

**For Class VI students (6<sup>th</sup>)**

CODE: VIDWAN-LAVA-F1-02-0002

Time Allotted: 2 Hrs.

 Maximum Marks : **240**

- Please read the instructions carefully. You are allotted 5 minutes specifically for this purpose.
- You are not allowed to leave the Examination Hall before the end of the test.

**INSTRUCTIONS**
**A. General Instructions**

1. This booklet is your Question paper containing **60 questions**. All questions are compulsory.
2. The question paper having Scientific Aptitude, Maths & General Science.

**Marking Scheme :**
**+4 for correct answer NO NEGATIVE MARKS FOR WRONG ANSWER.**

3. Blank papers, clipboards, log tables, slide rules, calculators, cellular phones, pagers, and electronic gadgets in any form are not allowed to be carried inside the examination hall.
4. Fill in the boxes provided below on this page and also write your **Name & Enrollment No.** In the space provided.
5. The answer sheet, a machine-readable (OMR), is provided separately.
6. **DO NOT TAMPER WITH/ MUTILATE THE OMR OR THE BOOKLET.**
7. Do not open the question-paper booklet before being instructed to do so by the invigilators.

**B. Filling the OMR**

8. On the Response sheet, write in Black Ball Point Pen, your name, your Enrollment No. and Name of the Centre. **Do not write these anywhere else.**
9. Rough spaces are provided for rough work inside the question paper. No additional sheets will be provided for rough work.
10. Use Only **Black Ball Point Pen** to Darken the OMR Sheet

**FORMULA ONE TEST**

Date: 20-11-2016

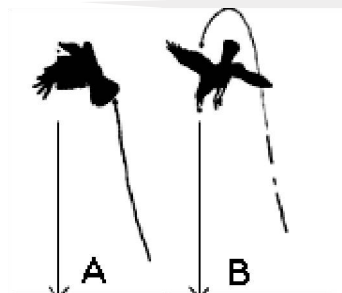
 2<sup>nd</sup> EDITION

<b>Name of the Candidate</b>	-----
<b>Father's Name</b>	-----
<b>Enrollment No.</b>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>



