CHEMISTRY

BOOKS - ARIHANT PUBLICATION JHARKHAND

MODEL SOLVED PAPER

Section I Physics

1. The value of g ..... with increase of depth below earth's surface

A. Increases

B. Increases

C. decreases

D. remains the same

Answer: B

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2. A car covers the first half of the distance between two places at 40 km/h and other half at 60 km/h. The average speed of the car is

A. 60 km/h

B. 50 km/h

C. 78 km/h

D. 48 km/h

Answer: D

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3. A force of 100 N acts on a huge mass of 100 kg for 0.1 s. The change in momentum will be

A. $100 kgms^{-1}$

B. $10 kgms^{-1}$

C. $1 kgms^{-1}$

D. $0.1 kgms^{-1}$

Answer: B

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4. The maximum range of a gun of horizontal terrain is 16 km. If g = 10 mis, then the muzzle velocity of a shell must be

A. $200\sqrt{2}m/s$

B. $160m/s$

C. $800m/s$

D. $400m/s$

Answer: D

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5. What is the change in the temperature on Fahrenheit scale and on Kelvin scale, if a iron piece is heated from $30^\circ C$ to $90^\circ C$,

A. $108^\circ F, 60K$

B. $100^\circ F, 55K$

C. $100^\circ F, 65K$

D. $60^\circ F, 180K$

Answer: A

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6. When electric current passes through any conductor, then its temperature is

A. Increases

B. decreases

C. remains same

D. depends upon conductor

Answer: A

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7. The unit of latent heat is

A. Joule

B. Joule /kg

C. Joule/kg-K

D. Joule/K

Answer: B

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8. The velocity of heat radiations in vacuum is

A. equal to that of sound

B. equal to that of ultrasonic

C. equal to that of Infra sonics

D. equal to that of light

Answer: D

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9. A radio station is transmitting waves of wavelength 300 m. Radiation capacity of the transmittsr is 10 kW. The number of photons emitted per unit time is

A. 1.5×10^{35}

B. 1.5×10^{29}

C. 1.5×10^{33}

D. 1.5×10^{31}

Answer: D

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10. A virtual image three times the size of the object is obtained with a concave mirror of radius of curvature 36cm. The distance of the object from the mirror is

A. 20 cm

B. 10 cm

C. 12 cm

D. 5 cm

Answer: C

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11. What will be the heat produced each second in a 4Ω resistance connected across a potential difference of 20V?

A. 80 J

B. 5 J

C. 100 J

D. 125 J

Answer: C

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12. A particle of mass mis at rest. A force Facts upon it for time t. It acquires kinetic energy equal to

A. $F^2t^2 / 2m$

B. Ft/2m

C. $\frac{F^2}{2mt^2}$

D. $t^2 / 2Fm$

Answer: A

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13. When a light wave travels from air into water, the quality that remains unchanged is its

A. speed

B. amplitude

C. frequency

D. wavelength

Answer: C

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14. A man inside an artificial satellite feels weightlessness because the force of attraction due to earth on him is

A. zero at that place

B. equal to centripetal force

C. Is balanced by the force of attraction due to moon

D. non-effective due to particular design of satellite.

Answer: B

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15. A dam for water reservoir is built whicker at the bottom than at the top because:

A. pressure of water Is very large at the bottom due to Its large depth

B. pressure of water Is very small at the bottom due to its large depth

C. It Is a custom

D. It Is due to surtace tension of water

Answer: A

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16. A raft of wood (density $= 600kg/m^3$) of mass $120kg$ floats in water. How much weight can be put on the raft to make it

just sink?

A. 120 kg

B. 200 kg

C. 40 kg

D. 80 kg

Answer: D

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17. Rocket works on the principle of coservation of

A. angular momentum

B. linear momentum

C. energy

D. speed

Answer: B

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18. A body of 1 quintal moves with a constant velocity of 1000 m/s on a horizontal frictionless path. The force acting on the body is

A. zero

B. $100 \times 1000N$

C. 1000 N

D. 100 N

Answer: A

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19. Minimum work will be done if the angle between the impressed force and displacement caused is

A. 90°

B. 60°

C. 45°

D. zero

Answer: A

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20. A 400kg car attains a speed of 50m/s from rest in 20s. The power developed in the engine will be

A. 50 W

B. 0.5 kW

C. 5 kW

D. 25 kW

Answer: D

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21. The time period of a simple pendulum is 1.2 s. If the length of the pendulum is doubled, the new time period will be

A. 1.0s

B. 1.4s

C. 1.7s

D. 2.4s

Answer: C

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22. Velocity of sound in air is

A. 300m/s

B. $3 \times 10^{10} m/s$

C. $3 \times 10^{8} m/s$

D. $3 \times 10^{19} m/s$

Answer: A

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23. On the same voltage, the resistance of the filament of the bulbs of 200 Wand 100 Ware R_1 and R_2, then

A. the value of R_1 is twice that of R_2

B. the value of R_2 is four times the value of R_1

C. the value of R_1 is four times that of R_2

D. the value of R_2 is twice that of R_1

Answer: D

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24. Three resistances of 2Ω each are connected in a triangle. The resistance in ohms between any two comers is

A. 3Ω

B. 4Ω

C. 6Ω

D. $\frac{4}{3}\Omega$

Answer: D

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25. When a horse pulls a cart, the force that helps the horse to move forward is the force exerted by

A. Whenever a horse pulls a cart, the force helpful in the movement of the horse is the force exerted by

B. horse on the ground

C. cart on the ground

D. ground on the cart

Answer: A

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26. While jumping in a swimming pool, swimmer bends his body to decrease his

A. angular momentum

B. angular speed

C. kinetic energy of translation

D. moment of inertia

Answer: D

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27. The reason for shining of air bubble in water is

A. diffraction oflight

B. dispersion oflight

C. scattering of light

D. total Internal reflection

Answer: D

Watch Video Solution

28. A cell of emf 1.5 Vis connected with an external resistance 2Ω. The potential difference falls to 1.0 v. The internal resistance of cell is

A. 1.5Ω

B. 1.0Ω

C. 10.0Ω

D. 2.0Ω

Answer: C

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30. A defective eye cannot see close objects clearly because their image is formed

A. on the eyelens

B. between eyelens and retina

C. beyond retina

D. on the retina

Answer: C

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31. The unit of intensity of electric field is

A. newton/coulomb

B. joule/coulomb

C. volt-metre

D. newton/metre

Answer: B

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32. Charge of 5 C given a displacement of 0.5 m. The work done in the process is 10 J. The potential difference between the two points will be

A. 2V

B. 0.25V

C. 1 V

D. 25V

Answer: A

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33. A magnetic field can be produced

A. a moving charge

B. a changing electric field

C. both of these

D. neither of these

Answer: C

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34. The working of a dynamo is based on principle of

A. conversion of energy Into electricity

B. magnetic effects of current

C. electromagnetic Induction

D. heat effects of current

Answer: C

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35. Which one of the following is most stable for cores of transformer?

