MENIIT

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ADMISSION TEST (JEE)

SAMPLE PAPER Set-1

COURSE: Two Year (10th to 11th Moving)

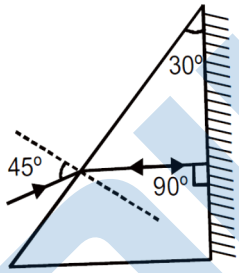
ADMISSION TEST PATTERN

SCIENCE : 40 MCQs **MATHEMATICS : 20 MCQs** **MENTAL ABILITY : 15 MCQs**

Total Questions: 75 **Test Duration: 120 minutes (2 Hours)**

SECTION A : SCIENCE

1. A ray of light falls on a prism having one silvered surface, at an incident angle of 45° as shown in figure. After refraction and reflection, it retraces the path, then the refractive index of prism material is (prism angle is 30°):



(A) $\sqrt{2}$ (B) 2 (C) $\frac{1}{\sqrt{2}}$ (D) $\frac{1}{2}$

2. A convex lens produces an image of an object on a screen with a magnification of ½. When the lens is moved 30 cm away from the object, the magnification of the image is 2. The Focal length of the lens is

(A) 20 cm. (B) 25 cm. (C) 30 cm. (D) 35 cm.

3. Light enters from air to glass. If refractive index of glass is 1.5 and speed of light in air 3×10^8 m/s. Then speed of light in glass will be-

(A) 4.5×10^8 m/s (B) 3.0×10^8 m/s (C) 1.5×10^8 m/s (D) 2.0×10^8 m/s

4. In long sightedness image is formed-

(A) On Retina (B) In front of Retina (C) Behind Retina (D) On blind spot

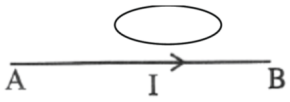
5. The length of a bar magnet is 2*l*, the distance between magnetic poles will be:

(A) between 0 – *l* (B) between *l* – 2*l* (C) equal to 2*l* (D) equal to *l*

6. A primary coil of a transformer has 800 turns and the secondary coil has 8 turns. This transformer is connected to a 220 volt A.C. supply. Then the output voltage will be:

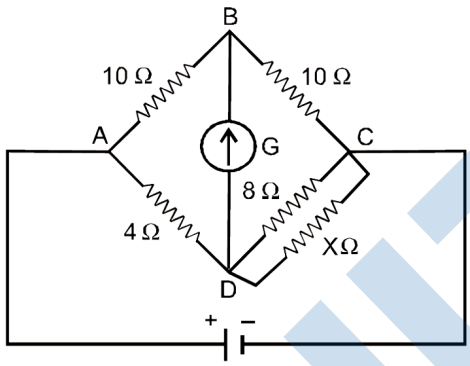
(A) 1.5 volt (B) 2.2 volt (C) 3.5 volt (D) 3.3 volt

7. Current from A to B in the straight wire is decreasing. The direction of induced current in circular loop will be:



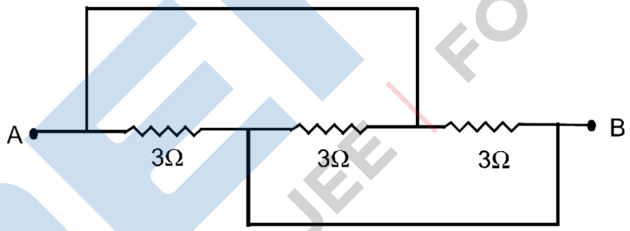
(A) clock wise
(B) anticlockwise
(C) no induced current flows
(D) None of the above

8. In the given circuit diagram, the value of resistance X in ohm when the bridge is balanced will be -



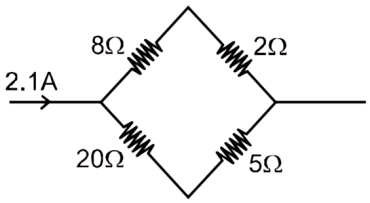
(A) 4
(B) 8
(C) 10
(D) 12

9. In the following figure, the equivalent resistance between the points A and B in ohm will be:



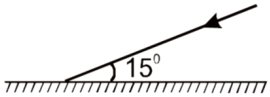
(A) 1
(B) 2
(C) 3
(D) 9

10. In the circuit shown in figure, the current flowing through 5Ω resistance is:



(A) 0.5A
(B) 0.6A
(C) 0.9 A
(D) 1.5 A

11. When a ray of light strikes a plane mirror at an angle of 15^o with the mirror, what will be the angle through which the ray gets deviated?



