

**FUTURE BHUBANESWAR SCHOOL**  
**FBS ASSESSMENT CUM SCHOLARSHIP TEST**  
**FOR XI - (23-24)**

(SET-1)

**General Instructions:**

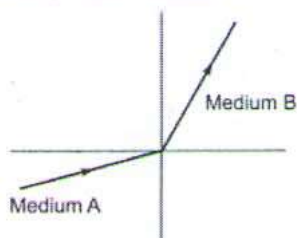
- ✓ There are 50 questions in all. All questions are compulsory.
- ✓ This question paper has five sections: Section A, Section B, Section C, Section D and Section E. All the sections are compulsory.
- ✓ Section A contains eight MCQs of Physics 1 mark each, Section B contains eight MCQs of Chemistry 1 mark each, Section C contains eight MCQs of Biology 1 mark each, Section D contains 16 MCQs of Mathematics 1 mark each and Section E contains 10 MCQs of Mental ability 1 mark each.

**Maximum Marks: 50 Marks**

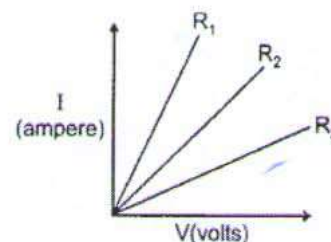
**Time Allowed: 1 Hour**

**SECTION-A (PHYSICS)**

1. Focal length of plane mirror is  
a. At infinity      b. Zero      c. Negative      d. None of these
2. A light ray enters from medium A to medium B as shown in figure. The refractive index of medium B relative to A will be



- a. Greater than unity      b. Less than unity
- c. Equal to unity      d. Zero
3. A person is unable to see object distinctly placed within 50 cm from his eyes. Find the power of the lens to correct this defect.  
a. + 2 D      b. - 2D      c. + 4D      d. - 4D
4. Which of the following statements is correct regarding the propagation of light of different colours of white light in air?  
a. Red light moves fastest.  
b. Blue light moves faster than green light.  
c. All the colours of the white light move with the same speed.  
d. Yellow light moves with the mean speed as that of the red and the violet light.
5. 1 kWh is equal to  
a.  $3.6 \times 10^6$  MJ      b.  $3.6 \times 10^5$  MJ  
c.  $3.6 \times 10^2$  MJ      d. 3.6 MJ
6. A student carries out an experiment and plots the V-I graph of three samples of nichrome wire with resistances  $R_1$ ,  $R_2$  and  $R_3$  respectively. Which of the following is true?  
a.  $R_1 = R_2 = R_3$       b.  $R_1 > R_2 > R_3$   
c.  $R_3 > R_2 > R_1$       d.  $R_2 > R_3 > R_1$



7. The most important safety method used for protecting home appliances from short circuiting or overloading is by
  - a. Earthing
  - b. Use of fuse
  - c. Use of stabilizers
  - d. Use of electric meter.
8. The magnetic lines of force, inside a current carrying solenoid, are
  - a. Along the axis and are parallel to each other
  - b. Perpendicular to the axis and equidistance from each other
  - c. Circular and they do not intersect each other
  - d. Circular at the ends but they are parallel to the axis inside the solenoid.

### SECTION-B (CHEMISTRY)

9. Sodium and chlorine are reacted, and as a result, sodium chloride is formed, which is also called table salt. What option gives the reactants and products of the reaction?
  - a. Reactants – Sodium; Products – Chlorine
  - b. Reactants – Sodium and Table Salt; Products – Chlorine
  - c. Reactants – Tables Salt; Products – Sodium and Chlorine
  - d. Reactants – Sodium and Chlorine; Products – Sodium Chloride
10. Which of the following reactions can also be termed as thermal decomposition reaction?
  - a. Combination Reaction
  - b. Decomposition Reaction
  - c. Displacement reaction
  - d. Double displacement reaction
11. Which of the following is not an acid's property?
  - a. Turns blue Litmus red
  - b. Sour in taste
  - c. Neutralize bases
  - d. Bitter in taste
12. The pH of which of the following is more than 7?
  - a. Gastric juice
  - b. Vinegar
  - c. Blood plasma
  - d. Lemon juice
13. A non-metal used to preserve food material is:
  - a. Carbon
  - b. Phosphorus
  - c. Sulphur
  - d. Nitrogen
14. The electronic configuration of an element is found to be 2, 4. How many bonds can one carbon atom form in a compound?
  - a. 1
  - b. 2
  - c. 4
  - d. 6
15. Which of the following belongs to a homologous series of alkynes?  
 $C_6H_6, C_2H_6, C_2H_4, C_3H_4$ 
  - a.  $C_6H_6$
  - b.  $C_2H_6$
  - c.  $C_2H_4$
  - d.  $C_3H_4$
16. Following is (are) the property (ies) of ionic compounds.
  - a. They have high melting and boiling points
  - b. They conduct electricity in solution or in molten state
  - c. Both (a) and (b)
  - d. None of the above

