which of the following cases, is the wooden block acted upon by a net force of 8 N towards left?



2. The base areas of the 6 kg and the 4 kg blocks in the given figures are in the ratio 4 : 1. The pressure exerted on the ground in case A is



(1) Four times of that in c



### Case B

- (1) Four times of that in case B  
(2) Twice of that in case B  
(3) One fourth of that in case B  
(4) Same as that in case B

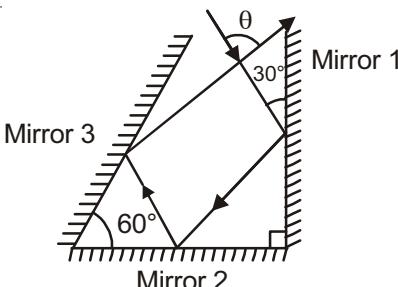
3. Identify the pair containing one contact and one non-contact force.

(1) Gravitational force, Magnetic force  
(2) Magnetic force, Muscular force  
(3) Muscular force, Frictional force  
(4) Gravitational force, Electrostatic force

4. A tree lies 1 m behind Rohan. If a plane mirror is placed 6.5 m in front of him, the distance between Rohan and the image of the tree in the mirror is



5. A light ray is incident on the plane mirror 1, as shown. The value of  $\theta$  is



- (1)  $60^\circ$       (2)  $90^\circ$   
(3)  $45^\circ$       (4)  $120^\circ$

6. When a man pushes a box horizontally on the floor with force 7 N, it moves straight with constant speed. The friction acting on the box is

- (1) Less than 7 N      (2) More than 7 N  
(3) 7 N      (4) Zero

7. Which of the following is correct?

- (1) Cone cells are sensitive to dim light
  - (2) Rod cells sense colour
  - (3) Cone cells sense colour
  - (4) Rod cells are present at blind spot

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8. Electrostatic force comes into action between two bodies
- Only when both of them are similarly charged
  - Only when both of them are oppositely charged
  - When at least one of them is charged
  - When neither of them is charged
9. Two plane mirrors are inclined at right angle to each other. The number of images formed for an object kept between the mirrors is
- Three
  - Two
  - Infinite
  - Four
10. The location of blind spot is at
- Iris
  - Pupil
  - Comea
  - Retina
11. Which of the following is correct using the concept of pressure applied by the fluid in the vessels of equal height and base area?
- 
- (i) (ii) and (iv) (3) (ii) and (iii) (4) (i) and (iv)
12. The type of force which will never be zero between two separate masses is
- Electrostatic force
  - Frictional force
  - Magnetic force
  - Gravitational force

13.  $C + BSO_4 \rightarrow CSO_4 + B$   
 $A + BSO_4 \rightarrow$  No reaction  
 $CSO_4 + A \rightarrow$  No reaction
- The correct order of decreasing reactivity of A, B and C is
- $A > B > C$
  - $C > B > A$
  - $C > A > B$
  - $B > A > C$
14. A dark oily liquid with an unpleasant odour, which is a mixture of petrol, LPG etc., is
- Compressed natural gas
  - Petroleum
  - Coal
  - Coke
15. On reacting with water a substance X forms Y, which turns red litmus blue. X is
- $CO_2$
  - $SO_2$
  - $CaO$
  - $P_2O_5$
16. **Statement 1:** Fossil fuels are exhaustible.  
**Statement 2:** Wildlife is an exhaustible natural resource.
- Statement 1 is correct and statement 2 is incorrect
  - Statement 2 is correct and statement 1 is incorrect
  - Both the statements are correct
  - Both the statements are incorrect
17. Which among the following gases burns with a characteristic 'pop' sound?
- Nitrogen gas
  - Oxygen gas
  - Chlorine gas
  - Hydrogen gas

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18. A substance is tough, porous and black in colour and is also used in making steel. It is almost the pure form of carbon. This substance is