(A) 15^o
(B) 30^o
(C) 75^o
(D) none of these

12. An object A is placed at a distance d in front of a plane mirror. If one stands directly behind the object at distance S from the mirror, then the distance of the image of A from the individual is:

(A) 2S (B) 2d (C) S + d (D) S + 2d

13. In a room lighted by an electric bulb, it is found that the shadow of the ceiling fan hung in the centre is falling on a wall opposite to the door. What can you say about the position of the bulb?

(A) On the wall having the door

(B) On the wall facing the door

(C) On the wall on your right as you enter the room

(D) On the wall on your left as you enter the room

14. When a body is negatively charged by friction, it means:

(A) the body has acquired excess of electrons (B) the body has acquired excess of protons

(C) the body has lost some electrons (D) the body has lost some neutrons

15. A wire of resistance R is cut into n equal parts. These parts are then connected in parallel. The equivalent resistance of combination will be:

(A) nR (B) R/n (C) n/R (D) R/n^2

16. How much electrical energy in kilowatt hour is consumed in operating ten, 50 watt bulbs for 10 hours per day in a month of 30 days?

(A) 15 (B) 150 (C) 1500 (D) 15000

17. A switch is always connected to the

(A) earth wire (B) neutral wire (C) live wire (D) None of these

18. The magnetic field intensity produced due to a current carrying coil is maximum at:

(A) any point

(B) the centre of the coil

(C) any point lying on the axis of the coil

(D) points lying between centre of the coil and its circumference

19. A wire of length 0.04 m is placed perpendicular to a uniform magnetic field of magnitude 0.30 T. Calculate the force on the wire when the current flowing through it is 5.0 A.

(A) 10 N (B) 0.06 N. (C) 0.01 N (D) 0.02 N

20. Lenz's law:

(A) is the same as the right hand palm rule

(B) determines the magnitude of an induced e.m.f.

(C) bears no relation to the law of conservation of energy

(D) is useful in deciding about the direction of an induced e.m.f.

Q.21 Which of the following is an example of endothermic reaction?

(A) burning of paper
(B) respiration
(C) decomposition of limestone
(D) slaking of lime

Q.22 Which of the following can be decomposed by the action of light?

(A) AgCl
(B) KCl
(C) $CuCl_2$
(D) NaCl

Q.23 Tooth enamel is made up of

(A) calcium phosphate
(B) calcium carbonate
(C) calcium oxide
(D) potassium

Q.24 Two solutions X and Y were found to have pH value of 4 and 10 respectively. The inference that can be drawn is

(A) X is base and Y is an acid
(B) Both X and Y are acidic solutions
(C) X is an acid and Y is a base
(D) Both X and Y are bases

Q.25 An elements X has two shell both which are completely filled with electrons. The X is likely to be :

(A) argon
(B) helium
(C) neon
(D) krypton

Q.26 To form water, hydrogen and oxygen combine in the ratio 1 : 8 by mass. Find the mass of oxygen required to react completely with 4 g of hydrogen.

(A) 32 g
(B) 8 g
(C) 4 g
(D) 16 g

Q.27 The Al_2O_3 reacts with sodium hydroxide to form

(A) $NaAlO_3$.
(B) NaAlO
(C) $NaAlO_4$
(D) $NaAlO_2$

Q.28 Which of the following are not ionic compounds

(i) KCl (ii) HCl(g) (iii) CCl_4 (iv) NaCl

(A) (iii) and (iv)
(B) (i) and (ii)
(C) (i) and (iii)
(D) (ii) and (iii)

Q.29 In 80 gm mixture of O_2 and H_2 containing 80% oxygen by mass at a total pressure of 50 atm.Find partial pressure of oxygen when no reaction occurs .