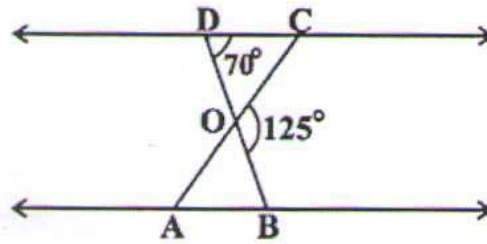
### SECTION-C (BIOLOGY)

17. Which of the following events in the mouth cavity will be affected if salivary amylase is lacking in the saliva?
- Starch breaking down into sugars.
  - Proteins breaking down into amino acids.
  - Absorption of vitamins.
  - Fats breaking down into fatty acids and glycerol.
18. Which plant hormone promotes dormancy in seeds and buds?
- Auxin
  - Gibberellin
  - Cytokinin
  - Abscisic acid
19. In a potato, vegetative propagation takes place by:
- Root
  - Leaf
  - Stem tuber
  - Grafting
20. Human teeth and elephant's tusk are
- Analogous organs
  - Vestigial organs
  - Homologous organs
  - Rudimentary organs
21. Which one of the following will undergo fastest bio-degradation?
- Mango seed
  - Wood
  - Mango peel
  - Mango pulp
22. The main cause for abundant coliform bacteria in the river Ganga is –
- Disposal of human excreta directly
  - Discharge of effluents from electroplating industries
  - Washing of clothes
  - Immersion of ashes.
23. Which gas is formed, when fossil fuels are burnt in insufficient air (oxygen)?
- Carbon dioxide
  - Carbon monoxide
  - Both CO<sub>2</sub> and CO
  - Neither CO<sub>2</sub> nor CO
24. The breakdown of pyruvate to give Carbon di-oxide, water and energy takes place in
- Cytoplasm
  - Mitochondria
  - Chloroplast
  - Nucleus

### SECTION-D (MATHEMATICS)

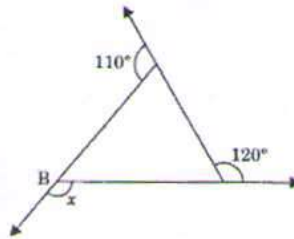
25. The sum of exponents of prime factors in the prime-factorization of 196 is
- 3
  - 4
  - 5
  - 2
26. Two numbers are in the ratio 5:6. If 8 is subtracted from each of the numbers, the ratio becomes 4:5. Find the numbers
- 45, 54
  - 40, 48
  - 55, 66
  - 50, 60
27. Which of the following pairs of linear equations are consistent?
- $x - y = 8, 3x - 3y = 16$
  - $x + y = 5, 2x + 2y = 15$
  - $2x + y - 6 = 0, 4x - 2y - 4 = 0$
  - $2x - 2y - 2 = 0, 4x - 4y - 5 = 0$

28. In the Fig.,  $\triangle ODC \sim \triangle OBA$ ,  $\angle BOC = 125^\circ$  and  $\angle CDO = 70^\circ$ . Find  $\angle OAB$



