CHEMISTRY

BOOKS - VGS BRILLIANT CHEMISTRY (TELUGU ENGLISH)

ACIDS,BASES AND SALTS

1 Acids Bases And Salts

1. Which of the following solution has incorrect option of colour change, when different indicators are used ?

Indicators	$Ca(OH)_2$	CH_3COOH	HNO_3	NH_4C
Red Litmus	Blue	No colour change	NO colour	Blue
Blue Litmus	No colour change	Red	Red	No co
Phenolphthalein	Pink	Colourless	Colourless	No co
Methyl orange	Yellow	Yellow	Pink	Yello

A. $Ca(OH)_2$ and CH_3COOH

B. CH_3COOH and NH_4OH

C. CH_3COOH and HNO_3

D. $Ca(OH)_2$ and HNO_3

Answer: B

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2. When vinegar reacts with baking soda the gas evolved is

A. hydrogen

B. oxygen

C. carbon dioxide

D. nitrogen dioxide

Answer: C

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3. Identify the correct representation of reaction occurring during chloroalkali process.

A. $2NaCl_{(l)} + 2H_2O_{(l)} \rightarrow 2NaOH_{(l)} + Cl_{2(g)} + H_{2(g)}$

B. $2NaCl_{(aq)} + 2H_2O_{(aq)} \rightarrow 2NaOH_{(aq)} + Cl_{2(g)} + H_{2(g)}$

C. $2NaCl_{(aq)} + 2H_2O_{(l)} \rightarrow 2NaOH_{(aq)} + Cl_{2(aq)} + H_{2(aq)}$

D. $2NaCl_{(aq)} + 2H_2O_{(l)} \rightarrow 2NaOH_{(aq)} + Cl_{2(g)} + H_{2_g}$

Answer: D

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4. During the preparation of hydrogen chloride gas on a humid day, the gas is usually passed through the guard tube containing calcium chloride. The role of calcium chloride taken in the guard tube is to

A. absorb the evolved gas

B. moisten the gas

C. absorb moisture from the gas

D. absorb Cl ions from the evolved gas

Answer: C

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5. The aqueous solution of Aluminium Sulphate is

A. Acidic

B. Basic

C. Amphoteric

D. Both (B) and (C)

Answer: A

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6. Plaster of Paris hardens by

A. giving of CO_2

B. changing into $CaCO_3$

C. combining with water

D. giving out water

Answer: C

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7.

	Column - I	Column - II
a)	Bleaching powder	P) Constituent of glass
b)	Baking soda	Q) Production of H_2 and Cl_2
c)	Borax	S) Decolourization
d)	Sodium Chloride	B) Antacid

A. $a-Q, b-P, c-S, d-R$

B. $a-R, b-Q, c-S, d-P$

C. $a-R, b-S, c-P, d-Q$

D. $a - Q, b - S, C - P, d - R$

Answer: C

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8. Consider the following statements :

a. The hydronium ion $\left(H_3O^+\right)$ is the strongest acid that can exist in aqueous solution .

b. Mixing concentrated acid or bases with water is a highly endothermic reaction .

Which of these statement (s) is / are correct ?

A. A only

B. B only

C. Both A and B

D. Neither A nor B

Answer: A

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9. Consider the following statements :

a) Hydrogen chloride gas turns red litmus blue .

b) Lactic acid is one of the mineral acids .

c) Milk of Magnesia is a type of milk .

Which of these statement (s) is / are correct ?

A. a and b

B. a and c

C. All are correct

D. All are incorrect

Answer: D

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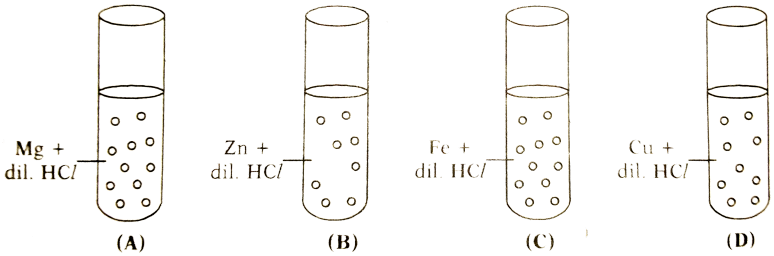
10. In the below mentioned diagram four test-tubes A, B, C and D contains dil . HCl. Defferent metal granules are put inside the dil.HCI. In which test-tube the reaction is more vigorous at room temperature ?



A. test tube-A

B. test tube-B

C. test tube-C

D. test tube-D

Answer: A

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11. Select the odd one out :

A. Glass

B. Cement

C. Plaster

D. Washing Soda

Answer: C

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

A. Wash the hand with saline solution.

B. Wash the hand immediately with plenty as water and apply a paste of sodium hydrogen carbonate.

C. After washing with plenty of water apply solution of sodium hydroxide on the hand .

D. Neutralise the acid with a strong alkali .

Answer: B

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13.

	Column - I	Column - II(Uses)
a)	Na_2CO_3	P) Fungicide
b)	$CuSO_4 \cdot 5H_2O$	Q) Medicine
c)	$NaHCO_3$	R) Preservative
d)	$NaCl$	S) Textile

A. $a-P, b-S, c-Q, d-R$

B. $a-S, b-P, c-Q, d-R$

C. $a-S, b-Q, c-P, d-R$

D. $a-Q, b-P, c-S, d-R$

Answer: B

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14. The following table shows solutions X , Y and Z with their respective pH values .

Solutions	X	Y	Z
pH	3	7	12

Based on the given information which of the following statements is false ?

A. Solution X reacts with metals to liberate H_2 gas

B. solution Y is formic acid

C. solution Z reacts with solution X to form salt and water

D. solution X reacts with calcium carbonate to give of CO_2 gas

Answer: B

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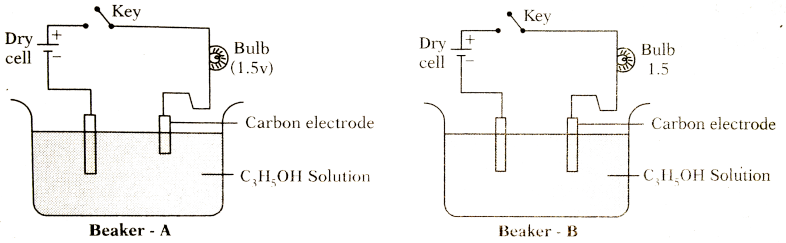
15. What is the aim of this experiment



A. a. To show that both the solutions from beaker A and B conducts electricity.

B. b. To show solution beaker A conducts electricity. Beaker B doesn't conduct

C. c. To show that solution in beaker A doesn't conduct but beaker B conduct electricity.

D. d. To show both the solutions in beaker A & B doesn't conduct electricity

Answer: C

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16.

	Column - I	Column - II
a)	H_3BO_3	P) Food preservation
b)	HNO_3	Q) Aerated drink
c)	CH_3COOH	R) Food digestion
d)	H_2CO_3	S) Eye-wash

A. $a-S, b-R, c-P, d-Q$

B. $a-S, b-P, c-R, d-Q$

C. $a-S, b-R, c-Q, d-P$

D. $a-Q, b-R, c-P, d-S$

Answer: A

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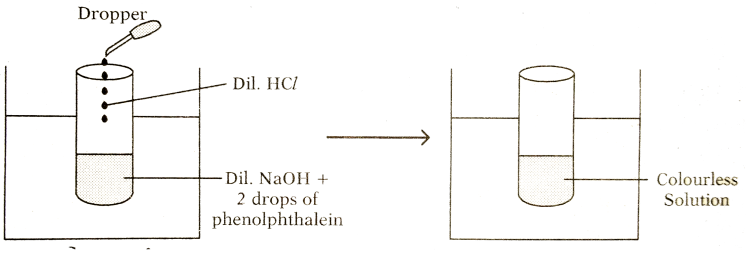
17. Observe the experimental setup carefully .

Which type of reaction is this ?