(A) 10 atm
(B) 40 atm
(C) 5 atm
(D) 25 atm

Q.30 The formula of the compound formed between element X belonging to group 2 and another element Y belonging to group 15, is

(A) X_2Y_3 (B) X_3Y_2 (C) XY (D) XY_3

Q.31 Find the number of moles in 128 g of oxygen molecules.

(A) 12 (B) 16

(C) 8 (D) 4

Q.32 Which of the following is the pair of isobar?

(A) ${}_6C^{13}, {}_7N^{13}$ (B) ${}_7N^{15}, {}_8O^{16}$

(C) ${}_6C^{13}, {}_7N^{14}$ (D) ${}_6N^{13}, {}_8O^{15}$

Q.33 A student heated small amount of ferrous sulphate in a test tube. She made the following observations:

(i) Ferrous sulphate colour changes to brown

(ii) A gas having a smell of burning sulphur is evolved

(iii) Water droplets collect on the upper side of the test tube

(iv) Brown coloured gas is evolved.

The correct set of observation is

(A) (i), (ii), (iv) (B) (i), (ii), (iii) (C) (i), (iii), (iv) (D) (ii), (iii), (iv)

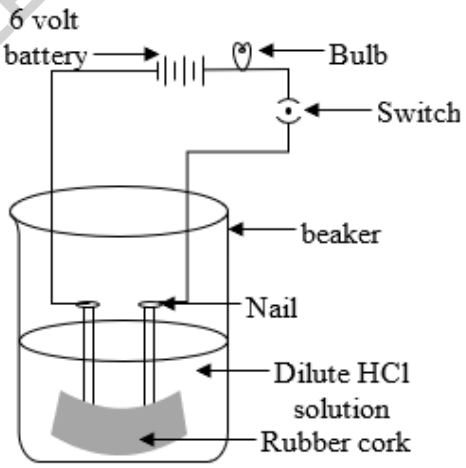
Q.34 The apparatus given in the figure is set up to demonstrate electrical conductivity. Which of the following statement(s) is(are) correct ?

(i) Bulb will not glow because electrolyte is not acidic.

(ii) Bulb will glow because HCl is a strong acid and furnishes ions for conduction.

(iii) Bulb will not glow because circuit is incomplete

(iv) Bulb will not glow because it depends upon the type of electrolytic solution.



(A) (i) and (iii) (B) (ii) and (iv) (C) (ii) only (D) (iv) only

Q.35 The reactivities of iron, magnesium, sodium and zinc towards water are in the following order

(A) Fe > Mg > Na > Zn
(B) Zn > Na > Mg > Fe
(C) Na > Mg > Zn > Fe
(D) Mg > Na > Fe > Zn

Q.36 Find the mass of oxygen contained in 1 kg of potassium nitrate (KNO_3).

(A) 475.2 g
(B) 485.2 g
(C) 475.5 g
(D) 485.5 g

Q.37 If a few drops of a concentrated acid accidentally spills over the hand of a student, what should be done?

(A) Wash the hand immediately with plenty of water and apply a paste of sodium hydrogen carbonate
(B) After washing with plenty of water apply solution of sodium hydroxide on the hand
(C) Neutralise the acid with a strong alkali
(D) Wash the hand with saline solution

Q.38 Curd cannot be stored in

(i) Brass vessel (ii) Copper vessel
(iii) Steel (iv) Bronze

(A) (ii), (iii), (iv)
(B) (i), (ii), (iv)
(C) (i), (iii), (iv)
(D) (i), (ii), (iii)

Q.39 A student added dilute HCl to a test tube containing zinc granules. Which of the following observations are correct?