- a.  $55^\circ$       b.  $70^\circ$       c.  $125^\circ$       d.  $110^\circ$
29. Which of the following statement(s) is/are correct?
- The difference of any two sides of a triangle is greater than third side
  - A triangle can have two obtuse angles
  - A triangle can have an obtuse angle and one right angle
  - None
30. The width of each of five continuous classes in a frequency distribution is 5 and the lower class-limit of the lowest class is 10. The lower class-limit of the highest class is:
- 15
  - 30
  - 35
  - 40
31. Mode of the data  
15, 14, 19, 20, 16, 15, 16, 14, 15, 18, 14, 19, 16, 17, 16 is
- 14
  - 15
  - 16
  - 17
32. The point which divides the line segment joining the points (7, -6) and (3,4) in ratio 1:2 internally lies in the
- I quadrant
  - II quadrant
  - III quadrant
  - IV quadrant
33. If  $\cos x = 3/5$ , then  $\tan x =$  \_\_\_\_\_
- 4/3
  - 3/4
  - 5/3
  - 3/5
34. Given that  $\sin \theta = a/b$  then  $\cos \theta$  is equal to
- $b/\sqrt{b^2-a^2}$
  - $b/a$
  - $\sqrt{(b^2-a^2)}/b$
  - $a/\sqrt{b^2-a^2}$
35. 15<sup>th</sup> term of sequence  $x-7, x-2, x+3, \dots$  is \_\_\_\_\_.
- $X+53$
  - $X+73$
  - $X+83$
  - $X+63$
36. Cards marked with all two digit numbers are placed in a box and are mixed thoroughly. One card is drawn at random. Find the probability that the number in the card is divisible by 10.
- 1/10
  - 9/89
  - 1/9
  - None of these
37. If  $\alpha, \beta$  are the zeroes of the polynomial  $x^2 - 16$ , then  $\alpha\beta(\alpha + \beta)$  is
- 0
  - 4
  - 4
  - 16
38. In what ratio does the line joining the points A (-4,6) and B (8,-3) gets divided by the y axis:
- 2 : 3
  - 1 : 2
  - 1 : 3
  - 3 : 1
39. The sum of the squares of two consecutive natural numbers is 313. The numbers are
- 12, 13
  - 13, 14
  - 11, 12
  - 14, 15

40. In figure the value of  $x$  is



- a.  $120^\circ$       b.  $130^\circ$       c.  $110^\circ$       d.  $100^\circ$

**SECTION-E (MENTAL ABILITY)**

41. If WORLD = YMTJF, then CONCERN = -----

- a. AQLECTL    b. EQPEGTP  
c. EMPAGPP    d. AMLACPL

42. In three of the options, the second word is related to the first word in the same logical way. Which is the odd one out?

- a. CREATE : ETAERC    b. CATALYST : TSYLATAC  
c. GREAT : EATRG    d. SNAKE : EKANS

**Direction (Question 43): First two terms are connected by some relationship. The same relationship is applicable for next terms identify the suitable pair.**

43. Square : Cube

- a. Rectangle : Cuboid    b. Triangle : Square  
c. Quadrilateral : Cuboid    d. Cuboid : Rectangle

44. How many meaningful two-lettered English words can be made by taking letters from the latter half of the English alphabet?

- a. One      b. Two      c. Three      d. More than three

**Direction (Question 45) : In the number series given below, one number is missing. Each series is followed by four alternatives (a), (b), (c) and (d). One of them is the right answer. Identify and indicate it as per the "instructions"**

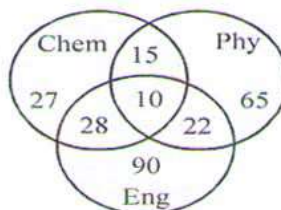
45. 11, 23, 48, 99, ....., 409

- a. 205      b. 200      c. 202      d. 201

46. In a class of 35 students Kunal is placed seventh from the bottom, whereas Sonali is placed ninth from top. Pulkit is placed exactly in between the two. What is Kunal's position from Pulkit?

- a. 9<sup>th</sup>      b. 10<sup>th</sup>      c. 11<sup>th</sup>      d. 2<sup>th</sup>

47. In the diagram, the number of those candidates is given who passed in Chemistry, Physics and English. Total number of candidates who appeared for the examination was 600. Find the percentage of candidates who passed in at least two subjects

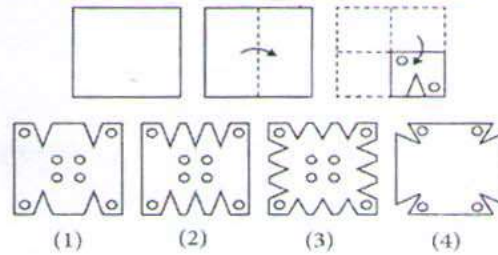


- a. 12.5      b. 1.25      c. 12.05      d. 12

48. If  $\times$  means  $-$ ,  $+$  means  $\div$ ,  $-$  means  $\times$  and  $\div$  means  $+$ , then  $15 - 2 \div 900 + 90 \times 100 = ?$

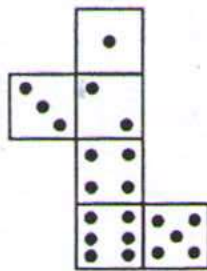
- a. 190      b. 180      c. 90      d. -60

49. A piece of paper is folded as shown in the figure and then punched: Choose the correct option from the answer figure which appears the same when unfolded.