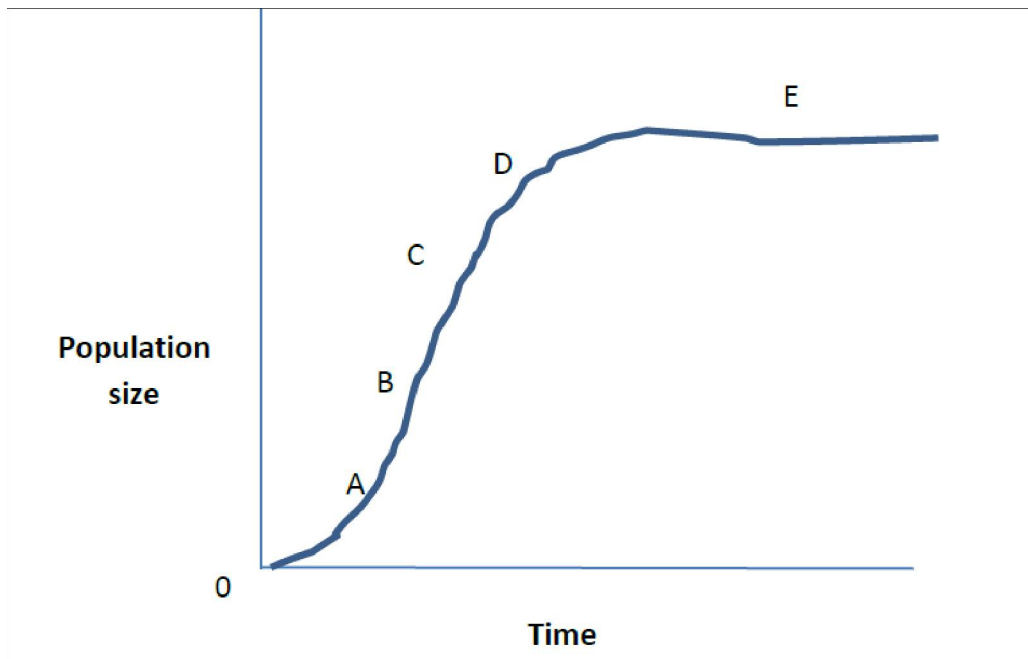
## SCIENTIFIC APTITUDE

01. What is the probability of obtaining the given genotype in the offspring, AAbbCCdd, from the parents AaBbCcDd x AABbCcDd (assume independent assortment of all gene pairs)?
- (a) 1/64  
 (b) 1/128  
 (c) 3/128  
 (d) 9/256
02. The endosperm of a plant with "monosporic" development has 72 chromosomes. How many chromosomes does the egg cell have?
- (a) 24  
 (b) 28  
 (c) 72  
 (d) 98
03. The binding affinity of hemoglobin to O<sub>2</sub> in the bloodstream is greatest at relatively
- (a) High pH and high CO<sub>2</sub> concentration.  
 (b) High pH and low CO<sub>2</sub> concentration.  
 (c) Low pH and high CO<sub>2</sub> concentration.  
 (d) Low pH and low CO<sub>2</sub> concentration.
04. Reto Zach studied the whelk-eating behavior of the Northwestern crow. Below are two flight paths that the crow could assume when eating whelks. Select the flight path that would be used most often and the response that best supports your answer.



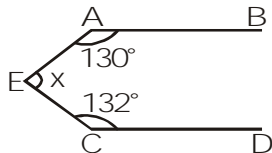
- (a) Flight Path A: the crow is maximizing the height to drop the whelk.  
 (b) Flight Path A: the crow is adding force to the downward movement to the whelk by flying higher.  
 (c) Flight Path A: the crow has a wider view of his surroundings to assure that another bird will not steal the whelk.  
 (d) Flight Path B: the crow can see where the whelk lands.

05. In the graph below, which point indicates that birth rate equals death rate?



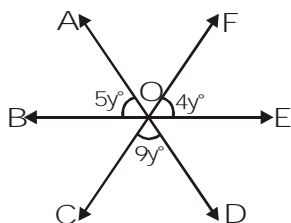
- (a) B
- (b) C
- (c) D
- (d) E

06. In the given figure the value of  $x$  is :



- (a)  $80^\circ$
- (b)  $88^\circ$
- (c)  $90^\circ$
- (d)  $98^\circ$

07. From the adjoining figure the value of  $y$  is :



- (a)  $24^\circ$
- (b)  $22^\circ$
- (c)  $20^\circ$
- (d)  $10^\circ$

08. Kishan cycles at a speed of 8 km/hr . After every 10 km, he rests for 20 minutes . How long will he take to travel a distance 40 km ?

- (a) 6 hrs 20 min
- (b) 8 hrs
- (c) 6 hrs
- (d) 5 hrs

09. Three pipes are connected to a tank . Pipes A and B connected with tubewells can fill the tank in 10 hrs and 12 hrs respectively, While pipe C used for watering the garden can empty the tank in 6 hrs . At 7 a.m. all the three pipes are opened . One fourth of the tank will be filled at

- (a) 9 p.m.
- (b) 10 p.m
- (c) 8 pm
- (d) 11 p.m

10. The remainder when  $2^{2005}$  is divided by 9 is

- (a) 4
- (b) 6
- (c) 2
- (d) None of these

11. 
$$\left[ \frac{1}{2} \left[ \frac{1}{2} \left\{ \frac{1}{2} \right\}^{\frac{-1}{2}} \right]^{\frac{-1}{2}} \right]^{\frac{-1}{2}} \div 2^{1/8} =$$

- (a) 2
- (b)  $\sqrt{2}$
- (c)  $\sqrt[3]{2}$
- (d) None of these

12. 
$$\sqrt{2 + \sqrt{2 + \sqrt{2 + \dots \dots \dots \infty}}} =$$

- (a)  $\sqrt{2}$
- (b) -1
- (c)  $\frac{1}{2}$
- (d) None of these

13. If  $\frac{1}{a} + \frac{1}{b} + \frac{1}{c} = \frac{1}{a+b+c}$ , then  $\frac{a+b+c}{a} + \frac{a+b+c}{b} + \frac{a+b+c}{c} =$