A. Isomerisation

B. Neutralisation

C. Saponification

D. Both (B) & (C)

Answer: B

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18. What is correct for following ?

i) Lemon Juice ii) Solution of washing soda iii) Tooth paste iv) Stomach juices v) Vinegar

A. i, iv, v are acids and ii, iii are bases

B. ii, iii are acids and i, iv, v are bases

C. i, iii, iv, v are acids and ii is a base

D. i, ii , iii are acids and iv , v are bases

Answer: A

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2 Reflection And Refraction

1. A man runs towards a mirror with a speed of 15 $m - s^{-1}$. What is the speed of his image?

A. 7. $5m -^{-1}$

B. $15m - s^{-1}$

C. $30m - s^{-1}$

D. $45m - s^{-1}$

Answer: B

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2. The light reflected by a plane mirror will form a real image

A. Under no circumstances

B. If object is placed close to the mirror

C. If rays incident on mirror are parallel

D. If rays incident on mirror are converging

Answer: B

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3. If a ray of light is incident on a plane mirror at an angle of 30° , then deviation produced by the plane mirror is

A. 30°

B. 60°

C. 90°

D. 120°

Answer: D

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4. An object is placed at a distance f in the front of a convex mirror. If focal length of the mirror is f, then distance of image from pole of the mirror is

A. f

B. 2f

C. f/2

D. f/4

Answer: C

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5. A point source of light P is placed at a distance L in front of a mirror of width d hung vertically on a wall . A man walks infront of the mirror a long a line parallel to the mirror at a distance 2L as shown in the figure. The greatest distance over which he can see the image of the light source, in the mirror is

A. d/2

B. d

C. 2d

D. 3d

Answer: D

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6. If a fish lies at the bottom of a 4 m deep water tank $(\mu = 4/3)$ and a bird is flying at a height of 6m above the water surface, then apparent distance at which the fish appears to the bird is

A. 9m

B. 10m

C. 11m

D. 12m

Answer: A

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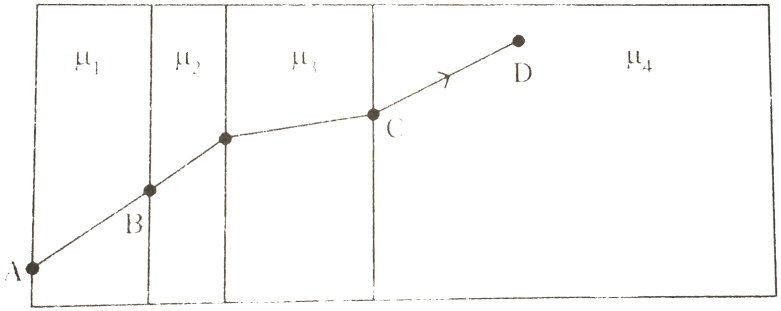
7. A ray of light passes through four transparent media with refractive indices μ_1, μ_2, μ_3 and μ_4 as shown in the figure. The surface of are media are parallel. If the emergent ray CD is parallel to the incident ray AB

, we must have



A. $\mu_1 = \mu_2$

B. $\mu_2 = \mu_3$

C. $\mu_3 = \mu_4$

D. $\mu_1 = \mu_4$

Answer: D

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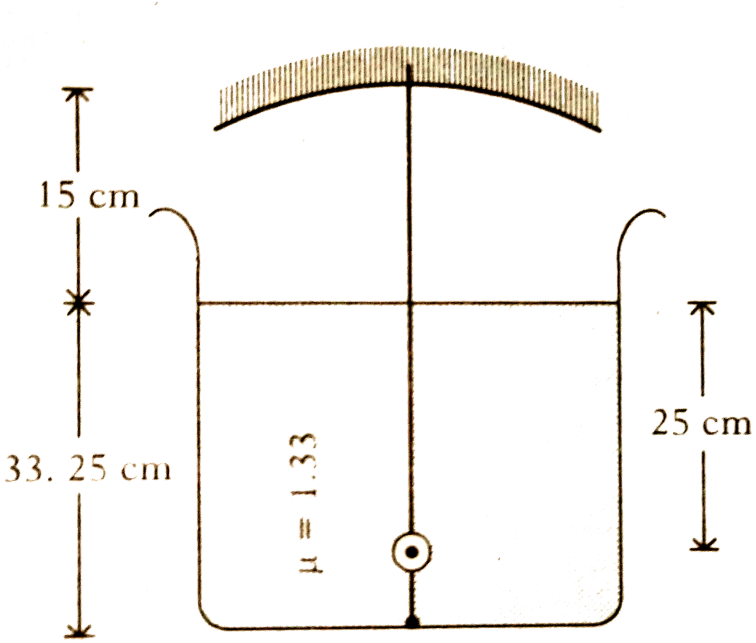
8. A container is filled with water $(\mu = 1.33)$ upto a height of 33 . 25 cm and a concave mirror is placed 15 cm above the water level as shown in the figure. The image of an object placed at the bottom is formed 25 cm

below the water level. The focal lenght of the concave mirror is approximately.



A. 10 cm

B. 15 cm

C. 19 cm

D. 23 cm

Answer: C

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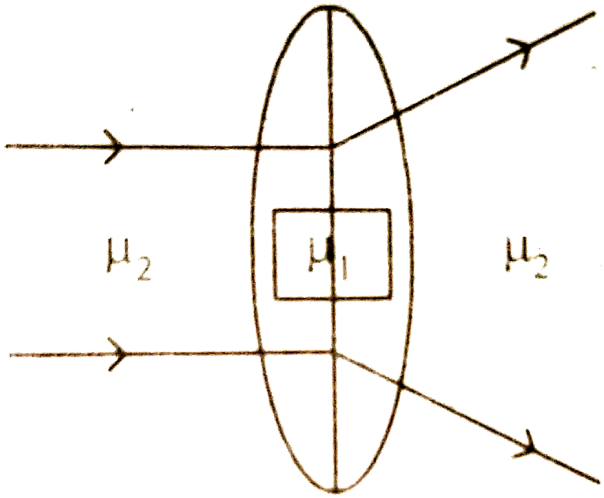
9. A convex lens made up of a material of refractive index μ_1 is immersed in medium of refractive index μ_2 as shown in the figure. The relation between μ_1 and μ_2 is



A. $\mu_1 < \mu_2$

B. $\mu_1 > \mu_2$

C. $\mu_1 = \mu_2$

D. $\mu_1 = \sqrt{\mu_2}$

Answer: A

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10.

Column - I	Column - II
a) A lens that can form a real image	P) Convex lens
b) A lens that forms virtual and diminished image	Q) Concave len
c) Incident ray is parallel to emergent ray	R) Denser medi
d) A substance in which speed of light is less	S) Rectangular

A. $a-Q, b-P, c-S, d-R$

B. $a-P, b-Q, c-S, d-R$

C. $a-Q, b-P, c-R, d-S$

D. $a-P, b-Q, c-R, d-S$

Answer: B

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11. Under which of the following statement describes the conditions a concave mirror can form an image larger then the actual object ?

A. when the object is kept at a distance equal to its radius of curvature

B. when object is kept at a distance less then its focal length

C. when object is placed between the focus and centre of curvature

D. when object is kept at a distance greater then its radius of curvature

Answer: C

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12. Which of the following statements describes the condition-when is refraction of light NOT possible?

a) The angle of incidence is 0° . b) The two media have the same refractive index. c) The refractive index is higher then 3 . 0 .