A. Steel

B. Brass

C. Copper

D. Soft Iron

Answer: C

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36. Indicate the correct arrangement for electromagnetic radiation in order of their increasing wavelength.

A. Visible, Infrared, microwave, X-rays

B. X-rays, Infrared, visible, microwave

C. Microwave, Infrared, visible, X-rays

D. X-rays, visible, Infrared, microwave

Answer: D

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37. Woolen clothes are used in winter season because wool is

A. a good conductor of heat

B. a bad conductor of heat

C. a low specific heat material

D. a large specific heat material

Answer: B

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38. At what temperature is the kinetic energy of a gas molecule double that of its value of $27^\circ C$?

A. $54^\circ C$

B. $300^\circ C$

C. $327^\circ C$

D. $108^\circ C$

Answer: C

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39. Two free parallel wires carrying currents in opposite directions

A. repel each other

B. attract each other

C. neither attract nor repel

D. may attract as well as repel under different values of currents.

Answer: A

View Text Solution

40. The emf of a primary cell is 2 V. When it is short circuited, it gives a current of 4 A. Ite internal resistance is

A. 2.0Ω

B. 5.0Ω

C. 0.5Ω

D. 8.0Ω

Answer: C

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41. The electrical resistance of a material is directly · proportional to its

A. length

B. cross sectional area

C. current

D. All of these

Answer: A

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42. The energy of a particle moving at 5m/s ie 125 J. The mass of particle is

A. 4 kg

B. 6 kg

C. 10 kg

D. 25 kg

Answer: C

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43. With a fuse of 10 A and at 220 V, how many bulbs each of 200 W can be used safely?

A. 11

B. 10

C. 20

D. None of these

Answer: A

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44. If the applied force and the displacement of body are inclined to each other at 90°, then the work done is

A. Infinity

B. maximum

C. zero

D. cannot be determined

Answer: C

View Text Solution

45. The amount of work done in raising body of mass 1 kg to a height of 9.8 mis

A. 1 J

B. 9.BJ

C. $(9.8)^2 J$

D. None of these

Answer: C

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46. An artificial satellite ie revolving around earth. The physical quantity which ie conserved is

A. angular momentum

B. torque

C. moment of Inertia

D. total energy

Answer: A

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47. A man is 180 cm tall and his eyes are 10 cm below the top of his head. In order to see his entire height, right from toe to

head, he uses a plane mirror kept at a distance of 1 m from him. The minimum length of the plane mirror required is

A. 180cm

B. 90cm

C. 85cm

D. 170cm

Answer: B

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48. Find the power and type of the lens by which a person can see clearly the distant objects, if a person cannot see objects beyond 40 cm

A. -2.5 D and concave lens

B. -2.5 D and convex lens

C. -3.5 D and concave lens

D. -3.5 D and convex lens

Answer: A

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49. A sphere, a cube and a thin circular plate made up of same material and having the same mass are initially heated to temperature of 200°0. Which of these objects will cool slowest when left in at room temperature?

A. Cube

B. Circular plate

C. Sphere

D. All will cool at same rate

Answer: C

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50. A galvanometer can be converted into an ammeter by connecting a

A. low resistance In parallel

B. low resistance In series

C. high resistance In parallel

D. high resistance In series

Answer: A

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Section Ii Chemistry

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B. heterogeneous mixture

C. azeotroplc mixture

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View Text Solution

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View Text Solution

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23. The electronic configuration of chromium (Z = 24) is

A. $1s^2 2s^2 2p^6 3s^2 3p^6 3d^4 4s^2$

B. $1s^2 2s^2 2p^6 3s^2 3p^6 3d^6 4s^1$

C. $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 4p^4$

D. $1s^2 2s^2 2p^6 3s^2 3p^6 3d^6$

Answer: B

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24. Ammonia can not be collected over water because

A. it reacts with water

B. it is soluble In water

C. it explodes In water

D. None of these

Answer: B

View Text Solution

25. H_2S on complete combustion with oxygen forms mainly

A. H_2O and SO_2

B. H_2 and S

C. H_2 and SO_2

D. H_2O and S

Answer: A

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26. Which is an aromatic compound?

A. Methane

B. Cvclobutane

C. Benzene

D. Methyl alcohol

Answer: C

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27. Chloroprene is used in making

A. ssynthetic rubber

B. plastic

C. petrol

D. All of these

Answer: A

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28. Which of the following can yield acetylene in one step?

A. Propyne

B. Ethene

C. Ethylene dichloride

D. Sodium acetate

Answer: C

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29. Liquid petroleum gas is a mixture of

A. methane, ethane and H_2

B. ethane, propane and H_2

C. methane, ethane and O_2

D. ethane, propane and butane

Answer: D

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30. When ethane is heated with air at $500^\circ C$, we get

A. ethylene and hydrogen

B. acetaldehyde

C. carbon dioxide and water

D. None of these

Answer: C

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31. In a flame, which part of flame is called the luminous zone ?

A. Outer zone

B. Inner zone

C. Middle zone

D. Top of the flame

Answer: C

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32. Which is the commonest gas in the atmosphere ?

A. Helium

B. Nitrogen

C. Ammonia

D. Hydrogen

Answer: B

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33. The noble gas forming maximum number of compounds is

A. Ne

B. Xe

C. He

D. Ar

Answer: B

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34. Respiration is an example of

A. slow combustion

B. rapid combustion

C. spontaneous combustion

D. None of these

Answer: A

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35. Chemical name of Nausadar is

A. ammonium chloride

B. sodium chloride

C. calcium carbonate

D. calcium chloride

Answer: A

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36. which of the following are used for making the explosive of crackers is

A. sodium chloride

B. salt petre

C. soda

D. blue vitriol

Answer: B

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37. The formula of caustic soda is

A. Na_2CO_3

B. $NaOH$

C. $CaOCl$

D. Ca(NO_3)_2`

Answer: B

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38. In Bosch process hydrogen is obtained from

A. natural gas

B. water

C. water gas

D. None of these

Answer: C

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39. Anti-freeze is a mixture of

A. acetic acid and water

B. formic acid and water

C. methyl alcohol and water

D. ethyl alcohol and water

Answer: D

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40. Which of the following has highest melting point?

A. NaCl

B. NaBr

C. NaF

D. Nal

Answer: D

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41. Which of the following is a non meta!?