- |             |              |
|-------------|--------------|
| (1) Coal    | (2) Coal tar |
| (3) Bitumen | (4) Coke     |

19. Which property of aluminium makes it useful to form aluminium foils?

- |                  |                  |
|------------------|------------------|
| (1) Malleability | (2) Ductility    |
| (3) Sonority     | (4) Conductivity |

20. A metal X present in haemoglobin reacts with moist air to form a compound Y. Suspension of Y can turn

- |                        |                     |
|------------------------|---------------------|
| (1) Red litmus purple  | (2) Blue litmus red |
| (3) Purple litmus blue | (4) Red litmus blue |

21. Which of the following metals is the most reactive in nature?

- |               |               |
|---------------|---------------|
| (1) Gold      | (2) Potassium |
| (3) Aluminium | (4) Copper    |

22. Match the following and choose an appropriate option.

Petroleum constituents	Uses
a. Petrol	(i) Ointments
b. Paraffin wax	(ii) Dry-cleaning
c. Bitumen	(iii) Fuel for homes
d. LPG	(iv) Paints

(1) a(i), b(ii), c(iv), d(iii)  
 (2) a(ii), b(i), c(iv), d(iii)  
 (3) a(i), b(ii), c(iii), d(iv)  
 (4) a(ii), b(i), c(iii), d(iv)

23. The conditions required to slowly convert dead plants into coal are

- |  |
|--|
| (1) Low temperature and low pressure   |
| (2) High pressure and low temperature  |
| (3) Low pressure and high temperature  |
| (4) High pressure and high temperature |

24. A black coloured liquid X having an unpleasant smell is obtained during coal processing. X is used in the preparation of a substance Y, which is used to repel moths. X and Y respectively are

- |                            |
|----------------------------|
| (1) Petrol, Bitumen        |
| (2) Coal tar, Naphthalene  |
| (3) Kerosene, Paraffin wax |
| (4) Diesel, Bitumen        |

25. How many methods of irrigation given in the box are traditional methods?

Moat, Drip system, Chain pump,  
Dhekli, Sprinkler method

- |           |          |
|-----------|----------|
| (1) Three | (2) Four |
| (3) Two   | (4) Five |

26. **Statement-1:** The animals which give birth to young ones are called oviparous animals.

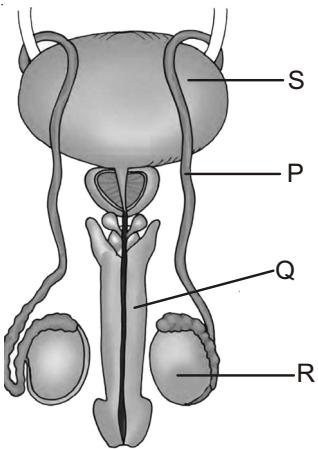
**Statement-2:** Frog, lizard and hen are oviparous animals.

- |  |
|--|
| (1) Statement-1 is true and statement-2 is false |
| (2) Statement-1 is false and statement-2 is true |
| (3) Both the statements are true                 |
| (4) Both the statements are false                |

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27. Which of the following microorganisms is used for production of curd?
- Spirogyra*
  - Yeast*
  - Penicillium*
  - Lactobacillus*
28. "In sexual reproduction, a male gamete fuses with the female gamete". Select the incorrect statement w.r.t. this process from the following statements.
- This process is called fertilization
  - During this process, the nucleus of male gamete fuses with the nucleus of female gamete to form two nuclei
  - This process results in the formation of zygote
  - This process results in inheritance of some characteristics from the mother and some from the father
29. *Rhizobium* present in the root nodules of leguminous plants replenishes the soil with
- Nitrogen
  - Oxygen
  - Phosphorus
  - Potassium
30. Identify the agricultural process on the basis of the given information.
- It helps in turning and loosening of soil.
  - It helps in proper mixing of manure.
- Harvesting
  - Weeding
  - Tilling
  - Sowing
31. 'X' and 'Y' are two diseases whose pathogens are carried by female mosquitoes. 'X' is caused by a unicellular eukaryotic organism whereas 'Y' is caused by an organism which requires a host for its survival. 'X' and 'Y' respectively are
- Malaria and Hepatitis B
  - Malaria and Dengue
  - Dengue and Malaria
  - Dengue and Polio