A. only a and B

B. only b and c

C. only a and c

D. a, b and c

Answer: A

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13. In an ecperiment to determine the focal length of a convex, lens a student obtained a sharp inverted image of a distant tree on the screen behind the lens. She then removed the screen and looked throught the lens in the direction of the object she will see

A. an inverted image of the tree at the focus of the lens

B. no image as the screen has been removed

C. a blurred image on the wall of the laboratory

D. an erect image of the tree on the lens

Answer: A

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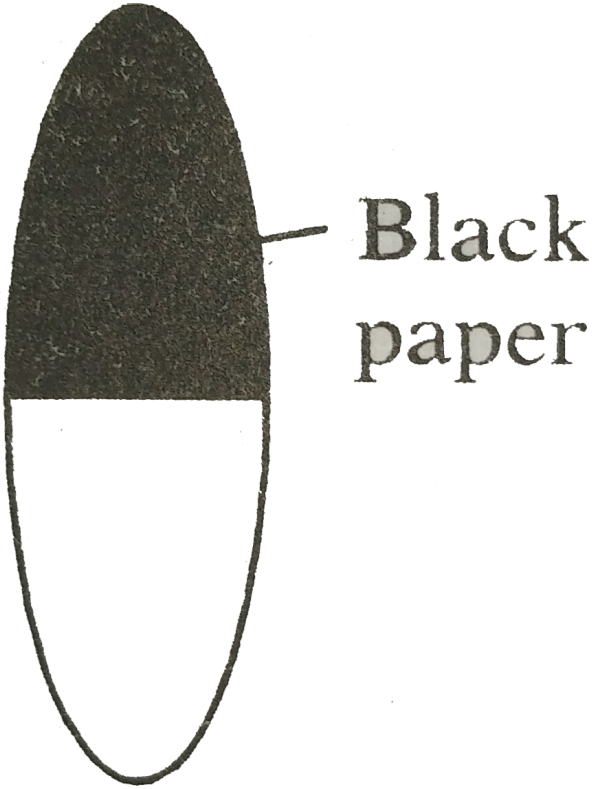
14. How will the image formed by a convex lens be affected if the upper half of the lens is wrapped with a black paper ?



A. The size of the image is reduced to one -half

B. The upper half of the image will be absent

C. The brightness of the image is reduced

D. There will be no effect

Answer: C

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15. The relation between u , v and R for a spherical mirror is

A. $R = \frac{2uv}{u+v}$

B. $R = \frac{2}{u+v}$

C. $R = \frac{2(u+v)}{(uv)}$

D. None of these

Answer: A

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16. You are given water, mustard oil, glycerine and kerosene. In which of these media a ray of light incident obliquely at same angle would bend the most ?

A. kerosene

B. water

C. mustrad oil

D. Glycerine

Answer: D

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17.

Column - I	Column
a) Ray passing through centre of curvature	P) Passes through
b) Ray passing through principal focus reflection	Q) Form a point-s
c) Rats from an object at infinite distance	R) Becomes parall
d) Ray parallel to the principal axis	S) Retraces its pat

A. $a - S, b - R, c - P, d - Q$

B. $a - P, b - S, c - R, d - Q$

C. $a - S, b - R, c - Q, d - P$

D. $a - R, b - S, c - Q, d - P$

Answer: C

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18. A ray of light in incidentin medium 1 on a surface that separates medium 1 from medium 2 . Let v_1 and v_2 represent the velocity of light in medium 1 and medium 2 respectively . Also let n_{12} and n_{21} represent the refractive index of medium 1 with respect to medium 2 and refractive index of medium 2 with respect to medium 1, respectively. if 1 and r denote the angle of incidence and angle fo refraction, then -

A. $\frac{\sin i}{\sin i} = n_{21} = \frac{v_1}{v_2}$

B. $\frac{\sin i}{\sin r} = n_{21} = \frac{v_2}{v_1}$

C. $\frac{\sin i}{\sin r} = n_{12} = \frac{v_1}{v_2}$

D. $\frac{\sin i}{\sin r} = n_{12} = \frac{v_2}{v_1}$

Answer: A

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3 Human Eye And Colourful World

1. The loss of ability of an eye to focus near and far objects, with the advancing age is called

A. myopia

B. presbyopia

C. astigmatism

D. hypermetropia

Answer: B

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2. Presbyopia arises due to

A. elongation of eye ball

B. contraction of eye ball

C. irregular surface of cornea

D. loss of flexibility of eye lens

Answer: D

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3. A defect of vision, in which lines in one plane of an object appear in facus while those in another plane are out of focus is called

A. myopia

B. distortion

C. astigmatism

D. hypermetropia

Answer: C

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4. In myopia

A. no image is formed

B. image is formed at retina

C. image is formed in front retina

D. image is formed behind retina

Answer: C

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5. Myopia arises due to

A. old age

B. shortening of eye ball

C. elongation of eye ball

D. irregular curvature of retina

Answer: C

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6. The hypermetropia is a

A. short-sighted defect

B. long-sighted defect

C. bad vision due to old age

D. None of these

Answer: B

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7. A preson uses spectacles of power + 2D . He is suffering from

A. myopia

B. presbyopia

C. astigmatism

D. hypermetropia

Answer: D

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8. A man suffering from short-sight is unable to see objects distinctly at a distance more than 2m . The power of lens required to correct this defect should be

A. $-0.5D$

B. $-2D$

C. $+0.50D$

D. $+2D$

Answer: A

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9. Which of the following produces yellow light ?

a) Sodium lamp b) Sunlight c) LPG gas

A. only (a)

B. only (a) and (b)

C. only (a) and (c)

D. only (b) and (c)

Answer: B

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10. In the human eye, the opaque diaphragm behind the cornea is called the

A. choroids

B. iris

C. retina

D. lens

Answer: B

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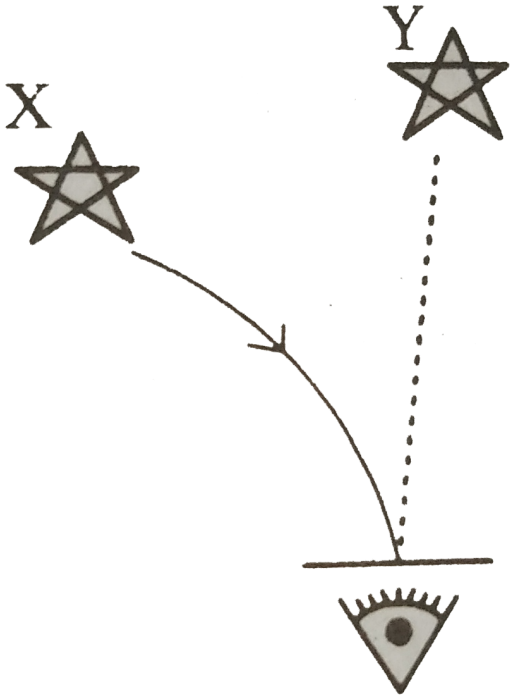
11. In the given figure 'x' represents the actual position of a star while 'y' represents its position which seems to be higher in the sky than it actually is

which of these effects is demonstrated here ?



A. Total internal reflection

B. Tyndall effect

C. Atmospheric refraction

D. Dispersion

Answer: C

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12. Two teams 'X' and 'Y' are playing football under flood lights that emit yellow light players of team X are dressed in white shirts and black shorts and players of team Y are dressed in yellow shirts and blue shorts . Which of the following is true of the colour change appearing in their dresses ?

	Team - X	Team - Y
A.	white shirts,blue shorts	White shirts, black shorts
B.	white shirts,blue shorts	White shirts, black shorts
C.	Yellow shirts black short	Yellow shirts, black shorts
D.	White shirts black short	White shirts, blue shorts

Answer: C

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13.