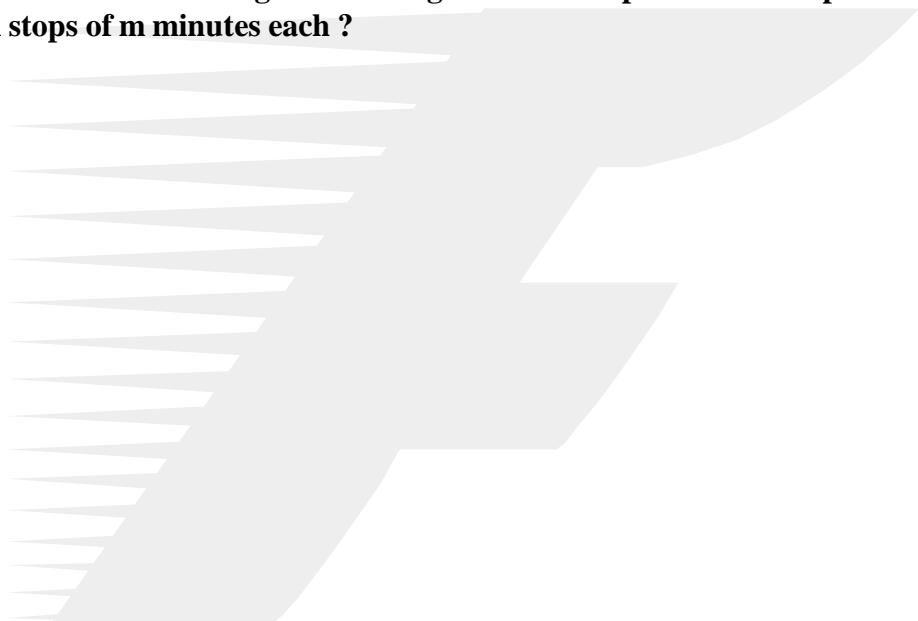
- (a)  $a + b + c$
- (b)  $(a + b + c)^2$
- (c) 1
- (d) None of these

14.  $\frac{2^1 + 2^0 + 2^{-1}}{2^{-2} + 2^{-3} + 2^{-4}} =$

- (a) 8
- (b) 5
- (c) 4
- (d) None of these

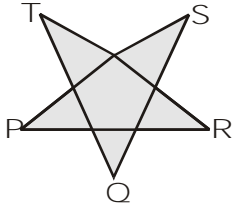
15. How many hours does it take a train traveling at an average rate of 40 mph between stops to travel a miles if it makes n stops of m minutes each ?

- (a)  $\frac{3a + 2mn}{120}$
- (b)  $3a + 2mn$
- (c)  $\frac{3a + 2mn}{12}$
- (d)  $\frac{a + mn}{40}$



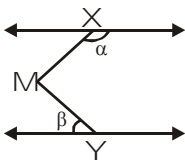
**MATHEMATICS**

16. In the adjoining fig, the sum of all the angles is equal to K right angles. Then K is equal to



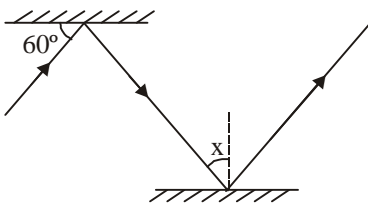
- (a) 10
- (b) 16
- (c) 14
- (d) None of these

17. In the figure  $\angle XMY$  in terms of  $\alpha$  and  $\beta$  equals :



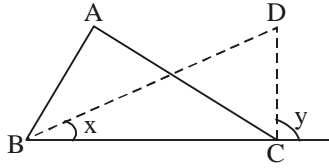
- (a)  $\pi - (\alpha - \beta)$
- (b)  $\pi - (\alpha + \beta)$
- (c)  $\pi - (\beta - \alpha)$
- (d)  $\pi + (\alpha - \beta)$

18. The value of x in the following figure is-



- (a)  $30^\circ$
- (b)  $45^\circ$
- (c)  $60^\circ$
- (d) none of these

19. In the adjoining figure, BD and CD are angle bisectors. Then, which of the following is true?



- (a)  $\angle D = \frac{1}{2} \angle A$
- (b)  $\angle x + \angle y = \angle A + \angle D$
- (c)  $\angle D = \frac{\angle x + \angle y}{2}$
- (d) All of the above

20. The L.C.M. of two numbers is 45 times their H.C.F. if one of the numbers is 125 and the sum of H.C.F. and L.C.M. is 1150, the other number is

- (a) 215
- (b) 220
- (c) 225
- (d) None of these

21. The value of

$$\frac{1 + \frac{1}{3 - \frac{1}{4}}}{2 + \frac{1}{3 - \frac{1}{2}}} + \frac{3}{3 + \frac{1}{2 - \frac{1}{2}}}$$

- (a)  $\frac{13}{7}$
- (b)  $\frac{15}{7}$
- (c)  $\frac{11}{21}$
- (d) None of these

22. If the numerator of a fraction is decreased by 40% and the denominator is increased by 100% the new value is 1. What was the original fraction ?