- a. 1      b. 2      c. 3      d. 4

50. When the following figure is folded to form a cube, how many dots lie opposite the face bearing five dots ?



- a. 1      b. 2      c. 3      d. 4

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**FOR XI- (23-24)**

(SET-2)

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**Maximum Marks: 50 Marks**

**Time Allowed: 1 Hour.**

**SECTION-A (PHYSICS)**

1. An object at a distance of + 15 cm is slowly moved towards the pole of a convex mirror. The image will get
 

a. Shortened and real	b. Enlarged and real
c. Enlarge and virtual	d. Diminished and virtual
2. Two lenses of power +2.50 D and -3.75 D are combined to form a compound lens. Its focal length in cm will be
 

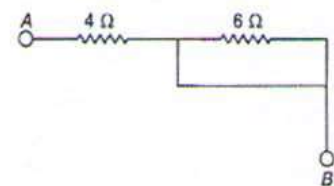
a. 40	b. -40	c. 80	d. -80
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3. Twinkling of stars is due to atmospheric
 

a. Dispersion of light by water droplets	b. Refraction of light by different layers of varying refractive indices
c. Scattering of light by dust particles	d. Internal reflection of light by clouds
4. Type of lens used in correction of myopia
 

a. Convex lens	b. Concave lens
c. Reflecting lens	d. Bifocal lens
5. A boy records that 4000 joule of work is required to transfer 10 coulomb of charge between two points of a resistor of 50  $\Omega$ . The current passing through it is
 

a. 2 A	b. 4 A	c. 8 A	d. 16 A
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6. The effective resistance between A and B is
 

a. 4 $\Omega$	b. 6 $\Omega$	c. May be 10 $\Omega$	d. Must be 10 $\Omega$
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7. Which of the following statement is not correct about the magnetic field?
 

a. Magnetic field lines form a continuous closed curve.	b. Magnetic field line do not interest each other.
c. Direction of tangent at any point on the magnetic field line curve gives the direction of magnetic field at that point.	d. Outside the magnet, magnetic field lines go from South to North Pole of the magnet.
8. The front face of a circular wire carrying current behaves like a north pole, The direction of current in this face of the circular wire is:
 

a. Clockwise	b. Downwards	c. Anticlockwise	d. Upwards
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### SECTION-B (CHEMISTRY)