Column - I	Column - II
a) Ciliary muscles	P) Slackened
b) Suspensory ligaments	Q) Thick
c) Muscle tension on lens	R) Contract
d) Lens shape	S) Low

A. $a - R, b - P, c - S, d - Q$

B. $a - R, b - P, c - Q, d - S$

C. $a - P, b - R, c - S, d - Q$

D. $a - P, b - R, c - Q, d - S$

Answer: A

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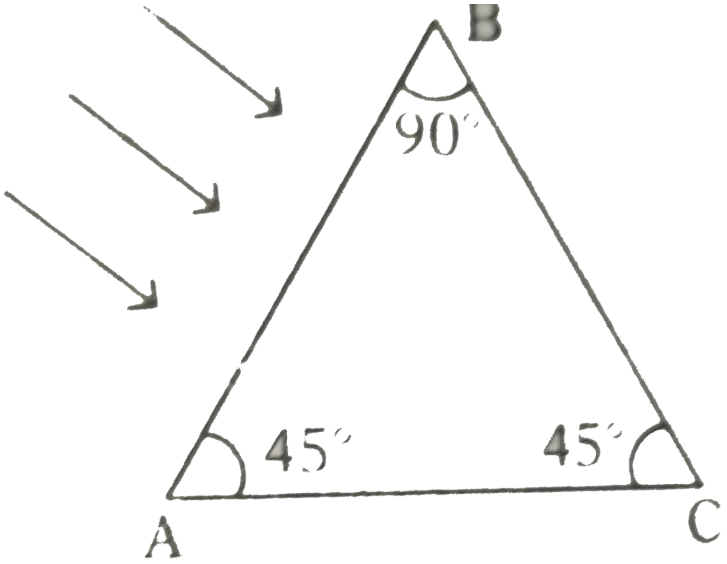
14. A beam of light consisting of red, green and blue colours is incident on right-angled prism as shown. The refractive index of the material of the prism for the above red, green and blue wavelengths are 1.39, 1.44

and 1.47 respectively . The prism will



A. separate part of the red colour from the green and blue colours.

B. separate part of the blue colour from the red and green colours.

C. separate all the three colurs from one another.

D. not separate even partially and colour form the other two colours.

Answer: A

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15. Consider the following statements :

a) For a normal eye, the far point isat infinity. b) Focal length of eye lens is fixed. c) The change in focal length of eye lens to focus image at varying distance is done by the action of pupil .

Which of the these statement (s) / are correct ?

A. only (b)

B. only (a)

C. (a) and (b)

D. (b) and (c)

Answer: B

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16. Which of the following statement is not an advantage of having two eyes ?

A. Ability to get a wider field of view than that provided by a single eye

B. Ability to detect faint object than it is possible with one eye

C. Ability to focus on two different objects at the same time in two different directions

D. Ability to experience three dimensional effect of the world

Answer: C

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17.

Column - I	Column - II
a) The twinkling of a star	P) Dispersion of li
b) Formation of rainbow	Q) Atmospheric r
c) Ability of the eye lens to adjust its focal length	R) Scattering of li
d) Blue colour of sky	S) Accommodatio

A. $a-P, b-Q, c-S, d-R$

B. $a-Q, b-P, c-S, d-R$

C. $a-P, b-Q, c-R, d-S$

D. $a-Q, b-P, c-R, d-S$

Answer: B

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4 Classification Of Elements The Periodic Table

1. Which of the given elements A , B , C , D and E with atomic numbers 2 , 3 , 7 , 10 and 30 respectively belong to the same period ?

A. A , B , C

B. B , C , D

C. A , D , E

D. B , D , E

Answer: B

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2. Which of the following elements A , B , C , D and E with atomic numbers 3 , 11 , 15 , 18 , and 19 respectively belong to the same group ?

A. A , B , C

B. B , C , D

C. A , D , E

D. A , B , E

Answer: D

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3. Which of the following sets of elements belongs to halogen family?

A. 1 , 12 , 30 , 4 , 62

B. 37 , 19 , 3 , 55

C. 9 , 17 , 35 , 53

D. 12 , 20 , 56 , 88

Answer: C

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4. Which one of these group of elements is also called the halogen family ?

A. Group 16

B. Group 18

C. Group 10

D. Group 17

Answer: D

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5.

Column - I (Name of element)	Column - II (Group of element)
a) Nitrogen	P. 15
b) Aluminium	Q. 16
c) Chlorine	R. 17
d) Oxygen	S. 13
e) Copper	T. 11

A. $a-P, b-S, c-R, d-Q, e-T$

B. $a-S, b-P, c-R, d-Q, e-T$

C. $a-P, b-S, c-Q, d-r, e-T$

D. $a-P, b-S, c-R, d-T, e-Q$

Answer: A

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6. On the basis of following features identify correct option.

a) These elements majorly forms acidic oxides .

b) These elements are majorly non-metals.

A. s - block elements

B. p - block elements

C. d - block elements

D. f - block elements

Answer: B

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7. Which of the following statements is incorrect from the point of view of modern periodic table ?

A. Elements are arranged in the order of increasing atomic number.

B. There are eighteen vertical columns called groups.

C. Transition elements fit in the middle of long periods.

D. Noble gases are arbitrarily placed in eighteenth group .

Answer: D

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8. Consider the following elements of third period of modern periodic table :

Period III elements	Na	Mg	Al	Si	P	S	Cl	Ne
Atomic number	11	12	13	14	15	16	17	18

How does valency very in a period on going from left to right ?

A. Increases

B. Decreases

C. Remains constant

D. First increases then decreases

Answer: D

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9. Among Al_2O_3, SiO_2, P_2O_3 and SO_2 the correct order of acid strength is

A. $SO_2 < P_2O_3 < SiO_2 < Al_2O_3$

B. $Al_2O_3 < SiO_2 < P_2O_3 < SO_2$

C. $Al_2O_3 < SiO_2 < SO_2 < P_2O_3$

D. $SiO_2 < SO_2 < Al_2O_3 < P_2O_3$

Answer: B

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10. An atom of an element (X) has its K , L and M shell filled with some electrons. It reacts with sodium metal to form a compound NaX . The number of electrons in the M shell of the atom (X) will be

A. Eight

B. Seven

C. Two

D. One

Answer: B

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11.

a) Newland law of octaves	P) Atomic mass Vs atomic volume
b) Mendeleev	Q) Li, Na, K
c) Electronic configuration	R) One to seven groups sub-divided into
d) Lother Meyer	S) Periodic repetition of properties of ele
e) Dobereiner's tried	T) Only 56 elements known

A. $a-T, b-S, c-R, d-P, e-Q$

B. $a-T, b-R, c-S, d-P, e-Q$

C. $a-T, b-R, c-s, d-Q, e-P$

D. $a-R, b-T, c-S, d-P, e-Q$

Answer: D

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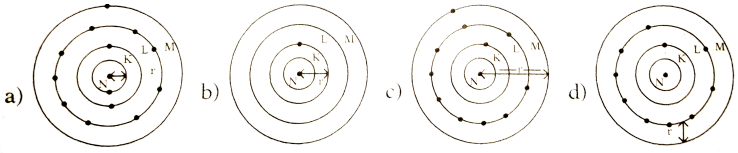
12. Which one of the following depict the correct representation of atomic radius (r) of an atom ?



A. (a) and (b)

B. (b) and (c)

C. (c) and (d)

D. (a) and (d)

Answer: B

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13. Which of the following statements are the characteristics of isotopes of an element?

a) Isotopes of an element have same atomic masses

b) Isotopes of an element have same atomic number

c) Isotopes of an element show same physical properties

Isotopes of an element show same chemical properties

A. a , c and d

B. b , c and d

C. b and c

D. b and d

Answer: D

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14. Observe the following periodic table :

Arrange the following elements XYZ in increasing order of their valencies

:

H 1							He 2,
Li 2, 1	Be 2, 2	B 2, .	C 2, 4	Y 2, 5	O 2, 6	F 2, 7	Ne 2, 8
Na 2, 8, 1	Mg 2, 8, 2	Al 2, 8, 3	Z 2, 8, 4	P 2, 8, 5	S 2, 8, 6	Cl 2, 8, 7	Ar 2, 6, 8
K 2, 8, 8, 1	X 2, 8, 8, 2						