I. Zinc surface became dull and black.
II. A gas was evolved which burnt with a pop sound.
III. The solution remained colourless.

(A) I and II
(B) I and III
(C) II and III
(D) I, II and III

Q.40 Fill in the blanks by selecting the option with the correct words.

The process of removing impurities from the impure metal to obtain pure metal is known as _____of metal. The most widely used method for refining is _____. In this method, the impure metal is taken as _____ and the pure metal is taken as _____.

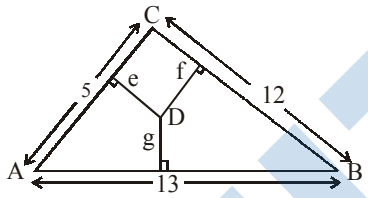
(A) refining, electrolytic refining, anode, cathode
(B) calcination, electrolysis, cathode, anode
(C) refining, smelting, cathode, anode
(D) smelting, calcination, anode, cathode

SECTION-B : MATHEMATICS

Q.41 The geometric and harmonic means of two positive numbers x_1 and x_2 are 18 and $16\frac{8}{13}$ respectively. The value of $|x_1 - x_2|$ is equal to

(A) 5 (B) 10 (C) 15 (D) 20

Q.42 The sides of a triangle ABC areas shown in the given figure. Let D be any internal point of this triangle and let e, f and g denote the distance between the point D and the sides of the triangle. The sum 5e + 12f + 13g is equal to



(A) 120 (B) 90

(C) 60 (D) 30

Q.43 Let A (1, 5), B (3, 4) and C (1, 1) be vertices of a ΔABC with O as its orthocentre. If orthocentre of ΔOAB be (α, β), then $|\alpha - \beta|$ is equal to

(A) 0 (B) 1 (C) 2 (D) 4

Q.44 If $a, b, c \in N$ and equations $ax^2 + 2bx + 3c = 0$ and $2x^2 + 3x + 5 = 0$ have a root in common then minimum value of $(a + b + c)$ will be

(A) 5 (B) 10 (C) 23 (D) 31

Q.45 Sum of n terms of the series

$$\frac{2}{5}+\frac{22}{25}+\frac{122}{125}+\frac{622}{625}+\ldots\ldots \text{ is}$$

(A) $1 - 3 \cdot 5^{-n}$ (B) $n - \frac{3}{4}+\frac{3}{4}5^{-n}$

(C) $n + \frac{3}{4}-\frac{3}{4}5^{-n}$ (D) $n - \frac{3}{4}+\frac{1}{4}5^{-n}$

Q.46 Let $\theta \in [0, 4\pi]$ satisfy the equation $(\sin\theta + 2)(\sin\theta + 3)(\sin\theta + 4) = 6$. If sum of all values of θ is of the form $k\pi$, then the value of k is

(A) 6 (B) 5 (C) 4 (D) 2

Q.47 A cyclist in a fog passed a man running at the rate of 6 km/hr in the same direction. He could see the cyclist for 5 minutes and it was visible to him upto a distance of 100 metres. What was the speed of the cyclist?

(A) 7.2 km/hr (B) 6 km/hr (C) 9 km/hr (D) none of these

Q.48 If α is the angle of first quadrant such that $\text{cosec}^4\alpha = 17 + \cot^4\alpha$, then what is the value of $\sin\alpha$?

(A) $\frac{1}{3}$ (B) $\frac{1}{4}$ (C) $\frac{1}{9}$ (D) $\frac{1}{16}$

Q.49 In a zoo, there are rabbits and pigeons. If heads are counted there are 200 and if legs are counted, there are 580. How many pigeons are there?

(A) 90 (B) 110 (C) 120 (D) 80

Q.50 Milk and water are mixed in a vessel A in the proportion 5: 2, and in vessel B in the proportion 8 : 5. In what proportion should quantities be taken from the two vessels so as to form a mixture in which milk and water will be in the proportion of 9 : 4?