32. Which of the following labelled parts in the given diagram produces the male gametes?



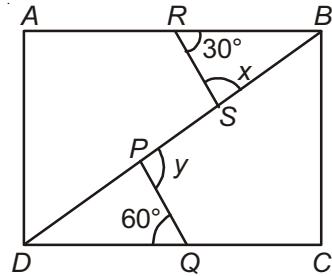
- Q
- P
- R
- S

33. Citrus canker is transmitted by
- Air
  - Seeds
  - Water
  - Mosquito
34. Which of the following is not an advantage of using manure?
- It improves the texture of the soil
  - It increases the number of friendly microbes
  - It makes the soil porous
  - It reduces the water holding capacity of the soil
35. The mode of asexual reproduction in *Amoeba* is
- Binary fission
  - Budding
  - Metamorphosis
  - Fragmentation
36. 'X' and 'Y' are two gametes which fuse to form a single celled structure 'Z'. 'X' is motile whereas 'Y' is immotile. 'X', 'Y', 'Z' respectively are
- Sperm, embryo, ovum
  - Ovum, sperm, zygote
  - Sperm, ovum, zygote
  - Sperm, ovum, foetus

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## SECTION-B : MATHEMATICS

37. The sum of all the interior angles of a convex octagon is  
 (1)  $1440^\circ$       (2)  $720^\circ$   
 (3)  $360^\circ$       (4)  $1080^\circ$
38. If  $20\% \text{ of } x = 30\% \text{ of } y + 40\% \text{ of } z$ , then  
 (1)  $x = \frac{4y+3z}{2}$       (2)  $y = \frac{2x+4z}{3}$   
 (3)  $z = \frac{2x-3y}{4}$       (4)  $z = \frac{4x-3y}{2}$
39.  $\frac{(3^2)^5 \times (3^5)^2}{(3^4)^4 \times (3^2)^2}$  can be simplified as  
 (1)  $3^2$       (2)  $3^8$   
 (3)  $1$       (4)  $3^{-6}$
40. If  $x^{128} = \frac{x^{(a+b)(a^2-ab+b^2)} \cdot x^{(a+b-c)^2}}{x^{(a-b)(a^2+ab+b^2)} \cdot x^{(a-b+c)^2}}$ , then  
 (1)  $b^2 + 4a(c-a) = 128$   
 (2)  $b^3 + a(c-a) = 32$   
 (3)  $b^3 + 2a(b-c) = 64$   
 (4)  $b^2 + 8a(c-a) = 16$
41. Rubina had 2209 chocolates which she wanted to distribute among the kids of an orphanage in such a manner that each kid gets as many chocolates as the number of kids. The number of chocolates, each kid got is  
 (1) 33      (2) 43  
 (3) 47      (4) 37
42. On simplifying  $(x+a)(x-b) + (x-a)(x+b) - (x-a)(x-b)$ , we get  
 (1)  $3x^2 + (a-b)x - 3ab$   
 (2)  $x^2 + (a+b)x - 3ab$   
 (3)  $x^2 - (a-b)x + 3ab$   
 (4)  $x^2 - (a+b)x - 3ab$
43. If  $(a-b)^2 = (a+b)^2 + kab$ , then the value of  $k$  is  
 (1) 2      (2) -4  
 (3) -2      (4) 4
44. The smallest number that should be subtracted from 2200 to make it a perfect cube is  
 (1) 2      (2) 5  
 (3) 4      (4) 3
45. The sum of  $3.6 \times 10^4$  and  $3.6 \times 10^{-4}$  is  
 (1) 7.2      (2) 36000.00036  
 (3)  $3.6 \times 10^0$       (4) 3600.0036
46. In the given figure, if ABCD is a square, then the sum of  $x$  and  $y$  is

