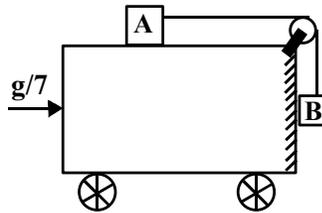




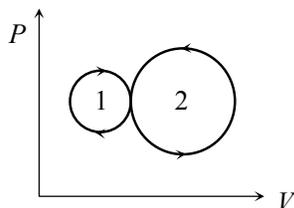
- The error due to calibration of a measuring instrument is
a) Random error b) systematic error c) gross error d) personal error
- A balloon is rising vertically upwards with constant velocity 'v'. When it is at a height 'h' above the ground, an object is released from it. After 't' seconds of its release, the separation between balloon and object(object doesnot reach the ground in that time)
a) depends on h and t only b) depends on v and t only
c) depends on v, h and t d) independent of v and h
- A body is projected with a velocity $6\vec{i} + 8\vec{j} + 20\vec{k} \text{ ms}^{-1}$ where \vec{i}, \vec{j} being in horizontal plane and \vec{k} in vertical plane. Horizontal range of the body is (take $g = 10 \text{ ms}^{-2}$)
a) 80m b) 20m c) 40m d) 34m
- Two blocks A and B of masses m_1 , and m_2 , also $m_1 = 7.5m_2$ are connected by a light inextensible string passes over a smooth and light pulley at the top corner of a long carriage as shown in the figure. The upper surface of the carriage is frictionless and vertical side is rough. The carriage moves with an acceleration ($g/7$) towards right. If the blocks just remain stationary with respect to the carriage, the coefficient of friction between the block B and the vertical side of the carriage is



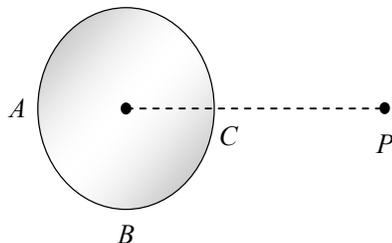
- a) 0.5 b) 0.4 c) 0.35 d) 0.23
- A rocket of initial mass 1500 kg ejects gas at a constant rate of 10 kg/sec with a relative speed of 5 km/sec. The acceleration of the rocket 50 sec after the blast is (neglect gravity)
a) 33.3 m/sec^2 b) 25 m/sec^2 c) 50 m/sec^2 d) 100 m/sec^2
- Rain is falling vertically with a speed of 4 ms^{-1} . After some time, wind starts blowing with a speed of 3 ms^{-1} in the north to south direction. In order to protect himself from rain, a man standing on the ground should hold his umbrella at an angle θ given by
a) $\theta = \tan^{-1}\left(\frac{3}{4}\right)$ with the vertical towards south b) $\theta = \tan^{-1}\left(\frac{3}{4}\right)$ with the vertical towards north
c) $\theta = \cot^{-1}\left(\frac{3}{4}\right)$ with the vertical towards south d) $\theta = \cot^{-1}\left(\frac{3}{4}\right)$ with the vertical towards north