A. $X > Z > Y$

B. $Y > Z > X$

C. $Z > Y > X$

D. $X > Y > Z$

Answer: C

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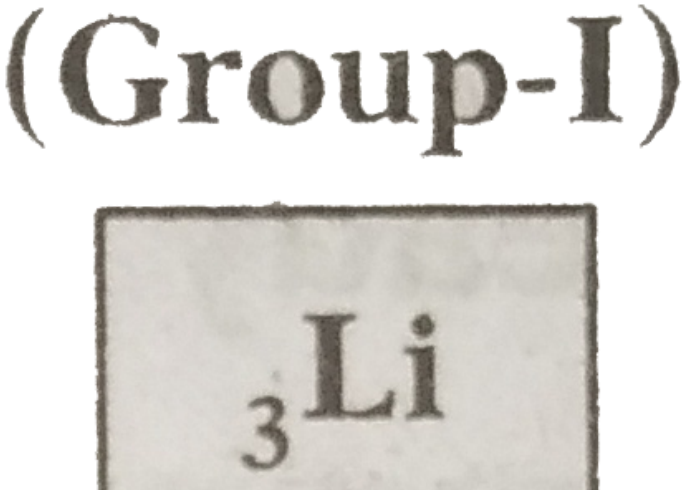
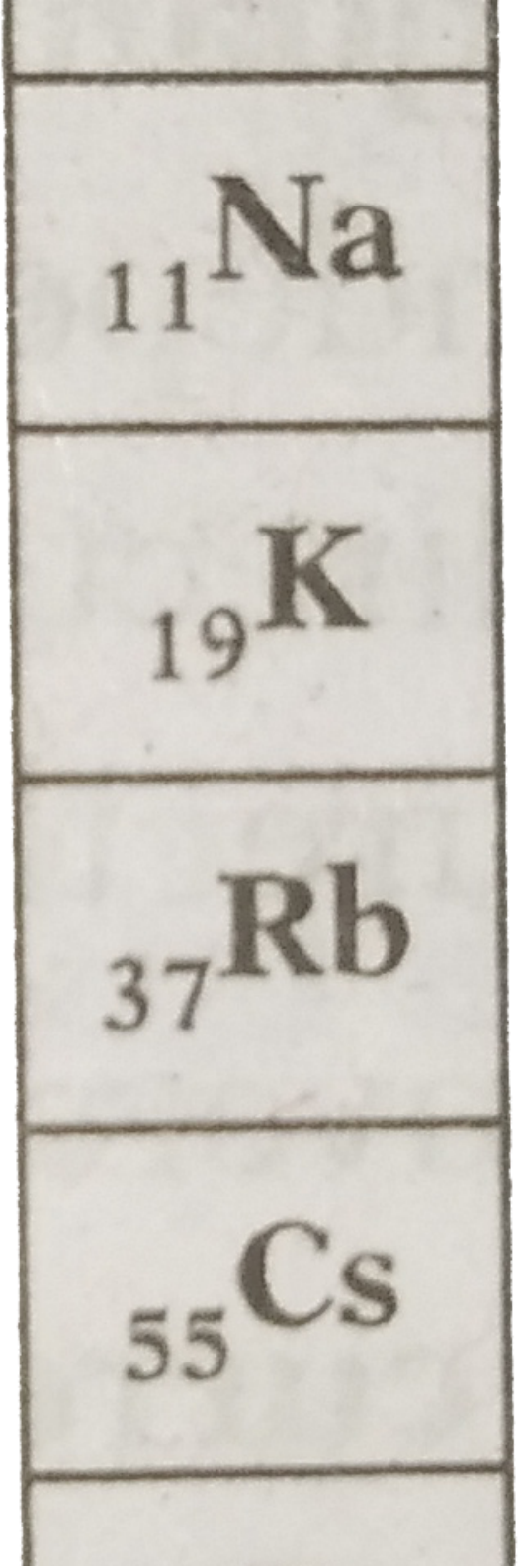
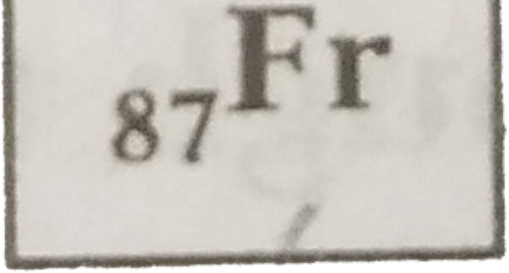
15. Look at the group - I of the modern periodic table as given below .

What is common between them ?




11Na
19K
37Rb
55Cs



A. All are alkali metals

B. All have one valence electron

C. Both (A) and (B)

D. None of these

Answer: C

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16. 3 elements x , Y and Z form a Dobereiner triad . Their atomic weights are in the ratio 5 : 11 : 17 . If the sum of the atomic weights of extreme elements is 176 , then find the atomic weights of X , Y and z .

A.

X	Y	Z
40	80	176

B.
X	Y	Z
40	88	136

C.
X	Y	Z
40	80	120

D.
X	Y	Z
80	100	120

Answer: B

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5 Electric Current

1. The net charge on a current carrying conductor is

A. zero

B. constant

C. varying

D. negative

Answer: A

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2. A steady current is passing through a conductor of non-uniform cross-section . The net quantity of charge crossing any cross-section per second is

A. independent of area of cross-section

B. directly proportional to the length of conductor

C. directly proportional to the area of cross-section

D. inversely proportional to the length of conductor

Answer: A

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3. If a current of 300 mA is following in a conductor, then the no.of electrons passed through the conductor in 4 min is (charge on an electron $= 1.6 \times 10^{-19} C$

A. 4.5×10^{20}

B. 9.0×10^{20}

C. 4.5×10^{18}

D. 9.0×10^{18}

Answer: A

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4. At room temperature, copper has free electron density of $8.4 \times 10^{28} m^{-3}$. The electron drift velocity in a copper conductor of cross-sectional area of $10^{-6} m^2$ and carrying a current of 5.4 A , will be

A. $4m - s^{-1}$

B. $0.4m - s^{-1}$

C. $4cm - s^{-1}$

D. $0.4mm - s^{-1}$

Answer: D

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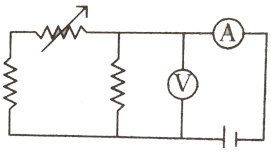
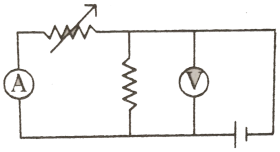
5. Which of the following setup can be used to verify the Ohm's law ?

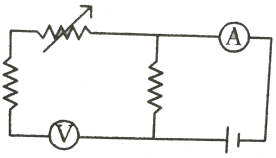
A.



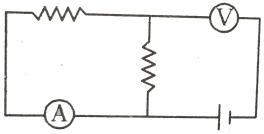
B.



C.



D.



Answer: A

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6. The resistance of an incandescent lamp is

A. greater when switched ON

B. smaller when switched ON

C. greater when switched OFF

D. same whether it is switched OFF or ON

Answer: D

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7. Three copper wires have lengths and cross-sectional areas of (l and A) , (2land A / 2) and (l/2 and 2A) . Resistance will be minimum in

A. wire of cross-sectional area A

B. wire of cross-sectional area A/2

C. wire of cross-sectional area 2 A

D. same in all three cases

Answer: C

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8. If the length of a conductor is halved,then its conductanc will be

A. halved

B. doubled

C. quadrupled

D. unchanged

Answer: B

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9. What length of the wire (specific resistance $48 \times 10^{-8} \Omega - m$) is needed to make a resistance of 4.2Ω ?

A. 1.1m

B. 2.1m

C. 3.1m

D. 4.1m

Answer: A

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10. A wire of length l is drawn such that its diameter is reduced to half of its original diameter. If the initial resistance of the wire were 10Ω , its new resistance would be

A. 40Ω

B. 80Ω

C. 120Ω

D. 160Ω

Answer: D

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11. A uniform wire of resistance R is uniformly compressed along its length, unitl its radius becomes n times the original radius. Now resistance of the wire becomes.