(A) 2 : 7 (B) 3 : 8 (C) 7 : 2 (D) 8 : 3

Q.51 The sum of 3rd and 15th terms of an arithmetic progression is equal to the sum of 6th, 11th and 13th terms of the same progression. Then which term of the series should necessarily be equal to zero?

(A) 8^{th} (B) 9^{th} (C) 12^{th} (D) none of these

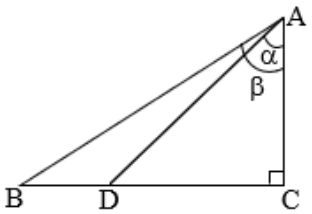
Q.52 If x + y = 2z, then the value of $\frac{x}{x-z}+\frac{z}{y-z}$ is

(A) 1 (B) 3 (C) $\frac{1}{2}$ (D) 2

Q.53 D is a real number with non-terminating digits a_1 and a_2 after the decimal point. Let D = 0. $a_1a_2a_1a_2a_1a_2$..... with a_1 & a_2 not both zero. Which of the following when multiplied by D will necessarily give an integer?

(A) 18 (B) 198 (C) 33 (D) 288

Q.54 In the adjacent figure $\frac{BD}{BC}=\frac{1}{3}$, then the ratio $\frac{\tan\alpha}{\tan\beta}$ is equal to



(A) $\frac{3}{4}$ (B) $\frac{1}{2}$ (C) $\frac{2}{3}$ (D) $\frac{3}{2}$

Q.55 A ladder 65 feet long is leaning against a straight wall. Its lower end is 25 feet from the bottom of the wall. How much further away will it move if the upper end is moved down by 8 feet ?

(A) 8 feet (B) 10 feet (C) 14 feet (D) 20 feet

Q.56 The smallest number which when increased by 5 is completely divisible by 8, 11 and 24 is

(A) 264

(B) 259

(C) 269

(D) none of these

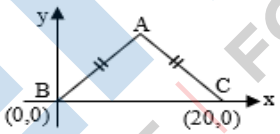
Q.57 If the roots of the quadratic equation $x^2 - 2(a + b)x + a(a + 2b + c) = 0$ are equal where a, b, $c \in Q$ then

(A) $b^2 = 4ac$ (B) $4b^2 = 9ac$ (C) $b^2 = 2ac$ (D) $b^2 = ac$

Q.58 If sum of n terms of an AP is $(pn + qn^2)$ where p and q are constants then, the common difference is equal to :

(A) 3q (B) 2q (C) q (D) 4q

Q.59 In the diagram, ΔABC is isosceles and its area is 240. Then y coordinate of A is



(A) 6 (B) 12 (C) 24 (D) 48

Q.60 Suppose a, b, c are three distinct real numbers. Let

$$P(x) = \frac{(x-b)(x-c)}{(a-b)(a-c)} + \frac{(x-c)(x-a)}{(b-c)(b-a)} + \frac{(x-a)(x-b)}{(c-a)(c-b)}$$ when simplified, P(x) becomes

(A) 1

(B) x

(C) $\frac{x^2 + (a+b+c)(ab+bc+ca)}{(a-b)(b-c)(c-a)}$

(D) 0

SECTION C : MENTAL ABILITY

61. Arrange the given words in a meaningful sequence and then choose the most appropriate sequence from amongst the alternatives provided below each question:

1. Honey 2. Flower 3. Bee 4. Wax

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

62. In question written below a statement is given followed by two conclusion I and II.

Statement: Adversity makes a man wise.
Conclusions:
I. The poor are wise
II. Man learns from bitter experience.

(A) Only conclusion I is true
(B) Only conclusion II is true
(C) Both conclusions I and II are true
(D) Neither conclusion I nor conclusion II are true.

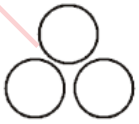
63. In a showroom, 60 percent discount is given to everybody on all the articles. The successive discount of 40 percent is offered to female students. If printed price of an article of Rs. 1000 is bought by a female student, how much she will have to pay for that article?