7. A body moves a distance of 10 m along a straight line under the action of a force of 5 N. If the work done is 25 joules, the angle which the force makes with the direction of motion of the body is
- a) 0^0 b) 30^0 c) 60^0 d) 90^0
8. A body is moved along a straight line by a machine delivering constant power. The distance moved by the body in time t is proportional to
- a) $t^{1/2}$ b) $t^{3/4}$ c) $t^{3/2}$ d) t^2
9. A uniform solid sphere of radius r is rotating about an axis passing through its centre with a time period 0.5 seconds. During the rotation, if the sphere suddenly changes into a uniform solid cylinder of height $r/3$, such that the axis of the cylinder coincides with axis of rotation, then the time period of rotation of cylinder is
- a) 2.5 sec b) 1 sec c) 2 sec d) 3 sec
10. A solid sphere of radius r rolls without slipping on the floor, with linear momentum P . Its angular momentum will respect to a point on the floor is
- a) $2Pr/5$ b) $3Pr/5$ c) $3Pr/7$ d) $7Pr/5$
11. The relay satellite transmits the T.V. programme continuously from one part of the world to another because its
- a) Period is greater than the period of rotation of the earth
b) Period is less than the period of rotation of the earth about its axis
c) Period has no relation with the period of the earth about its axis
d) Period is equal to the period of rotation of the earth about its axis
12. The mass and diameter of a planet are twice those of earth. The period of oscillation of pendulum on this planet will be (If it is a second's pendulum on earth)
- a) $\frac{1}{\sqrt{2}}$ sec b) $2\sqrt{2}$ sec c) 2 sec d) 1/2 sec
13. A ball falling in a lake of depth 200 m shows 0.1% decrease in its volume at the bottom. What is the bulk modulus of the material of the ball
- a) $19.6 \times 10^8 \text{ N/m}^2$ b) $19.6 \times 10^{-10} \text{ N/m}^2$ c) $19.6 \times 10^{10} \text{ N/m}^2$ d) $19.6 \times 10^{-8} \text{ N/m}^2$
14. A shell having a hole of radius r is dipped in water. It holds the water upto a depth of h then the value of r is
- a) $r = \frac{2T}{hdg}$ b) $r = \frac{T}{hdg}$ c) $r = \frac{Tg}{hd}$ d) Neither 1 nor 2
15. Water is flowing in a pipe of diameter 4 cm with a velocity 3 m/s. The water then enters into a tube of diameter 2 cm. The velocity of water in the other pipe is
- a) 3 m/s b) 6 m/s c) 12 m/s d) 8 m/s

16. A rod of silver of length 5m at 0°C is heated to 100°C . It's length is increased by 1 cm. Coefficient of cubical expansion of the silver rod is
 a) $2.33 \times 10^{-5} / ^{\circ}\text{C}$ b) $4 \times 10^{-5} / ^{\circ}\text{C}$ c) $6 \times 10^{-5} / ^{\circ}\text{C}$ d) data insufficient
17. The energy spectrum of a black body exhibits a maximum around a wavelength λ_0 . The temperature of the black body is now changed such that the energy is maximum around a wavelength $\frac{3\lambda_0}{4}$. The power radiated by the black body will now become k times of initial value then k is
 a) 256/81 b) 64/27 c) 16/9 d) 81/256
18. In a thermodynamic process, pressure of a fixed mass of a gas is changed in such a manner that the heat energy taken by the gas is 30J and 10 J of work is done by the gas. If the initial internal energy of the gas was 40 J, then the final internal energy will be
 a) 30 J b) 20 J c) 60 J d) 40 J
19. In the following indicator diagram, the net amount of work done will be



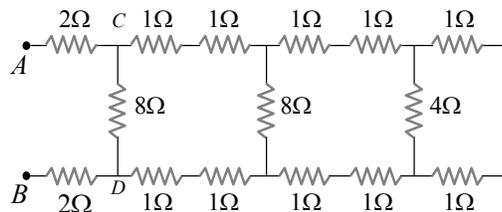
- a) Positive b) Negative c) Zero d) Infinity
20. Gas at a pressure P_0 in contained is a vessel. If the speeds of all gas molecules are doubled, the resulting pressure P will be equal to
 a) $2 P_0$ b) $4 P_0$ c) P_0 d) $P_0 / 2$
21. A hollow conducting sphere is placed in an electric field produced by a point charge placed at P as shown in figure. Let V_A, V_B, V_C be the potentials at points A, B and C respectively. Then