A. $\frac{R}{n^4}$

B. $\frac{R}{n^2}$

C. $\frac{R}{n}$

D. nR

Answer: A

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12. A series combination of two resistors 1 Ω each is connected to a 12 V battery of internal resistance 0.4Ω The current flowing through it is

A. 10A

B. 7.5A

C. 5A

D. 2.5A

Answer: C

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13. An electric current is passed through a circuit containing two wires of the same material, connected in parallel. If lengths and radii of the wires are in the ratio of 4 : 3 and 2 : 3 , then ratio of the currents passing through the wires will be

A. $3:1$

B. $2:1$

C. $1:3$

D. $1:2$

Answer: C

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14. What will be the resistance between P and Q in the following circuit ?

A. 2Ω

B. 3Ω

C. 4Ω

D. 5Ω

Answer: D

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15. A_3 volt battery with negligible internal resistance is connected in a circuit as shown in the figure. The current (1) in circuit will be

A. 1/3 A

B. 1A

C. 1.5A

D. 2A

Answer: C

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16. A current of 2A flows in a system as shown in the figure. The potential difference between A and B $(V_A - V_B)$ will be

A. 1V

B. 2V

C. 3V

D. 4V

Answer: A

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17. The current flowing through a lamp , marked as 60 W and 240 V is

A. 0.25 A

B. $1A$

C. 2.5 A

D. 5A

Answer: A

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18. The power of an electric bulb marked as 40 W and 200 V used in a circuit of supply voltage 100 V will be

A. 100 W

B. 40 W

C. 20 W

D. 10 W

Answer: D

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19. In India, electricity is supplied for domestic use at 220V. It is supplied at 110 V in USA. If the resistance of a 60 W bulb for use in India is R , then resistance of a 60 W bulb for use in USA will be

A. R

B. 2R

C. R/2

D. R/4

Answer: D

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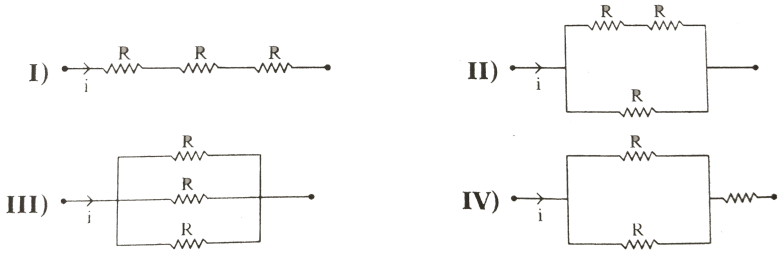
20. The three resistances of equal value (R) are arranged in different combinations shown below . Arrange them in increasing order of power dissipation.



A. $III < II < IV < I$

B. $II < III < IV < I$

C. $I < IV < III < II$

D. $I < III < II < IV$

Answer: A

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21. The current in the arm CD of the circuit will be

A. $I_1 + I_2$

B. $I_2 + I_3$

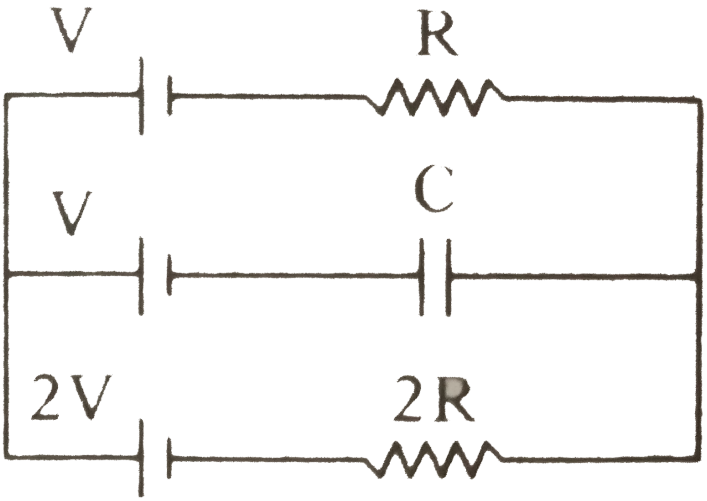
C. $I_1 + I_3$

D. $I_1 - I_2 + I_3$

Answer: B

View Text Solution

22. In the given circuit, with steady current, potential drop across the capacitor (C)n must be



A. V

B. V/2

C. V/3

D. 2V/3

Answer: C

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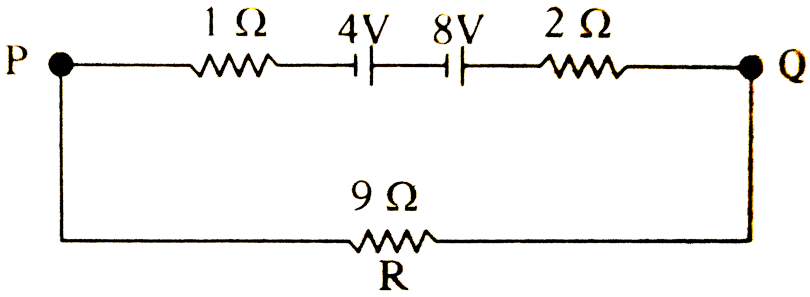
23. Two batteries of e.m.f4 V and 8 V with internal resistance of 1 Ω and 2 Ω are connected in a circuit with a resistance of 9 Ω as shown in the

figure . The current and potential difference between the point P and Q are



A. $\frac{1}{3}A$ and $3V$

B. $\frac{1}{6}A$ and $4V$

C. $\frac{1}{9}A$ and $9V$

D. $\frac{1}{12}A$ and $12V$

Answer: A

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1. The magnitude of magnitic field at a point due to a current carrying small element does not depend open

A. current in the element

B. length of the element

C. diameter of the element

D. distance of the point from the element

Answer: C

Watch Video Solution

2. If a current i ampere flows in a long straight thin walled tube, then magnetic induction at any point inside the tube is

A. zero

B. Infinite

C. $\frac{2i}{r}$ Tesla

D. $\frac{\mu_0}{4\pi} - \frac{2i}{2}$ Tesla

Answer: A

Watch Video Solution

3. A coll having N turns is wound tightly in the form of a spiral with inner and outer radii a and b respectively when a current I passes through the coll , the magnetic field at the centre is

A. $\frac{\mu_0 NI}{b}$

B. $\frac{2\mu_0 NI}{a}$

C. $\frac{\mu_0 NI}{2(b-a)} \text{in}\left(\frac{b}{a}\right)$

D. $\frac{\mu_0 NI}{2(b-a)} \text{in}\left(\frac{b}{a}\right)$

Answer: C

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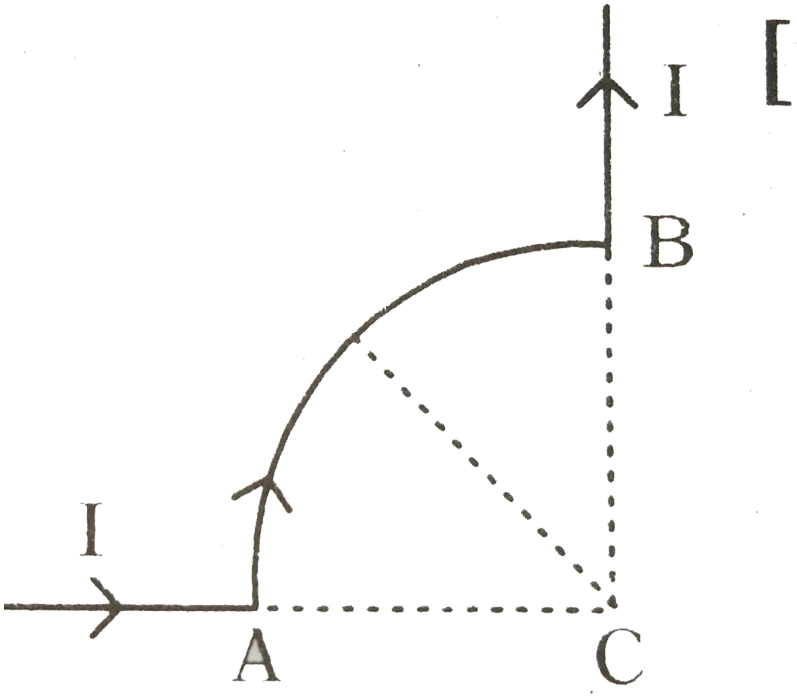
4. A wire carrying current I is shaped as shown in the figure. The section AB is quarter circle of radius r. The magnetic field is directed .