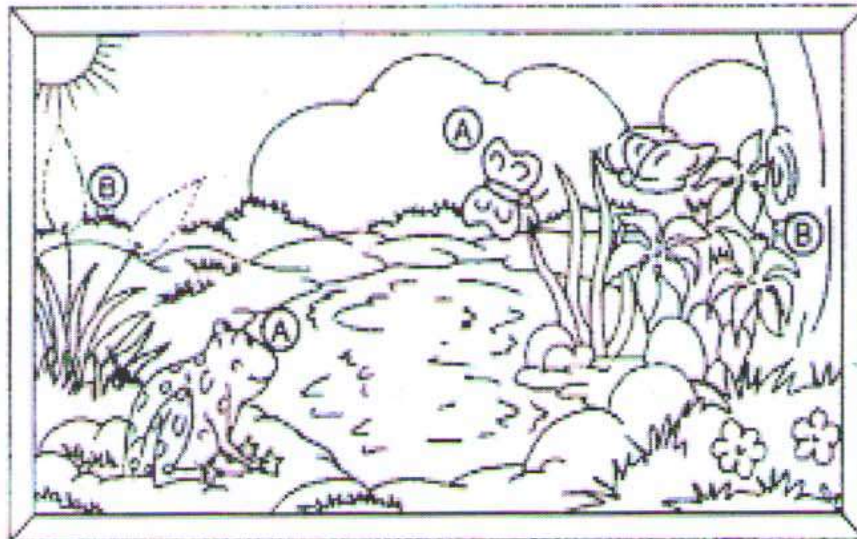
9. A student performs an experiment to form aluminium chloride from aluminium and chlorine. Which options give the chemical equation of the reaction?
- a.  $\text{Al} + \text{Cl}_2 \rightarrow \text{AlCl}_2$   
b.  $2\text{Al} + \text{Cl}_2 \rightarrow 2\text{AlCl}$   
c.  $2\text{Al} + 3\text{Cl}_2 \rightarrow 2\text{AlCl}_3$   
d.  $3\text{Al} + 3\text{Cl}_2 \rightarrow 3\text{AlCl}_3$
10. Give the ratio in which hydrogen and oxygen are present in water by volume
- a. 1:2                      b. 1:1                      c. 2:1                      d. 1:8
11. What is the Neutralization process in reverse?
- a. Formation                      b. Hydrolysis  
c. Reaction                      d. Splitting
12. What happens when a solution of an acid is mixed with a solution of a base in a test tube?
- (i) Temperature of the solution decreases  
(ii) Temperature of the solution increases  
(iii) Temperature of the solution remains the same  
(iv) Salt formation takes place
- Which of the following are correct?
- a. (i) and (iv)                      b. (i) and (iii)  
c. (ii) only                      d. (ii) and (iv)
13. Aluminium is used for making cooking utensils. Which of the following properties of aluminium are responsible for the same?
- (i) Good thermal conductivity  
(ii) Good electrical conductivity  
(iii) Ductility  
(iv) High melting point
- a. (i) and (ii)                      b. (i) and (iii)  
c. (ii) and (iii)                      d. (i) and (iv)
14. A carbon compound contains two atoms of carbon. Which name should the carbon compound bear?
- a. Butane                      b. Ethane                      c. Methane                      d. Propane
15. Methane, ethane and propane are said to form a homologous series because all are
- a. Hydrocarbons  
b. Saturated compounds  
c. Aliphatic compounds  
d. Differ from each other by a  $\text{CH}_2$  group
16. Following is (are) the property (ies) of ionic compounds.
- a. They have high melting and boiling points  
b. They conduct electricity in solution or in molten state  
c. Both (a) and (b)  
d. None of the above

### SECTION-C (BIOLOGY)

17. What are the products obtained by anaerobic respiration in plants?
- a. Lactic acid + Energy  
b. Carbon dioxide + Water + Energy



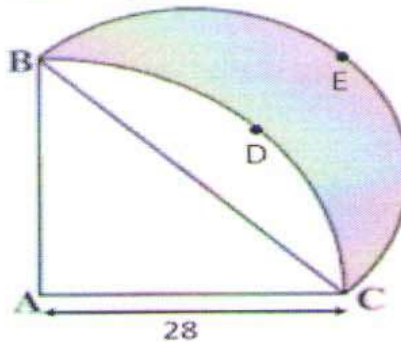
- c. Ethanol + Carbon dioxide + Energy  
 d. Pyruvate
18. Fall of mature leaves and fruits from plants is triggered by which of the following substance?  
 a. Auxin  
 b. Cytokinin  
 c. Gibberellin  
 d. Abscisic acid
19. The flower of the Hibiscus plant is  
 a. Bisexual  
 b. Unisexual  
 c. Neuter  
 d. Very small
20. Independent inheritance of two separate traits, shape and colour of seeds in Mendel's cross on pea plants resulted in a observable ratio of:  
 a. 3 : 1      b. 9 : 3 : 3 : 1      c. 1 : 1      d. 9 : 4 : 2 : 1
21. An ecosystem is represented in the figure given above. This ecosystem will be self-sustaining if



- a. The type of organisms represented by B are eliminated.  
 b. Materials cycle between the organisms labelled A and the organisms labelled B.  
 c. The organisms labelled A outnumber the organisms labelled B.  
 d. The organisms labelled A are equal in number to the organisms labelled B.
22. Pick the right combination of terms which has no fossil fuel.  
 a. Wind, ocean and coal  
 b. Kerosene, wind and tide  
 c. Wind, wood, sun  
 d. Petroleum, wood, sun
23. Posture and balance of the body is controlled by  
 a. Pons  
 b. Medulla oblongata  
 c. Cerebellum  
 d. Cerebrum
24. Two pink coloured flowers on crossing resulted in 1 red, 2 pink and 1 white flower progeny. The nature of the cross will be  
 a. Double fertilisation  
 b. Self-pollination  
 c. Cross fertilisation  
 d. No fertilisation