- (a)  $\frac{10}{3}$
- (b)  $\frac{3}{10}$
- (c)  $\frac{2}{3}$
- (d) None of these



23.  $1x3y6$  is a give digit number where  $x,y$  are digits and  $y$  exceeds  $x$  by 6. If this number is divisible by 18, then the value of  $\frac{y}{x}$  is :
- (a) 7  
 (b) 3  
 (c)  $\frac{1}{3}$   
 (d)  $\frac{1}{7}$
24. If the product of two numbers is 21 and their difference is 4, then the ratio of the sum of the sum of their cubes to the difference of their cubes is
- (a) 185:165  
 (b) 165 : 158  
 (c) 185 : 158  
 (d) 158 : 145
25. Unit's digit in the number  $(12357)^{655}$  is :
- (a) 1  
 (b) 3  
 (c) 7  
 (d) 9
26. For positive  $x$  and  $y$ , the LCM is 225 and HCF is 15. There
- (a) Is exactly one such pair  
 (b) Are exactly two such pair  
 (c) Are exactly three such pair  
 (d) Are exactly four such pair
27. If  $A$  and  $B$  represent two integers other than zero, then  $|A| + |B| - |B| + |A|$
- (a) May be negative  
 (b) May be positive  
 (c) May be 0  
 (d) None of these
28. What is the greatest possible rate at which a man can walk 51 km and 85 km in an exact number of minutes ?
- (a) 11 km/min  
 (b) 13 km/min  
 (c) 17 km/min  
 (d) None of these

29. How many numbers between 1 and 200 are exactly divisible by exactly two of 3, 9 and 27 ?
- (a) 14  
 (b) 15  
 (c) 16  
 (d) 17
30. The sum of two numbers is equal to thrice their difference. If the smaller of the number is 10 . Find the other number .
- (a) 15  
 (b) 20  
 (c) 40  
 (d) None of these

### GENERAL SCIENCE

31. A stone tied to string is whirled in a circle. As it is revolving, the string suddenly breaks. the stone then
- (a) Files off radially outwards  
 (b) Files off radially inwards  
 (c) Files off tangentially  
 (d) Moves in a circles of larger radius
32. A person moves a certain distance in a certain time. If  $\frac{1}{3}$  of the distance is covered in  $\frac{2}{3}$  of the time with speed  $V_1$  and the rest of the  $\frac{2}{3}$  distance in  $\frac{1}{3}$  of the time in speed  $V_2$  then  $V_1/V_2$  is:
- (a)  $\frac{1}{2}$   
 (b)  $\frac{1}{4}$   
 (c)  $\frac{4}{9}$   
 (d)  $\frac{2}{9}$
33. According to Newton's Second law of motion
- (a)  $f = m \times v$   
 (b)  $f = m \times a$   
 (c)  $f = \frac{m}{a}$   
 (d)  $f = \frac{m}{v}$

34. A person standing on the floor of a lift drops a coin. The coin reaches the floor of the lift in a time  $t_1$  if the lift is stationary and in time  $t_2$  if its moving uniformly. Then:

- (a)  $t_1 = t_2$
- (b)  $t_1 < t_2$
- (c)  $t_1 > t_2$
- (d)  $t_1 < t_2$  or  $t_1 > t_2$  depending on whether the lift is going up or down

35. In which of the following situations, the work done by a force on a body will be positive

- (a) Body does not move
- (b) Body moves perpendicular to the direction of applied force
- (c) Body moves along the direction of applied force
- (d) Body moves opposite to the direction of applied force

36. Match Column-I with Column-II and select the correct answer using the codes given below:

Column-I	Column-II
(A) Mechanical to Electrical	(p) $\frac{1}{2}mv^2$
(B) Electrical to mechanical	(q) $mgh$
(C) Kinetic energy	(r) A.C generator
(D) Potential energy	(s) Electric motor
(a) $A \rightarrow r, B \rightarrow s, C \rightarrow p, D \rightarrow q$	
(b) $A \rightarrow p, B \rightarrow r, C \rightarrow s, D \rightarrow q$	
(c) $A \rightarrow s, B \rightarrow p, C \rightarrow r, D \rightarrow q$	
(d) $A \rightarrow q, B \rightarrow r, C \rightarrow p, D \rightarrow s$	

37. When we rub our hands, which of the following is true?

- (a) Kinetic energy converted to heat energy
- (b) Heat energy converted to mechanical energy
- (c) Mechanical energy converted to heat energy
- (d) Heat energy converted to kinetic energy

38. Blue colour of sky is due to :

- (a) Dispersion of light
- (b) Scattering of light
- (c) Reflection of light
- (d) Refraction of light