A. At any angle $\pi/4$ to the plane of the paper.

B. Along the bisector of the angle ACB towards AB .

C. Along the bisector of the angle ACB away from AB.

D. Perpendicular to the plane of paper in downward direction.

Answer: D

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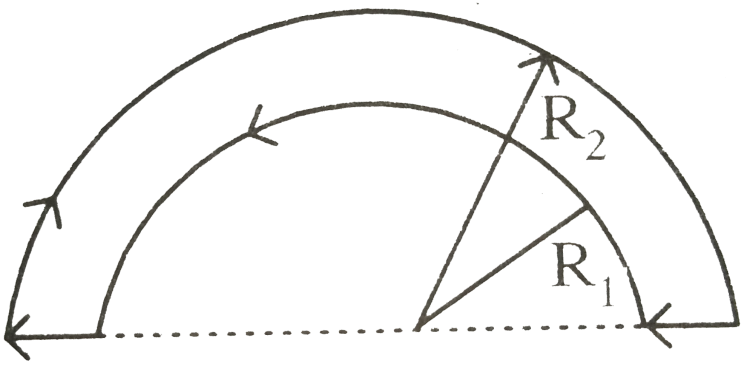
5. A wire loop formed by joining two semicircular sections of radii R_1 and R_2 and centre C carries a current I as shown in the figure . The resultant magnetic field at C has a magnitude of



A. $\frac{\mu_0 I}{4}\left(\frac{1}{R_1}-\frac{1}{R_2}\right)$

B. $\frac{\mu_0 I}{2}\left(\frac{1}{R_1}-\frac{1}{R_2}\right)$

C. $\frac{\mu_0 I}{4}\left(\frac{1}{R_1}+\frac{1}{R_2}\right)$

D. $\frac{\mu_0 I}{2}\left(\frac{1}{R_1}+\frac{1}{R_2}\right)$

Answer: A

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6. A closely wound solenoid 80 cm long has 5 layers of windings of 400 turns each . If it carries a current of 8 A then magnetic field inside the solenoid near its centre is

A. 5×10^{-3} T

B. 25×10^{-3} T

C. 50×10^{-3} T

D. 75×10^{-3} T

Answer: B

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7. A proton moving with a velocity $2.5 \times 10^{7} m - s^{-1}$, enters a magnetic field of intensity 2.5 T at an angle 30° with the magnetic field. The force on the proton is

A. 3×10^{-12} N

B. 5×10^{-12}N

C. 6×10^{-12} N

D. 9×10^{-12} N

Answer: B

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8. A particle of mass m and charge q moves with a constant velocity V along the positive x-direction . It enters a regio containing a uniform magnetic field B directed along the negative z-direction, extending from x = a to x = b . The minimum value of V required, so that the particle can just enter the region of $x > b$ is

A. $\frac{qbB}{m}$

B. $\frac{qaB}{m}$

C. $\frac{q(b-a)B}{m}$

D. $\frac{q(b+a)B}{2m}$

Answer: C

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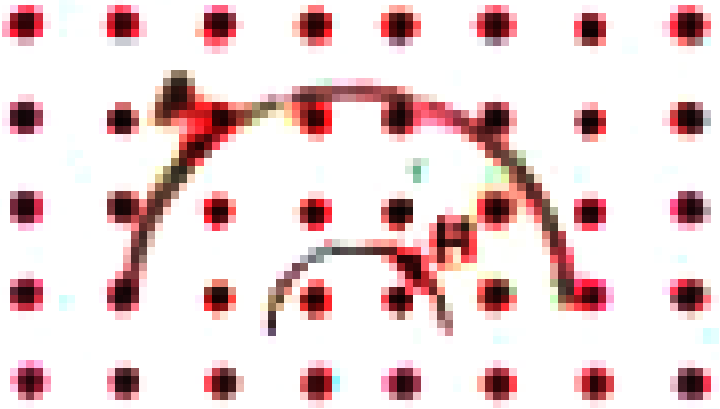
9. Two particles A and B of mass m_A and m_B respectively and having the same charge are moving in a plane. A uniform magnetic field exists perpendicular to this plane. The speeds of the particles are v_A and v_B respectively, and the trajectories are as shown in the figure. Then



A. $m_A v_A < m_B v_B$

B. $m_A v_A > m_B v_B$

C. $m_A < m_B$ and $v_A < v_B$

D. $m_A = m_B$ and $v_A = v_B$

Answer: B

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10. Two current carrying wires (P and Q) are placed between two magnets and their currents are equal but in opposite directions as shown below . What is the direction of the force acting on each wire ?

A. Force on P Upwards Force on Q Upwards

B. Force on P Downwards Force on Q Downwards

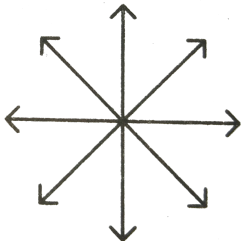
C. Force on P Upwards Force on Q Downwards

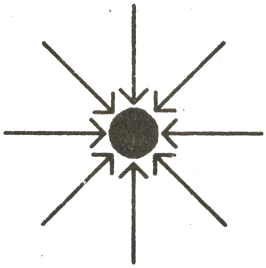
D. Force on P Downwards Force on Q Upwards

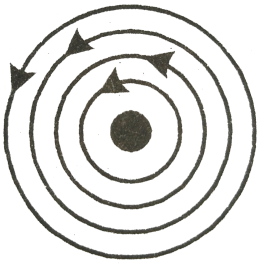
Answer: D

Watch Video Solution

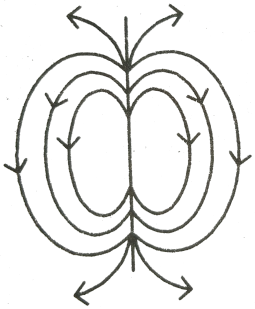
11. Which of the field patterns given below is valid for both electric and magnetic fields ?

A. 

B. 

C. 

D.



Answer: C

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12.

Column - I	Coumn - II
a) Electromagnet	P) Trains
b) D . C . Motor	Q) Telegraph
c) MRI	R) Power Plane
d) Electric Generator	S) Medicine

A. $a-Q, b-P, c-S, d-R$

B. $a-P, b-Q, c-S, d-R$

C. $a-Q, b-R, c-S, d-P$

D. $a-P, b-Q, c-R, d-S$

Answer: A

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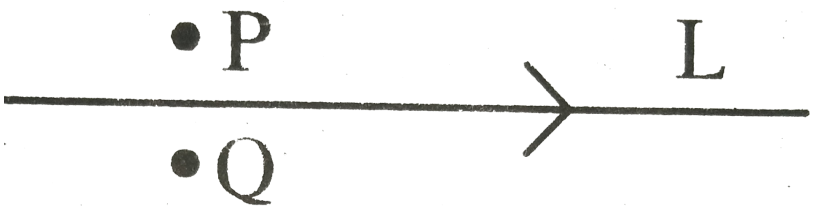
13. Two compass needles are placed near a current carying wire at points P and Q as shown

What can be concluded ?



A. Their needles will not deflect

B. Needle at P only will deflect

C. Both the needles will deflect in the same direction

D. The needles will deflect in opposite directions .

Answer: D

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14. Which of the following statements are in correct ?

a) Magnetic lines of force always start from the north pole of the magnet and end at the south pole .

b) Magnetic lines of force are very close to each other near the poles and widely.

c) Magnetic lines of force intersect each other.

d) Closes the magnetic lines of force, lesser os the field .