A. Gallium

B. Indium

C. Boron

D. Aluminium

Answer: C

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42. In a period, the element with least atomic size is

A. alkali metal

B. halogen

C. Inert gas

D. chalcogen

Answer: B

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43. The oxidation number of iron in $K_4\left[Fe(CN)_6\right]$ is

A. $+6$

B. $+4$

C. $+3$

D. $+2$

Answer: D

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44. In nuclear reactor, the controller rod is made of

A. uranium

B. graphite

C. cadmium

D. plutonium

Answer: C

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45. Substance used in preparation of blue· black ink is

A. oxalic acid

B. citric acid

C. hydrochloric acid

D. galllc acid

Answer: D

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46. The example of thermosetting plastic is

A. Polythene

B. PVC

C. Bakelite

D. Polystyrene

Answer: C

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47. Silicon is

A. semi-conductor

B. conductor

C. Insulator

D. None of these

Answer: A

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48. Crystalline solids are

A. glass

B. plastic

C. rubber

D. sugar

Answer: D

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49. 'Methylated spirit' is

A. CH_3OCH_3

B. CH_3OH

C. C_2H_5OH

D. $CH_3OH + C_2H_5OH$

Answer: D

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50. Which of the following compound is likely to have orange flavour?

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B. Octanolc acid

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View Text Solution

75. H_2S on complete combustion with oxygen forms mainly

A. H_2O and SO_2

B. H_2 and S

C. H_2 and SO_2

D. H_2O and S

Answer: A

View Text Solution

76. Which is an aromatic compound?

A. Methane

B. Cvclobutane

C. Benzene

D. Methyl alcohol

Answer: C

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77. Chloroprene is used in making

A. ssynthetic rubber

B. plastic

C. petrol

D. All of these

Answer: A

View Text Solution

78. Which of the following can yield acetylene in one step?

A. Propyne

B. Ethene

C. Ethylene dichloride

D. Sodium acetate

Answer: C

View Text Solution

79. Liquid petroleum gas is a mixture of

A. methane, ethane and H_2

B. ethane, propane and H_2

C. methane, ethane and O_2

D. ethane, propane and butane

Answer: D

View Text Solution

80. When ethane is heated with air at $500^\circ C$, we get

A. ethylene and hydrogen

B. acetaldehyde

C. carbon dioxide and water

D. None of these

Answer: C

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81. In a flame, which part of flame is called the luminous zone ?

A. Outer zone

B. Inner zone

C. Middle zone

D. Top of the flame

Answer: C

View Text Solution

82. Which is the commonest gas in the atmosphere ?

A. Helium

B. Nitrogen

C. Ammonia

D. Hydrogen

Answer: B

View Text Solution

83. The noble gas forming maximum number of compounds is

A. Ne

B. Xe

C. He

D. Ar

Answer: B

View Text Solution

84. Respiration is an example of

A. slow combustion

B. rapid combustion

C. spontaneous combustion

D. None of these

Answer: A

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85. Chemical name of Nausadar is

A. ammonium chloride

B. sodium chloride

C. calcium carbonate

D. calcium chloride

Answer: A

View Text Solution

86. The followinguaedfor making the explosive of crackers is

A. sodium chloride

B. salt petre

C. soda

D. blue vitriol

Answer: B

View Text Solution

87. The formula of caustic soda is

A. Na_2CO_3

B. $NaOH$

C. $CaOCl$

D. Ca(NO_3)_2`

Answer: B

View Text Solution

88. In Bosch process hydrogen is obtained from

A. natural gas

B. water

C. water gas

D. None of these

Answer: C

View Text Solution

89. Anti-freeze is a mixture of

A. acetic acid and water

B. formic acid and water

C. methyl alcohol and water

D. ethyl alcohol and water

Answer: D

View Text Solution

90. Which of the following has highest melting point?

A. NaCl

B. NaBr

C. NaF

D. Nal

Answer: D

View Text Solution

91. Which of the following is a non meta!?

A. Gallium

B. Indium

C. Boron

D. Aluminium

Answer: C

View Text Solution

92. In a period, the element with least atomic size is

A. alkali metal

B. halogen

C. Inert gas

D. chalcogen

Answer: B

View Text Solution

93. The oxidation number of iron in $K_4\left[Fe(CN)_6\right]$ is

A. $+6$

B. $+4$

C. $+3$

D. $+2$

Answer: D

View Text Solution

94. In nuclear reactor, the controller rod is made of

A. uranium

B. graphite

C. cadmium

D. plutonium

Answer: C

View Text Solution

95. Substance used in preparation of blue· black ink is

A. oxalic acid

B. citric acid

C. hydrochloric acid

D. galllc acid

Answer: D

View Text Solution

96. The example of thermosetting plastic is

A. Polythene

B. PVC

C. Bakelite

D. Polystyrene

Answer: C

View Text Solution

97. Silicon is

A. semi-conductor

B. conductor

C. Insulator

D. None of these

Answer: A

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98. Crystalline solids are

A. glass

B. plastic

C. rubber

D. sugar

Answer: D

View Text Solution

99. 'Methylated spirit' is

A. CH_3OCH_3

B. CH_3OH

C. C_2H_5OH

D. $CH_3OH + C_2H_5OH$

Answer: D

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100. Which of the following compound is likely to have orange flavour?

A. Octyl acetate

B. Octanolc acid

C. Octyl alcohol

D. Octyl amine

Answer: A

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Section Iii Mathematics

1. The value of a and b in $3\frac{7}{a} \times b\frac{3}{15} = 8$ is equal to

A. 2,11

B. 11, 2

C. 1,1

D. 2,1

Answer: B

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2. The HCF of $p(x) = 24\left(6x^4 - x^3 - 2x^2\right)$ and $q(x) = 20\left(2x^6 + 3x^5 + x^4\right)$ is

A. $4x^2(2x+1)$

B. $6x^3(2x-1)$

C. $6x^2(2x+1)$

D. $4x^2(2x-1)$

Answer: A

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3. If $3^{2n-1} = \frac{1}{27^{n-3}}$, then the value of n is

A. 5

B. 3

C. 6

D. 2

Answer: D

View Text Solution

4. If $\tan\theta + \sin\theta = a$ and $\tan\theta - \sin\theta = b$, then $a^2 - b^2$ is

A. $\sqrt{ab}$

B. $4\sqrt{ab}$

C. $4ab$

D. ab

Answer: B

Watch Video Solution

5. Ifthe curved surface area of a cylinder is 1320cm2 and its hase has diameter 21 cm, then the height of the cylinder is