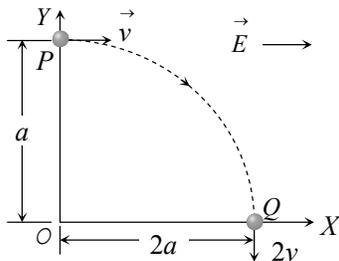
- a) $V_C > V_B$ b) $V_B > V_C$ c) $V_A > V_B$ d) $V_A = V_C$
22. The capacitance of an air capacitor is $15 \mu\text{F}$ the separation between the parallel plates is 6mm. A copper plate of 3mm thickness is introduced symmetrically between the plates. The capacitance now becomes
 a) $5 \mu\text{F}$ b) $7.5 \mu\text{F}$ c) $22.5 \mu\text{F}$ d) $30 \mu\text{F}$

23. The temperature coefficient of resistance for a wire is $0.00125/^{\circ}\text{C}$. At 300K its resistance is 1 ohm. The temperature at which the resistance becomes 2 ohm is
- a) 1154 K b) 1100 K c) 1400 K d) 1127 K

24. In the figure shown, the total resistance between A and B is

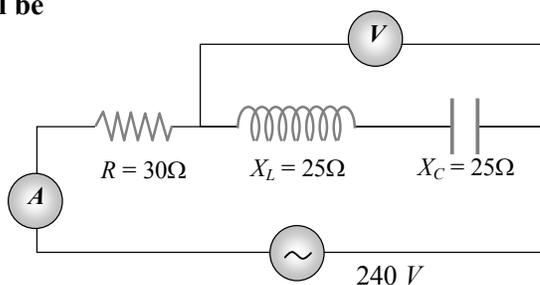


- a) 12 b) 4 c) 6 A d) 8
25. If a long hollow copper pipe carries a direct current along its length, the magnetic field associated with the current will be
- a) Only inside the pipe b) Only outside the pipe
- c) Neither inside nor outside the pipe d) Both inside and outside the pipe
26. A particle of charge $+q$ and mass m moving under the influence of a uniform electric field $E\hat{i}$ and a uniform magnetic field $B\hat{k}$ follows trajectory from P to Q as shown in figure. The velocities at P and Q are $v\hat{i}$ and $-2v\hat{j}$ respectively. Which of the following statement(s) is/are correct

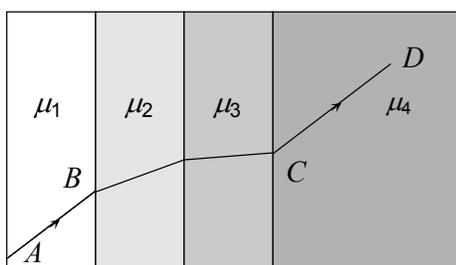


- a) Rate of work done by electric field at P is $\frac{3}{4} \frac{mv^3}{a}$
- b) Rate of work done by both the fields at Q is zero
- c) $E = \frac{3}{4} \frac{mv^2}{qa}$ d) all the above
27. The true value of angle of dip at a place is 60° , the apparent dip in a plane inclined at an angle of 30° with magnetic meridian is
- a) $\tan^{-1} \frac{1}{2}$ b) $\tan^{-1}(2)$ c) $\tan^{-1}\left(\frac{2}{3}\right)$ d) None of these
28. When a wire loop is rotated in a magnetic field, the direction of induced e.m.f. changes once in each
- a) $\frac{1}{4}$ revolution b) $\frac{1}{2}$ revolution c) 1 revolution d) 1 revolutions

29. In the circuit shown in figure neglecting source resistance, the voltmeter and ammeter reading will respectively, will be