A. a and c

B. b and c

C. c and d

D. d and d

Answer: C

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15. Which of the following statemetns are NOT the functions of the commutator in a D . C Motor ?

a) To reverse the direction of the flow of current in the coil at every half rotation.

b) To reverse the voltage in the coil at every half rotation.

c) to enable the coil to be in electrical contact with the carbon brushes.

A. only a and b

B. only b and c

C. only a and c

D. a , b and c

Answer: B

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16.

Column - I	Coumn - II
a) An electric motor works on	P) to a battery
b) An electric motor is also	Q) direct current
c) A commutator is used to	R) reverse the direction of flow
d) Commutator rings are connected	S) known as DC motor

A. $a-Q, b-S, c-P, d-R$

B. $a-S, b-Q, c-R, d-P$

C. $a-Q, b-S, c-R, d-P$

D. $a-Q, b-R, c-S, d-P$

Answer: C

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17. Which of the following factors regarding solenoid is in correct ?

a) The strenght of current $B \propto \frac{1}{I}$

b) The number of turns of wire forming solenoid $B \propto$ n

c) Nature of material inside the solenoid $B \propto \frac{1}{\mu}$

A. a and b

B. a and c

C. b and c

D. All of these

Answer: B

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18. The current in a generator armature is AC because

A. the magnetic field reverses at intervals.

B. the current in the field coild is AC .

C. the rotation of the armature causes the field through it to reverse .

D. the commutator feeds current into it in opposite directions every half cycle .

Answer: C

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7 Carbon And Its Compounds

1. Vinegar is a solution of

A. 50 - 60 % acetic acid in alcohol

B. 5 - 8 % acetic acid in alcohol

C. 5 - 8 % acetic acid in water

D. 50 - 60 % acetic acid in water

Answer: C

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2. Pentane has the molecular formula C_5H_{12} . It has

A. 5 covalent bonds

B. 12 covalent bonds

C. 16 covalent bonds

D. 17 covalent bonds

Answer: C

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3. Which among the following are unsturated hydrocarbons ?

a) $H_3C - CH_2 - CH_2 - CH_3$

b) $H_3C - C = C - CH_3$

c) $H_3C - \underset{\underset{CH_3}{|}}{CH} - CH_3$

d) $H_3C - \underset{\underset{CH_3}{|}}{C} = CH_3$

A. a and c

B. b and c

C. b and d

D. c and d

Answer: C

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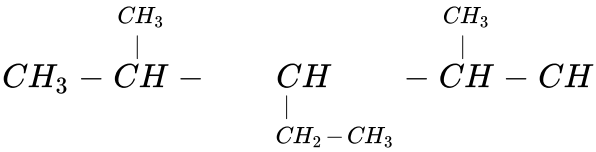
4. Which is correct IUPAC name of the following compound.



A. 3 - Isopropyl - 2 - methyl pentane

B. 3 - Ethyl - 2 , 4 - dimethyl pentane

C. 2 , 4 - Dimethyl - 3 - ethyl pentane

D. 3 - Isopropyl - 4 - methyl pentane

Answer: B

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5. Observe the following table carefully .

Test tube	Hard water	Soap/detergent is added	Observation (After sha
P	$10m$	Soap (5 drops)	White curd like scum is
Q	$15ml$	Detergent(5 drops)	White curd like scum is
R	$8m$	Soap (5 drops)	Lot of leather is formed
S	$12m$	Detergent (15 drops)	Lot of leather is formed

Which test - tube give correct result among these ?

A. P & Q

B. Q & R

C. P & S

D. R & S

Answer: C

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6. Study the reaction given below .

$$\underset{\text{Acetic acid}}{CH_3-COOH}+\underset{\text{Ethyl alcohol}}{CH_3-CH_2-OH}\xrightarrow{\text{cone}.,II_2So_4}{}'X'+H_2O$$

Indentify the number of mole (s) compound 'X' formed.

A. Moles 2 Compouds X Propanoic acid

B. Moles 1 Compouds X Butanoic acid

C. Moles Compouds X Ester

D. Moles 1 Compouds X Ester

Answer: D

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7. A molecule of ammonia (NH_3) has

A. only single bonds

B. only doudle bonds

C. only triple bonds

D. two double bonds and one single bond

Answer: A

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8. Mineral acids are stronger acids than cardoxylic acids because

A. mineral acids are completely ionised

B. carboxylic acids are completely ionised

C. mineral acids are partially ionised

D. carboxylic acids are partially ionised

Answer: A

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9. The reaction of an alcohol with carboxylic acid is called

A. Combustion

B. Esterification

C. Saponification

D. None of these

Answer: B

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10. In the presence of concentrated sulphuric acid acetic acid reacts with ethyl alcohol to produce

A. Aldehyde

B. Alcohol

C. Ester

D. Carboxylic acid

Answer: C

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11. Which of the following has shortest carbon-carbon bond length ?

A. C_2H_2

B. C_2H_4

C. C_2H_6

D. C_6H_6

Answer: A

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12. Which of the following are isomers ?

A. Butane and Isodutene

B. Ethane and Ethene

C. Propane and Propyne

D. Butane and Isobutane

Answer: D

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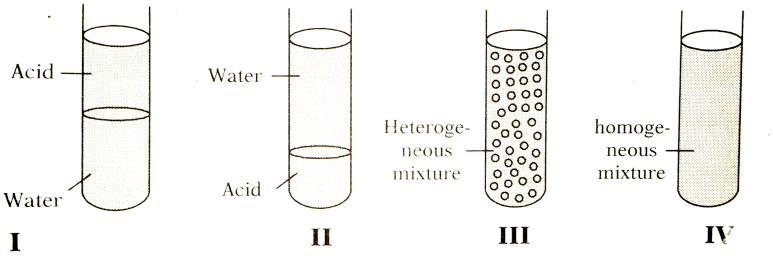
13. Amount of 5 ml each of acetic acid and water are mixed together and shaken well

The resulting mixture would appear as in



A. I

B. II

C. III

D. IV

Answer: D

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14. Which of the following statements are usually correct for carbon compounds ? These

a) are good conductors of electricity

b) are poor conductors of electricity

c) have strone forces of attraction between their molecules

d) do not have strong forces of attraction between their molecules .

A. a & c

B. b & c

C. a & d

D. b & d

Answer: D

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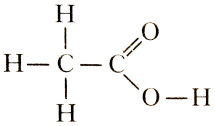
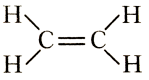
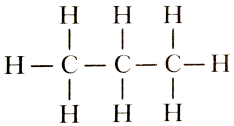
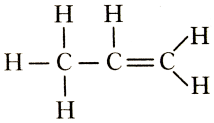
15. The structures of four organic compounds are shown below .

Which compounds decolourise bromine water ?

1) 

2) 

3) 

4) 

A. 1 and 2 only

B. 1 , 2 and 4 only

C. 2 and 4 only

D. 3 and 4 only

Answer: C

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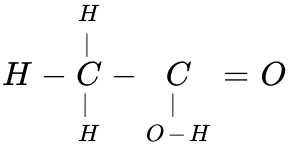
16. The diagram shows the structure of ethanoic acid .



How many moles of ethanoic react with one mole of magnesium ?

A. 1

B. 2

C. 3

D. 4

Answer: B

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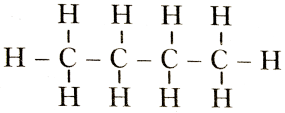
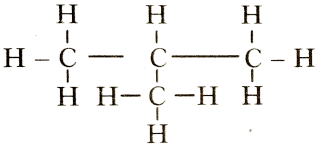
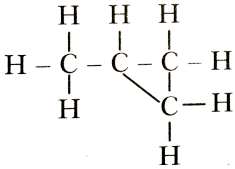
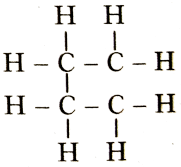
17. Which of the following are correct structural isomers of butane ?

a) 

b) 

c) 

d) 

A. a and c

B. b and d

C. a and b

D. c and d

Answer: C

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