A. 10 cm

B. 20 cm

C. 22 cm

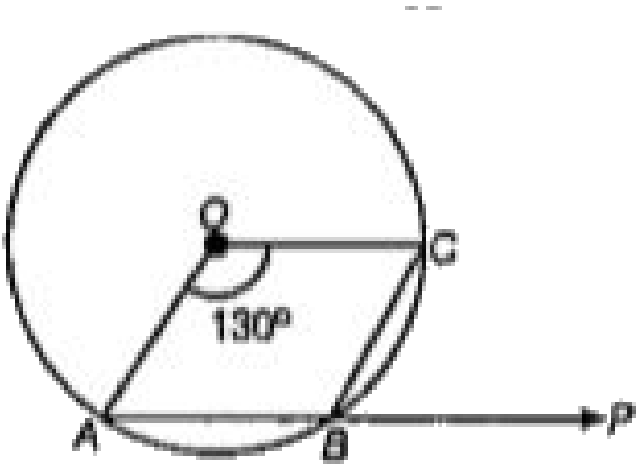
D. 25 cm

Answer: B

View Text Solution

6. In the given figure, 0 is the centre of a circle and arc ABC subtends an angle of 130° at 0. AB is extended to P. Then,

$\angle PBC$ is equal to



A. 25°

B. 40°

C. 65°

D. 75°

Answer: C

View Text Solution

7. Four bells ring at the intervals of 4s, 6s, Bs and 14s. This four bells started to ring on 12 O'clock. At which time, they again started to ring?

A. 2 min 48s past 12

B. 3 min past 12

C. 3 min 20s past 12

D. None of these

Answer: A

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8. If Bsinx- 4 = cos.x, the values of sinx are

A. $\frac{3}{5}, \frac{-5}{13}$

B. $\frac{-3}{5}, \frac{-5}{13}$

C. $\frac{3}{5}, \frac{5}{13}$

D. $\frac{5}{3}, \frac{5}{13}$

Answer: C

View Text Solution

9. A conical tent of a diameter 24 mat the base and its hei§ht 16 m. The canvas required to make it is

A. $\frac{5280}{7} m^2$

B. $\frac{5180}{7} m^2$

C. $\frac{4180}{7} m^2$

D. $\frac{3480}{7} m^2$

Answer: A

View Text Solution

10. In how many different ways can the letters of the word 'ABILITY' be arranged?

A. 5040

B. 720

C. 1260

D. Nona of these

Answer: D

View Text Solution

11. Vinita bought a watch with 24% discount on the selling price. If the watch cost her Rs 779. What is the original selling price of the watch?

A. Rs 1000

B. Rs 950

C. Rs 1040

D. None of these

Answer: D

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12. Find the average of the following sets of scores. 178,863,441,626,205,349,462,820

A. 505

B. 441

C. 349

D. 493

Answer: D

View Text Solution

13. The difference between 38% of a number and 24% of the same number is 135.10. What is 40% of that number?

A. 394

B. 370

C. 378

D. 386

Answer: D

View Text Solution

14. Kishan has some hens and some cows. If the total number of animal heads are 59 and the total number of feet are 190. How many cows does Kishan have?

A. 36

B. 32

C. 23

D. Cannot be determined

Answer: A

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15. If the numerator of a fraction is increased by 200% and the denominator is increased by 160%, the resultant fraction is $\frac{7}{13}$. What is the original fraction?

A. $\frac{7}{15}$

B. $\frac{2}{15}$

C. $\frac{8}{15}$

D. $\frac{5}{7}$

Answer: A

View Text Solution

16. The measure of an angle, if seven times its complement is 10° less than three times its supplement is

A. 30°

B. 35°

C. 25°

D. 20°

Answer: C

View Text Solution

17. A man age after 15 yr will be 4 times before the age of 15 yr ago. His present age is

A. 10yr

B. 15yr

C. 20yr

D. 25yr

Answer: D

View Text Solution

18. If n coins each of diameter 1.5 cm and thickness 0.2 cm are melted and a right circular cylinder of height 10 cm and diameter 5 cm is made, then n is equal to

A. 336

B. 450

C. 512

D. 555

Answer: D

View Text Solution

19. The value of

$$\frac{-\tan\theta\cot(90^\circ-\theta)+\sec\theta\,\mathrm{cosec}(90^\circ-\theta)+\sin^2 55^\circ+\cos^2 55^\circ}{\tan 10^\circ\tan 20^\circ\tan 30^\circ\tan 70^\circ\tan 80^\circ}$$

A. $\frac{2}{\sqrt{3}}$

B. $\frac{\sqrt{3}}{2}$

C. $-\frac{1}{\sqrt{3}}$

D. $\sqrt{3}$

Answer: D

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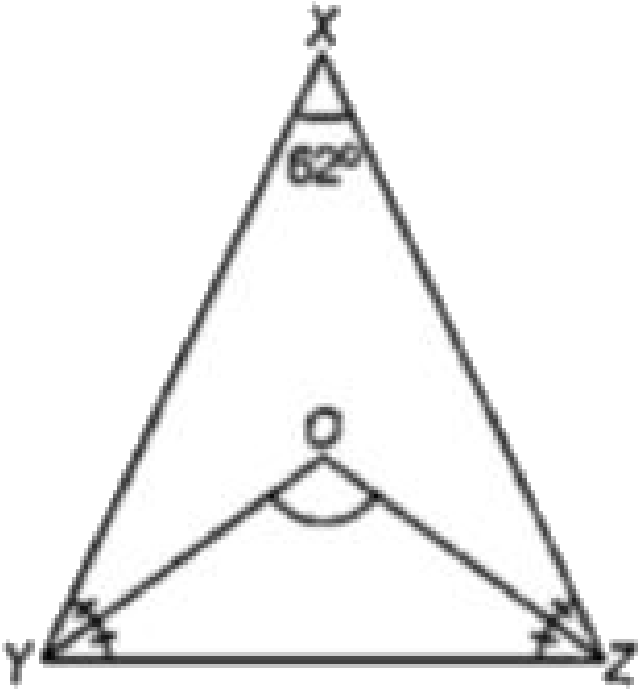
20. In figure, $\angle X = 62^\circ, \angle XYZ = 54^\circ$. If YO and ZO are bisectors of $\angle XYZ$ and $\angle XZY$ respectively of ΔXYZ then $\angle YOZ$ is



A. 90°

B. 124°

C. 31°

D. 121°

Answer: D

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21. If $\frac{\tan 26^\circ + \tan 19^\circ}{X(1 - \tan 26^\circ \tan 19^\circ)} = \cos 60^\circ$, then the value of X is

A. 1

B. $\sqrt{2}$

C. 2

D. $\sqrt{3}$

Answer: C

View Text Solution

22. Sita can do a work in 15 days and Gita can do it in 25 days and Meers in 30 days. How long will they take to do the work, if they work together?