**SECTION-D (MATHEMATICS)**

25. The decimal expansion of the rational number  $\frac{14587}{1250}$  will terminate after  
a. One decimal place    b. Two decimal place  
c. Three decimal place    d. Four decimal place
26. An army contingent of 104 members is to march behind an army band of 96 members in a parade. The two groups are to march in the same number of columns. What is the maximum number of columns in which they can march?  
a. 8    b. 96    c. 12    d. none of these
27. Sharat has ₹2 and ₹5 coins with him. If total number of coins are 16 and the amount of money is ₹50, Then the number of ₹2 and ₹5 coins are  
a. 8 and 8    b. 6 and 10    c. 10 and 6    d. 15 and 4
28. If one zero of the quadratic polynomial  $x^2 + 3x + k$  is 2, then the value of k is  
a. 10    b. -10    c. -7    d. -2
29. The line  $3x + y - 9 = 0$  divides the line joining the points (1, 3) and (2, 7) internally in the ratio  
a. 3 : 4    b. 3 : 2    c. 2 : 3    d. 4 : 3
30. ABC is a quadrant of circle of radius 28 cm and a semi-circle is drawn with BC as diameter. Find the area of Shaded region.



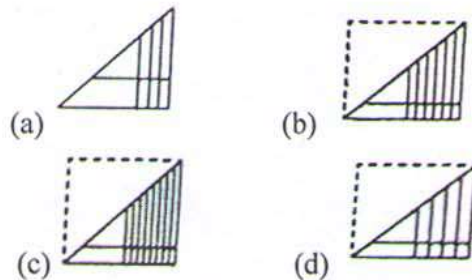
- a.  $192 \text{ cm}^2$     b.  $292 \text{ cm}^2$     c.  $392 \text{ cm}^2$     d.  $492 \text{ cm}^2$
31. If two complementary angles are in the ratio 13 : 5, then the angles are  
a.  $13x^\circ, 5x^\circ$     b.  $25^\circ, 65^\circ$   
c.  $65^\circ, 25^\circ$     d.  $65^\circ, 35^\circ$
32. The sides of a triangle are in the ratio 12: 17: 25 and its perimeter is 540cm. The area is:  
a. 1000 sq.cm.    b. 5000 sq.cm.    c. 9000 sq.cm.    d. 8000 sq.cm.
33. The class mark of a class 90-130 is  
a. 90    b. 105    c. 115    d. 110
34. Which of the following sequence form an A.P?  
a.  $-1, \frac{-3}{2}, -2, \frac{5}{2}, \dots$     b.  $\sqrt{3}, \sqrt{12}, \sqrt{27}, \dots$   
c.  $-5, 0, 5, 10, 13, \dots$     d.  $12, 8, 2, 0, \dots$
35. Two vertices of an equilateral triangle be  $(0,0)$ ,  $(3, \sqrt{3})$  and the third vertex is  
a.  $(0, 2\sqrt{3})$  or  $(3, -\sqrt{3})$     b.  $(0, \sqrt{3})$  or  $(-3, \sqrt{3})$   
c.  $(0, 2)$  or  $(-3, -3)$     d.  $(0,3)$  or  $(-3, -\sqrt{3})$



46. If the word PINK is coded as RGPI. How can the word BLUE be coded?  
 (a) DJCW (b) DWJC  
 (c) DJWC (d) DCJW
47. Two goods train each 500m long, are running on opposite directions on parallel tracks. Their speeds are 45 km/hr and 30 km/hr respectively. Find the time taken by the slower train to pass the driver of the faster one.  
 (a) 12 sec (b) 24 sec  
 (c) 48 sec (d) 60 sec
48. Which signs should be interchanged to correct the equation given below?  
 $4 - 13 \div 7 + 6 \div 7 \times 1 = 5$   
 (a)  $\times$  and  $+$  (b)  $-$  and  $\times$   
 (c)  $+$  and  $-$  (d)  $+$  and  $\times$
49. In the following question, a square transparent paper is given along with a pattern four option figures are given below, which shows the shape formed after the paper is folded on the dot line, select the one that completes the pattern answer figure.



(X)



50. Which digit will appear on the face opposite to the face with number 4?



- (a) 5 (b) 2 or 5  
 (c) 2 (d) 2 or 3