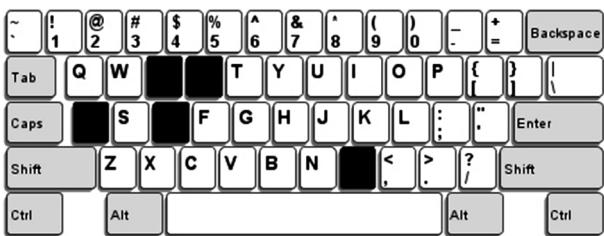


- (1)  $150^\circ$       (2)  $180^\circ$   
 (3)  $270^\circ$       (4)  $210^\circ$

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## **SECTION-C : MENTAL ABILITY**

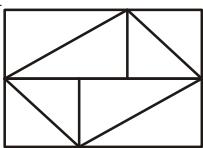


**Directions (Q.71 & Q.72):** Answer the following questions based on the given figure.



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73. In the given figure, find the maximum number of triangles.



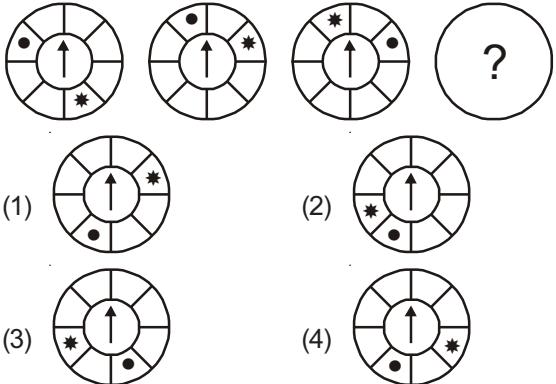


74. In the given question, the first and the second pair of figures bear a certain relationship. Find the missing one.



- Figure 2 consists of four panels labeled (1) through (4). Each panel contains a central white circle with a black dot. A black triangle is positioned at the bottom right. In panel (1), a black trapezoid is at the top left, and a black arrow points down from the circle. In panel (2), a black trapezoid is at the top left, and a black arrow points left from the circle. In panel (3), a black trapezoid is at the top left, and a black arrow points down from the circle. In panel (4), a black trapezoid is at the top left, and a black arrow points up from the circle.

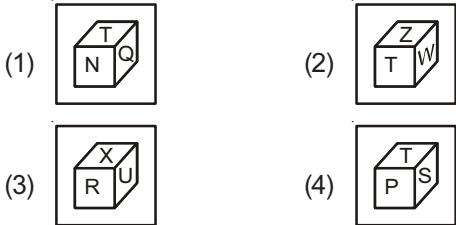
75. Find the missing figure to complete the series.



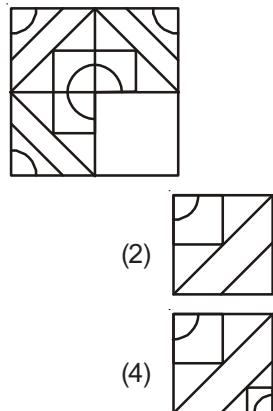
76. If the code of 'X' is '36' and the code of 'P' is '49', then what will be the code of 'R'?



77. Find the odd one out.



78. Complete the figure pattern.



79. Which pair of numbers has the least and the maximum frequency respectively in the given sequence?

48627682648762687

- |             |             |
|-------------|-------------|
| (1) 6 and 7 | (2) 4 and 6 |
| (3) 3 and 2 | (4) 4 and 8 |

80. If in a clock the numbers 1 to 12 are replaced with alphabets L, M, N, .... W, then at 4:20 pm, the hour hand will lie between



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