A. 7 days

B. 6 days

C. 7/50 days

D. None of these

Answer: D

View Text Solution

23. A field is in the form of a circle. The cost of plough the field at Rs 1.50 per m^2 is Rs 5775. The cost fencing the field at Rs 8.50 per mis

A. Rs 1870

B. Rs 2870

C. Rs 1970

D. Rs 2970

Answer: A

View Text Solution

24. The length and breadth of a room are 13 m and 7 .5 m, respectively. The floor of the room is to be paved with square tiles of uniform size. Determine the length of the largest possible size of the tile.

A. 1.0 m

B. 0.5 m

C. 1.5 m

D. 5.0 m

Answer: B

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25. If the area of a circle is 220 cm^2, then area of a square increased in this circle is

A. $160cm^2$

B. $175cm^2$

C. $140cm^2$

D. $180cm^2$

Answer: C

View Text Solution

26. In a polygon, the number of diagonals is 54. The number of sides of the polygon is

A. 10

B. 12

C. 9

D. None of these

Answer: B

View Text Solution

27. A jar contained a mixture of two liquids A and Bin the ratio 4 : 1. When 10 L of the mixture was taken out and 10 L of liquid B was poured into the jar, this ratio becomes 2 : 3. The quantity of liquid A contained in the jar initially was

A. 4L

B. 8L

C. 16L

D. 40L

Answer: D

View Text Solution

28. Iffor a line $m = \tan\theta > 0$, then

A. $\theta = 0$

B. $\theta$is acute

C. $\theta = 90^\circ$

D. θ is obtuse

Answer: B

View Text Solution

29. Four horses are tethered at four corners of a square plot of side 63 m, so that they just cannot reach one another. The area left ungrazed is

A. $675.5m^2$

B. $780.6m^2$

C. $785.8m^2$

D. $850.5m^2$

Answer: D

View Text Solution

30. The sum of the two numbers is 11 and their product is 30, then the numbers are

A. 8,3

B. 9,2

C. 7,4

D. 6,5

Answer: D

View Text Solution

31. Vertices of a ΔABC are A(2, 2), B (-4, -4) and C (5, -8) , then the length of the median through C is

A. $\sqrt{65}$

B. $\sqrt{117}$

C. $\sqrt{85}$

D. $\sqrt{113}$

Answer: C

View Text Solution

32. What is the sum of all the natural numbers from 1 to 40?

A. 730

B. 820

C. 850

D. 920

Answer: B

View Text Solution

33. If the mean of the following data is 13.5, then the value of p is

x	5	10	p	20	25
f	10	10	10	2	8

A. 15

B. 150

C. 10

D. None of these

Answer: A

View Text Solution

34. If the mean of five observations x, x + 2, x + 4, x + 6, x + Bis 11, then the mean offirst three observations is

A. 9

B. 11

C. 13

D. None of these

Answer: A

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35. A fast train takes 2 h less for a journey of 300 km in comparison to a slow train whose speed is 5 km/h less than that of the fast train. The speed of the fast train is equal to

A. 30 km/h

B. 25 km/h

C. 40 km/h

D. 45 km/h

Answer: A

View Text Solution

36. If $(41)^2$ is added to the square of a number the answer, so obtained is 7457. What is the number?

A. 76

B. 63

C. 81

D. 82

Answer: A

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37. The compound interest on Rs 2000 for 1 year at the rate of 8% per annum, when the interest is compounded semiannually the compound interest is

A. Rs 163.20

B. Rs 2163.20

C. Rs 2000

D. None of these

Answer: A

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38. If $A = \{l, 4, 7, 8\}$, $B = \{4, 6, 8, 9\}$ and $C = \{3, 4, 5, 7\}$ be three subsets of a universal set $U = \{1, 2, 3, 4, 5, 6, 7, 8, 9\}$. Then, $A \cup (B \cap C')$ is equal to

A. {1, 6, 7, 8, 9}

B. {1, 6, 7, 8, 9, 3}

C. {1, 4, 6, 7, 8, 9}

D. None of these

Answer: C

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39. If $\log_x(8x-3) - \log_x 4 = 2$, then the value of x is

A. $\frac{3}{2}$

B. $\frac{5}{2}$

C. 0

D. 3

Answer: A

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40. The expression to be added to $\left(5x^2 - 7x + 2\right)$ to produce $\left(7x^2 - 1\right)$ is

A. $2x^2 + 7x - 3$

B. $2x^2 + 3$

C. $2x^2 - 3$

D. $2x^2 + 7x$

Answer: A

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41. If a flag-staff of 6 m hi,.gh placed on the top of a tower throws a shadow of $2\sqrt{3}$ m along the ground, then the angle that the sun makes with the ground is

A. 60°

B. 30°

C. 90°

D. None of these

Answer: A

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42. A man can row at 5 km/h in still water. If the velocity of current is 1 km/h and it takes him 1 h to row to a place and come back, how far is the place?

A. 2.4 km

B. 2.5 km

C. 3 km

D. 3.6 km

Answer: A

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43. A certain amount was divided between A and Bin the ratio 4 : 3. If B's share was Rs 4800, the total amount was

A. Rs 11200

B. Rs 6400

C. Rs 19200

D. Rs 39200

Answer: A

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44. The value of k for which the lines $x + 2y - 9 = 0$ and $kx + 4y + 5 = 0$ are parallel, is

A. k = 2

B. k = 1

C. k = - 1

D. k = -2

Answer: A

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45. A rectangular water tank is 5 m high, 3 m long and 2 m wide.

How many litres of water can it hold?