(A) Inconclusive (B) Zero (C) Rs. 160 (D) Rs.240

64. Amit said, "This girl is the wife of the grandson of my mother." How is Amit related to the girl?
(A) Father (B) Father-in-law
(C) Grandfather (D) Husband

65. Which of the Venn diagrams given in the alternatives best represents the relation between the given items?

Doctors, Engineers, Lawyers

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

66. Select the missing numbers in the following sequence.
3, 6, 24, 30, 63, 72, ?, ?, 195, 210
(A) 117, 123 (B) 120,132 (C) 123,135 (D) 135,144

67. Find the missing term in figures.

6	8	4
9	12	6
15	20	?

(A) 5 (B) 10 (C) 20 (D) 25

68. A sprinter goes off the starting block for 100m run and at that instant the second-hand of a stopwatch had pointed towards North. He touches the finishing line exactly after 12 seconds. In which direction did the second hand point when he just crossed the finishing line?

(A) 18^o North of East
(B) 18^o East of North
(C) 72^o North of East
(D) 82^o East of North

69. Ashish leaves his house at 20 minutes to seven in the morning, reaches Kunal's house in 25 minutes, they finish their breakfast in another 15 minutes and leave for their office which takes another 35 minutes. At what time do they leave Kunal's house to reach their office?

(A) 7.40 A.M.
(B) 7.20 A.M.
(C) 7.45 A.M.
(D) 8.15 A.M.

70. The priest told the devotee, "The temple bell is rung at regular intervals of 45 minutes. The last bell was rung five minutes ago. The next bell is due to be rung at 7.45 a.m." At what time did the priest give this information to the devotee?

(A) 7.40 a.m.
(B) 7.05 a.m.
(C) 6.55 a.m.
(D) None of these

71. If P is the husband of Q and R is the mother of S and Q, then what is R to P?

(A) Mother
(B) Sister
(C) Aunt
(D) Mother-in-law

72. The door of a house opens to the South on pushing inside the house. Entering the door there is a room towards the right hand. After entering the room there is a window towards the right hand. What will be the direction of a man's face, if he is standing facing towards the window?

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

73. In the below number series one term is missing. Choose the correct option to complete the series

20, 19, 17, [?], 10, 5

(A) 12
(B) 13
(C) 14
(D) 15

74. In the below number series one term is missing. Choose the correct option to complete the series

5, 17, 37, 65, [?], 145

(A) 95
(B) 97
(C) 99
(D) 101

75. If '125' is to '9', then '387' is to____.

(A) 10
(B) 17
(C) 8
(D) 19

★★★★★

Answer Key [Sample Paper : JEE (10 to 11 going) SET-1

1.	(A)	16.	(B)	31.	(D)	46.	(B)	61.	(C)
2.	(A)	17.	(C)	32.	(A)	47.	(A)	62.	(B)
3.	(D)	18.	(B)	33.	(B)	48.	(A)	63.	(D)
4.	(C)	19.	(B)	34.	(C)	49.	(B)	64.	(B)
5.	(B)	20.	(D)	35.	(C)	50.	(C)	65.	(B)
6.	(B)	21.	(C)	36.	(A)	51.	(C)	66.	(B)
7.	(B)	22.	(A)	37.	(A)	52.	(A)	67.	(B)
8.	(B)	23.	(A)	38.	(B)	53.	(B)	68.	(A)
9.	(A)	24.	(C)	39.	(D)	54.	(C)	69.	(B)
10.	(B)	25.	(C)	40.	(A)	55.	(C)	70.	(B)
11.	(B)	26.	(A)	41.	(C)	56.	(B)	71.	(D)
12.	(C)	27.	(D)	42.	(C)	57.	(D)	72.	(B)
13.	(A)	28.	(D)	43.	(A)	58.	(B)	73.	(C)
14.	(A)	29.	(A)	44.	(D)	59.	(C)	74.	(D)
15.	(D)	30.	(B)	45.	(B)	60.	(A)	75.	(D)