39. **The lens used in a Camera is**
- (a) Convex Lens
  - (b) Concave Lens
  - (c) Biconcave Lens
  - (d) None of these
40. **As the thickness of the atmosphere increases colour of scattered light is found in the ..... order.**
- (a) Blue, Violet, Yellow, Red
  - (b) Violet, Blue, Yellow, Red
  - (c) Red, Yellow, Blue, Violet
  - (d) Violet, Blue, Red, Yellow
41. **What sublimate will be obtained when a mixture of sand , sulphur , common salt and iodine is sublimed ?**
- (a) Sand
  - (b) Iodine
  - (c) Sulphur
  - (d) Common salt
42. **Some matter and their groups are given in column P and Q respectively**
- | (P)                  | (Q)          |
|----------------------|--------------|
| (A) Air              | (i) Element  |
| (B) O <sub>2</sub>   | (ii) Mixture |
| (C) Copper sulphate  | (iii) Base   |
| (D) Sodium hydroxide | (iv) Salt    |
- The correct option is
- (a) A-ii, B-iv, C-i, D-iii
  - (b) A-iv, B-iii, C-ii, D-i
  - (c) A-i, B-ii, C-iii, D-iv
  - (d) A-ii, B-i, C-iv, D-iii
43. **Separation of cream from milk is done by**
- (a) Filtration
  - (b) Centrifugation method
  - (c) Evaporation
  - (d) Boiling

44. **As the solid melts to form liquid,**
- Interparticle forces of attraction decreases
  - The kinetic energy of the particles increases
  - Compressibility increases
  - All of these
45. **The quantity of matter present in an object is called its**
- Weight
  - Mass
  - Gram
  - Density
46. **When ice melts to water, then heat is**
- Absorbed
  - Evolved
  - No change
  - Depends on conditions
47. **Latent heat of vaporisation is used to**
- Overcome the forces of attraction between molecules in solid state.
  - Increase the kinetic energy of molecules in solid state.
  - Overcome the forces of attraction between molecules in liquid state
  - Increase the kinetic energy of molecules in vapour state.
48. **Dogs stretch out their tongues generally in summer because**
- Evaporation leads cooling,
  - Condensation of water vapour.
  - Freezing of saliva
  - Their body temperatures are high.
49. **Changes in which heat is liberated are called \_\_\_\_\_**
- Exothermic changes
  - Endothermic change
  - Rapid changes
  - None of these
50. **Iodine sublimes on heating i.e. directly changes into a gas state without going through liquid state. Which of the following change is not true for iodine sublimation ?**
- Change is fast
  - Change is physical
  - Change is chemical
  - Change is reversible

51. A fruit with an endocarp composed of sclerenchyma cells, but fleshy mesocarp and exocarp, is called a:
- (a) Pome
  - (b) Pepo
  - (c) Hesperidium
  - (d) Drupe
52. Which of the following pairs is mismatch ?
- (a) Pedology — Soil Science
  - (b) Physiology — Study of processes and functions of Life
  - (c) Kinesiology — Study of fossils
  - (d) Limnology — Study of Fresh Water Ecosystems.
53. Blind sac body plan is shown by
- (a) Roundworms
  - (b) Annelids
  - (c) Coelenterates
  - (d) Arthropods.
54. Sporogony in the life of Plasmodium occurs in
- (a) RBC of man
  - (b) Liver of man
  - (c) Salivary glands of mosquito
  - (d) Stomach wall of mosquito
55. Malarial parasites with 48 hours cycle are
- (a) Plasmodium malariae, P. falciparum and P. ovale
  - (b) Plasmodium malariae, P. falciparum and P. vivax
  - (c) Plasmodium malariae, P. ovale and P. vivax
  - (d) Plasmodium falciparum, P. ovale and P. vivax
56. Man in the life cycle of Plasmodium is
- (a) primary host
  - (b) secondary host
  - (c) intermediate host
  - (d) none of these
57. Which of the following are characteristics of both bacteria and fungi?
- (a) cell wall, unicellularity, and mitochondria
  - (b) cell wall, DNA, and plasma membrane
  - (c) nucleus, organelles, and unicellularity
  - (d) plasma membrane, multicellularity, and Golgi apparatus

58. Many important foods are fruits. Which of the following is not a fruit or part of a fruit?
- (a) Corn
  - (b) Jalapeño
  - (c) Rhubarb
  - (d) Squash
59. Beriberi, a disease characterized by tingling, poor coordination, and reduced blood circulation, can be avoided by consuming adequate amounts of which of the following?
- (a) Zinc
  - (b) Thiamine
  - (c) Folic acid
  - (d) Magnesium
60. Which of the following pairs represent two distinct species?
- (a) House mouse, Fancy mouse
  - (b) Mayan Indian, Inuit Indian
  - (c) Monarch butterfly, Viceroy butterfly
  - (d) Papillon, Chihauhau



**"All Birds find shelter during a rain.  
But Eagle avoids rain by flying above the Clouds."**

— Dr. A.P.J. Abdul Kalam