A. 30000

B. 15000

C. 25000

D. 35000

Answer: A

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46. Minimum value of $x^2 + \frac{1}{x^2+1} - 3$ is

A. 0

B. -1

C. -3

D. -2

Answer: D

View Text Solution

47. The amount of a certain sum at compound interest for 2 year at 5% is Rs 4410. The sum is

A. Rs 4000

B. Rs 4200

C. Rs 3900

D. Rs 3800

Answer: A

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48. The side (in cm) of a right triangle are x - 1, x and x + 1. The area of triangle is

A. $5cm^2$

B. $3cm^2$

C. $6cm^2$

D. None of these

Answer: C

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49. If x and y are positive with x- y = 2 and xy = 24, then $\frac{1}{x}+\frac{1}{y}$ is equal to

A. $\frac{5}{12}$

B. $\frac{1}{12}$

C. $\frac{1}{6}$

D. $\frac{25}{6}$

Answer: A

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50. The factors of $\left(x^4 + x^2 + 25\right)$ are

A. $\left(x^2 + 5 - 3x\right)\left(x^2 + 5x - 3\right)$

B. $\left(x^2 + 5 - 3x\right)\left(x^2 + 5 + 3x\right)$

C. $\left(x^2 + 5 - 3x\right)\left(x^2 + 5 - 3x\right)$

D. None of these

Answer: B

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Section B Chemistry

1. The ground state electronic configuration of $_{24}Cr$ is

A. $[Ar]3d^5 4s^1$

B. $[Ar]3d^4 4s^2$

C. $[Ar]3d^3 4s^2 4p^1$

D. $[Ar]3d^6 4s^0$

Answer: A

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2. In a thermite process, the reduction of metallic oxides is done by

A. Al

B. Na

C. H_2

D. CO

Answer: A

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3. Covering of iron sheets with a layer of zinc is called

A. zinc plating

B. galvanising

C. tinning

D. electroplating

Answer: B

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4. The solubility of which among the following substances, decrease with rise in temperature?

A. NH_4Cl

B. KNO_3

C. $Na_2S_2O_3$

D. $Ca(OH)_2$

Answer: D

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5. The enzyme pepsin converts

A. proteins to amino acids

B. fats to fatty acids

C. glucose to ethyl alcohol

D. starch to glucose

Answer: A

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6. Equal volumes of two solutions with pH=4 and pH = 10 are mixed. The pH of resulting solution will be

A. 3.5

B. 6.1

C. 7

D. 14

Answer: C

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7. The element with atomic number 50 is a member of

A. s-block

B. p-block

C. d-block

D. f-block

Answer: B

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8. In a period of the periodic table as we move from left to right usually

A. atomic radlus decreases

B. lonisation potential increases

C. electron affinity decreases

D. electronegativity increases

Among the above statements, which one is false?

Answer: C

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9. Which of the following acts as a catalyst in the hydrogenation of alkenes?

A. NI

B. Mn

C. MnO_2

D. V_2O_5

Answer: A

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10. $^{235}_{92}U$, $^{238}_{92}U$ and $^{239}_{92}U$ are

A. isomers

B. isotopes

C. isobars

D. Isotones

Answer: B

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11. The disaccharide present in milk is

A. amylose

B. lactose

C. sucrose

D. glucose

Answer: B

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12. Which of the following are isoelectronic?

$1K^+$ 2. Ar 3. Cl^- 4. Ca^+

A. 2 and 3

B. 3 and 4

C. 2 and 4

D. All of these

Answer: D

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13. A bivalent metal has 37.2 equivalent weight. The molecular weight of its chloride is

A. 216.6

B. 148.8

C. 145.4

D. 172.8

Answer: C

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14. Number of atoms present in 1.8g H_2O, $1.7gNH_3$ and $1.6gCH_4$ has the following sequence

A. $H_2O < NH_3 < CH_4$

B. $CH_4 < NH_3 < H_2O$

C. $CH_4 = NH_3 = H_2O$

D. $NH_3 < CH_4 < H_2O$

Answer: A

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15. X^+, Y^{2+} and Z^- ions are isoelectronic of CO_2. The sequence in number of protons in these ions will be

A. $X^+ = Y^{2+} = Z^-$

B. $X^+ < Y^{2+} < Z^-$

C. $Z^- < X^+ < Y^{2+}$

D. $Y^{2+} < X^+ < Z^-$

Answer: C

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16. Which of the following metals produce H_2 gas on reaction with cold water?

A. Hg

B. Sn

C. Al

D. Ca

Answer: D

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17. Which of the following elements has maximum electronegativity?

A. F

B. Cl

C. Br

D. I

Answer: A

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18. Depletion of ozone layer is caused by

A. CO_2

B. Chloro fluorocarbons (CFCs)

C. CH_4

D. Oxides of S and N

Answer: B

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19. The 'acid rain' which damages historical monuments is caused mainly by the presence of

A. CFCs (chloro fluoro carbons)

B. Oxides of S and N

C. CH_4

D. CO_2

Answer: B

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20. The 'global warming' is mainly due to which gas?

A. N_2O

B. O_2

C. CO

D. CO_2

Answer: D

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21. Which of the following statements are correct?

(1) Muscular contraction is a very fast process.

(ii) Reaction between $BaCl_2$ and H_2SO_4 is a fast process.

(iii) Rusting of iron is a slow process.

(iv) Rust of iron is $Fe_2O_3.xH_2O$

A. (i), (i) and (iii)

B. (ii), (iii) and (iv)

C. (i) and (iii)

D. All of these

Answer: D

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22. The ore of Al, 'bauxite' is

A. Al_2O_3

B. $Al_2O_3.\ H_2O$

C. $Al_2O_3.2H_2O$

D. Na_3AlF_6

Answer: C

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23. The main constituents of alloy 'brass' are

A. Al and Mg

B. Fe and Cr

C. Cu and Sn

D. Cu and Zn

Answer: D

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24. (v) An essential constituent of analgam is :

A. Al

B. Ag

C. Hg

D. Au

Answer: C

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25. 'Inert pair effect' is shown by

A. Tl

B. Pb

C. Bi

D. All of these

Answer: D

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26. Which of the following is a physical change?

A. Burning of a candle

B. Clotting of blood

C. Evaporation of water

D. Digestion of food

Answer: C

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27. Which of the following subshells is not possible?

A. 1s

B. 1p

C. 2s

D. 2p

Answer: B

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28. Which of the following will liberate Br_2 from KBr?

A. H_2

B. I_2

C. Cl_2

D. SO_2

Answer: C

View Text Solution

29. Fe, Mg and Co are present respectively, in

A. haemoglobin, myoglobin and chlorophyll

B. haemoglobin, chlorophyll and vitamin B_{12}

C. chlorophyll, vitamin B_{12} and myoglobin

D. vitamin B_{12}, haemoglobin and chlorophyll

Answer: B

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30. The amount of electricity required to deposit one mole of Al from a solution of $AlCl_3$ will be

A. 3.0 Faraday

B. 1.0 Faraday

C. 1.33 Faraday

D. 0.33 Faraday

Answer: A

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31. The modern periodic table is based on

A. mass number

B. molecular mass

C. atomic radius

D. atomic number

Answer: D

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32. Which of the following is a renewable source of energy?

A. Coal

B. Petroleum

C. Natural gas

D. Solar energy

Answer: D

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33. Among the following fuels, which has highest calorific value?

A. Blogas

B. Kerosene

C. Coal

D. Hydrogen gas

Answer: D

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34. Which of the following ores is concentrated by 'magnetic separation' process?

A. ZnS

B. $Al_2O_3.2H_2O$

C. Fe_3O_4

D. Fe_2O_3

Answer: C

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35. Which of the following non-metals is a liquid at room temperature?

A. Hg

B. Cl_2

C. Br_2

D. I_2

Answer: C

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36. Deficiency of which vitamin may lead to night blindness?

A. Vitanmin A

B. Vitamin B

C. Vitamin E

D. Vitamin K

Answer: A

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37. The number of σ and π bonds in a molecule of acetylene respectively, are

A. 3σ and 2π

B. 2σ and 3π

C. 5σ and 2π

D. 5σ and 3π

Answer: A

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38. On reaction with water, Al_4C_3 gives

A. methane

B. ethylene

C. acetylene

D. propene

Answer: A

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39. The base- sugar-phosphate unit present in the nucleic acid is called as

A. nucleoside

B. nucleotide

C. codon

D. gene

Answer: B

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40. Which of the following is strongest acid?

A. HOCl

B. $HClO_2$

C. $HClO_3$

D. $HClO_4$

Answer: D

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41. Among the following metals, which does not produce H_2 gas on reaction with dilute acids?

1. Zn 2. Al 3. Hg 4. Cu

A. Zn and Al

B. Zn and Hg

C. Hg and Cu

D. Hg and Al

Answer: C

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42. An element M having mass number 27 has 14 neutrons in its nucleus. The formula for oxide of this element will be

A. MO

B. M_2O

C. M_2O_3

D. MO_2

Answer: C

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43. Which solvent is often called a 'universal solvent'?

A. Bromine trifluoride

B. Water

C. Liquld ammonia

D. Liquid sulphur dioxide

Answer: B

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44. $M_{(g)} + e \rightarrow M^{-}_{(g)} + E$

In the above equation, E represents

A. electron affinity

B. electronegativity

C. first ionisation potential

D. second lonisation potential

Answer: A

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45. The crystal of KCl consists of

A. KCI molecules

B. K and Cl atoms

C. K and CI lons

D. molecules, atoms and ions.

Answer: C

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46. The water soluble vitamins are

A. B and C

B. A and H

C. B and D

D. A and D

Answer: A

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47. Which of the following statements is incorrect?

A. Cellulose is a polymer of β- glucose

B. Proteins are polymers of amino acids

C. Terylene is a polyamide polymer

D. The monomer of Teflon polymer is tetrafluoro-ethylene

Answer: C

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48. Which of the following is used in fire extinguishers ?

A. CH_4

B. $CHCl_3$

C. CH_2Cl_2

D. CCl_4

Answer: D

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49. Energy of 1g Uranium is equal to

A. 9.0×10^{13}J

B. $9.0 \times 10^{19} J$

C. $3.0 \times 10^{16} J$

D. $3.0 \times 10^{17} J$

Answer: A

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50. The sodium nucleus $^{23}_{11}Na$ contains

A. 11 electrons

B. 12 protons

C. 23 protons

D. 12 neutrons

Answer: D

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Section Ii Chemistry

1. The 100 cm^3 of a solution is obtained by dissolving 5.85 g of NaCl in water. The molarity of solution would be

A. 4 molar

B. 0.5 molar

C. 1 molar

D. 2 molar

Answer: C

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2. The oxidation number of sulphur in sulphuric acid H_2SO_4 is

A. 6

B. 4

C. 5

D. 7

Answer: A

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3. Which equation is balance among the following?

A.

$$5BiO_3^- + 14H^+ + 2Mn^{2+} \rightarrow 5Bi^{3+} + 7H_2O + 2MnO_4^-$$

B.

$$5BiO_3^- + 22H^+ + Mn^{2+} \rightarrow 5Bi^{3+} + 7H_2O + MnO_4^-$$

C.

$$6BiO_3^- + 12H^+ + 3Mn^{2+} \rightarrow 6Bi^{3+} + 6H_2O + 3MnO_4^-$$

D.

$$2BiO_3^- + 4H^+ + Mn^{2+} \rightarrow 2Bi^{3+} + 6H_2O + 3MnO_4^-$$

Answer: A

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4. The electronic distribution of Mn(25) is

A. 2, 8, 13,2

B. 2, 8, 14, 1

C. 2, 8, 8,7

D. 2, 8, 10,5

Answer: A

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5. The temperature at which the vapour pressure of liquid becomes equal to atmospheric pressure is called

A. critical temperature

B. melting point

C. freezing point

D. boiling point

Answer: D

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6. The pH value of of $\frac{M}{1000}$ HCl solution is

A. $+5$

B. -5

C. -7

D. $+3$

Answer: D

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7. An inorganic compound contains Ca = 40%, C = 12% and O = 48%. The empirical formula of this compound is

A. $CaCO_3$

B. $CaCO_3$

C. $CaCO$

D. Ca_2CO_2

Answer: A

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8. Rate of diffusion of a gas depends on

A. molecular weight

B. atomicity

C. specific heat

D. valency

Answer: A

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9. If the electronic distribution of X is 2, 8, 3 and Y is 2, 6, then, the formula of the compound formed is

A. XY

B. X_2Y_3

C. X

D. XY_3

Answer: B

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10. In which compound covalent bond exists among the following?

A. Magnesium chloride

B. Sodium chloride

C. Calcium oxide

D. Ethane

Answer: D

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11. The formula of calcium sulphate hemihydrate is

A. $CaSO_4.\ 2H_2O$

B. $CaSO_4.\ \frac{3}{2}H_2O$

C. $CaSO_4.\ H_2O$

D. $2CaSO_4.\ H_2O$

Answer: D

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12. The bonds present in NH_4Cl is/are

A. only ionic bond

B. only covalent bond

C. only coordinate covalent bond

D. All of the above

Answer: D

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13. The element with atomic number 35 is the element of

A. s-block

B. p-block

C. d-black

D. f-block

Answer: B

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14. Which pair separated by electromagnetic process?

A. Chromite, Cassiterite

B. Calcite, Dolomite

C. Cinnabar, Horn silver

D. Limonite, Magnetite

Answer: A

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15. Which food chain is wrong?

A. Grass, Goat, Tiger

B. Grass, Snake, Eagle

C. Fish, Fox, Tiger

D. Grass, Insect, Sparrow

Answer: B

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16. Which compound librates hydrogen gas on reaction with water?

A. Methane

B. Magnesium boride

C. Calcium carbide

D. Hydrolith

Answer: D

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17. For chemical equation

$$XCu + YHNO_3 \rightarrow ZCu(NO_3)_2 + 2NO + 4H_2O$$

The value of X, Y and Z are

A. 4,8,2

B. 2,4,3

C. 3, 8, 3

D. 2, 3, 8

Answer: C

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18. The incorrect pair of the following is :

A. Benzol : Benzene, Toluene, Xylene

B. Diesel : Cetane

C. Oil gas: n-Butane, Propane, Isobutane

D. Blue water gas : CO + H_2

Answer: C

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19. The compound, in which oxygen has oxidation state of +2, is

A. H_2O

B. H_2O_2

C. OF_2

D. KO_2

Answer: C

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20. Bohr's model of an atom can explain

A. only the spectrum of hydrogen atom

B. only spectrum of an atom or ion containing one electron

C. spectrum of hydrogen molecule

D. the solar spectrum

Answer: B

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21. Which of the following reaction will be favoured at low pressure?

A. $PCl_5(g) \Leftrightarrow PCl_3(g) + Cl_2(g)$

B. $N_2(g) + 3H_2(g) \Leftrightarrow 2NH_3(g)$

C. $H_2(g) + I_2(g) \Leftrightarrow 2HI(g)$

D. $N_2(g) + O_2(g) \Leftrightarrow 2NO(g)$

Answer: B

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22. Biogas contain mainly

A. CO, CO_2 and H_2

B. CH_4, H_2, N_2O

C. only CH_4

D. CH_4, CS_2, CO

Answer: C

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23. Dissolved oxygen present in natural water has

A. 4-6 ppm

B. 10-20 ppm

C. 40-60 ppm

D. 80-100 ppm

Answer: A

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24. Which one has maximum calorific value?

A. Welsh steam coal

B. Lignite

C. Cellulose

D. Bituminous coal

Answer: A

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25. The unfavourable condition for fermentation process of alcohol production is

A. presence of air

B. low concentration of sugar

C. high concentration of sugar

D. presence of a enzyme

Answer: A

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26. Non-combustible gas is

A. CO

B. CH_4

C. N_2

D. C_4H_{10}

Answer: C

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27. The formula of a metal sulphate is $M_2(SO_4)_3$ the formula of its phosphate will be

A. $M_2(PO_4)_3$

B. $M_3(PO_4)_2$

C. MPO_4

D. M_2PO_4

Answer: C

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28. The pH of a solution is 5.0. If pH is increased upto 2.0 by adding an acid, increase in hydrogen ion concentration is

A. 100 times

B. 10 times

C. 1000 times

D. 10000 times

Answer: C

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29. There is a difference of $45^\circ F$ in the temperature of two bodies. It's value would be

A. $30^\circ C$

B. $20^\circ C$

C. $40^\circ C$

D. none of these

Answer: D

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30. Compound do not evolve oxygen gas on strongly heating is

A. NH_4NO_3

B. $KClO_3$

C. $NaNO_3$

D. $AgNO_3$

Answer: A

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31. Which metal is mainly used for preparation of solar cell pannel?

A. Ag

B. Hg

C. Pb

D. Sb

Answer: A

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32.

$$SO_2(g) + \frac{1}{2}O_2(g) \rightleftharpoons SO_3(g)(K_1)$$

$$2SO_3(g) \rightleftharpoons 2SO_2(g) + O_2(g)(K_2)$$

The correct relationship between equilibrium constants K_1 and K_2 is

A. $K_1 = \frac{1}{K_2}$

B. $K_1 = \frac{1}{\sqrt{K_2}}$

C. $K_1 = K_2$

D. none of these

Answer: B

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33. Mortar is a mixture of

A. cement, lime, water

B. cement, sand, water

C. cement, sand, gravel, water

D. cement, slaked lime, water

Answer: B

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34. Match List-I with List-II and select the correct answer.

	List-I		List-II
A.	Natural polymer	1.	PVC
B.	Addition polymer	2.	Sodium lauryl sulphate
C.	Condensation polymer	3.	Protein
D.	Detergent	4.	Nylon-6, 6

Codes

	A	B	C	D
(a)	3	1	4	2
(b)	4	3	2	1
(c)	1	2	3	4
(d)	3	2	1	4

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35. Which one of the following has the smallest size?

A. O^{--}

B. F^{-}

C. Na^{+}

D. Mg^{++}

Answer: D

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36. The major chemical present in mesosphere is

A. O_2^+, NO^+

B. O_2, N_2, Ar

C. Ar, Na, He

D. O_2, CO_2, N_2

Answer: A

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37. Which of the following is not an ore?

A. Malachite

B. Pewter

C. Calamine

D. Cerussite

Answer: B

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38. Mustard gas is formed when gas react with S_2Cl_2. The gas is

A. ethane

B. butane

C. propene

D. ethylene

Answer: D

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39. How many neutrons formed during nuclear fission of U-235?

A. 3

B. ∞

C. 10

D. 35

Answer: B

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40. An aliphatic hydrocarbon contains 80% carbon. The empirical formula of the hydrocarbon is

A. CH_4

B. CH_3

C. C_2H_6

D. C_2H_2

Answer: B

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41. Which metal controls in the rate of neutrons in the nuclear reactor?

A. Barium

B. Thorium

C. Polonium

D. cadmium

Answer: D

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42. Baeyer's reagent decolourised by the following gas

A. Methane

B. ethylene

C. butane

D. propane

Answer: B

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43. Biomass energy is not related to

A. photosynthesis

B. fermentation

C. anaerobic digestion

D. geothermal energy

Answer: D

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44. Atmospheric N_2 do not convert into useful compounds for plant growth in presence of

A. E-coil

B. azobacter

C. clostridium

D. rizoblum

Answer: A

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45. Biopolymer is

A. nylon-6,6

B. buna-N

C. dextron

D. buna-S

Answer: C

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46. An element A is a member of group V and element B of group I, but A belongs to IInd period and B belongs to Ist period. The formula of the compound formed by A and B is

A. BA

B. B_2A

C. A_2B

D. AB_3

Answer: D

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47. In which of the following reactions, hydrogen acts as an oxidising agent?

A. $H_2 + I_2 \rightarrow 2HI$

B. $2Li + H_2 \rightarrow 2LiH$

C. $N_2 + 3H_2 \rightarrow 2NH_3$

D. $H_2 + S \rightarrow H_2S$

Answer: B

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48. The ratio of limestone and coke mixed with calcinated iron ore in blast furnance during smelting process is

A. $12:3$

B. $3:8$

C. $2:4$

D. $3:5$

Answer: A

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49. Which of the following is not a chemical change?

A. Curd formation from milk

B. Combustion of coal

C. Rusting of iron

D. Conversion of water into steam

Answer: D

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50. 1 kW hour is equal to

A. 1.0 HP

B. $3.6 \times 10^6 J$

C. 3600J

D. none of the above

Answer: B

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