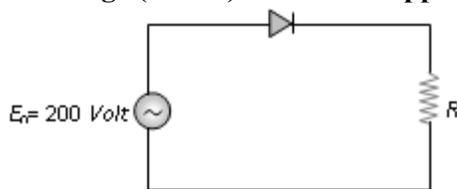


- a) 0V, 3A b) 150V, 3A c) 400V, 8A d) 0V, 8A
30. The condition under which a microwave oven heats up a food item containing water molecules most efficiently is:
- a) infra-red waves produce heating in a microwave oven.
 b) The frequency of the microwaves must match the resonant frequency of the water molecules.
 c) The frequency of the microwaves has no relation with natural frequency of water molecules.
 d) Microwaves are heat waves, so always produce heating,
31. The T.V transmission tower in Delhi has a height of 250 m. What is the distance upto which the broadcast can be received take ($R = 6.4 \times 10^6$ m)
- a) 50 km b) 60 km c) 56.4 km d) 54.6 m
32. Two open organ pipes of length 25 cm and 25.5 cm produce 10 beat/sec. The velocity of sound will be
- a) 255 m/s b) 250 m/s c) 350 m/s d) none of the above
33. A ray of light passes through four transparent media with refractive indices $\mu_1, \mu_2, \mu_3,$ and μ_4 as shown in the figure. The surfaces of all 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) $\mu_4 = \mu_1$
34. The diameter of the objective of a telescope is a , its magnifying power is m and wavelength of light is λ . The resolving power of the telescope is
- a) $(1.22 \lambda) / a$ b) $(1.22 a) / \lambda$ c) $am / (1.22 \lambda)$ d) $a / (1.22 \lambda)$
35. In the propagation of electromagnetic waves, the angle between the direction of propagation and plane of polarisation is
- a) 0° b) 30° c) 60° d) 90°

36. The kinetic energy of an electron is 5 eV. The de-Broglie wavelength associated with it is nearly ($h = 6.6 \times 10^{-34}$ Js, $m_e = 9.1 \times 10^{-31}$ kg)
- a) 5.47 Å b) 10.9 Å c) 2.7 Å d) 0.7 Å
37. The work function of a metallic surface is 5.01 eV. The photo-electrons are emitted when light of wavelength 2000 Å falls on it. The potential difference applied to stop the fastest photo-electrons is [$h = 4.14 \times 10^{-15}$ eVsec]
- a) 1.2 volts b) 2.24 volts c) 3.6 volts d) 4.8 volts
38. In the Bohr's hydrogen atom model, the radius of the stationary orbit is directly proportional to ($n =$ principle quantum number)
- a) n^{-1} b) n c) n^{-2} d) n^2
39. A radioactive element emits 200 particles per second. After three hours, 25 particles per second are emitted. The half life period of element will be
- a) 50 minutes b) 60 minutes c) 70 minutes d) 80 minutes
40. A sinusoidal voltage of peak value 200 volt is connected to a diode and resistor R in the circuit shown so that half wave rectification occurs. If the forward resistance of the diode is negligible compared to R then the rms voltage (in volt) across R is approximately



- a) 200 b) 100 c) $\frac{200}{\sqrt{2}}$ d) 280

Note: From Q.No: 41 to 60 the options are as follows: a statement of Assertion (A) is followed by a statement of Reason (R).

- a) Both A and R are true and R is the correct explanation of A
 b) Both A and R are true and R is not the correct explanation of A
 c) A is true but R is false d) A is false but R is true

41. **Assertion (A) :** The direction of velocity and acceleration can be in any way.
Reason (R): The direction of acceleration depends on the direction of force, but not on the direction of velocity.
42. **Assertion (A):** A player lowers his hands while catching a cricket ball.
Reason (R): The impulse on his hands is reduced by increasing the time of action.
43. **Assertion (A):** The work done by a conservative force during a round trip is always zero.
Reason (R): No force is required to move a body in a round trip.
44. **Assertion (A):** A coin placed on a rotating disc can move away if the angular velocity is gradually increased.
Reason (R): Friction can not provide sufficient centripetal force for a coin placed on a rotating disc at high angular velocity.

45. **Assertion (A):** When a clock fitted with a spring mass system is taken to the surface of the moon, its time period is same as that on the earth.
Reason (R): The time period of a spring mass system is not affected by the variation of g .
46. **Assertion (A):** Hot soup tastes better than the cold soups.
Reason (R): Hot soup spread properly on our tongue due to lower surface tension.
47. **Assertion (A):** 'Green houses' which are used to keep the plants in warm atmosphere in winter are built with glass.
Reason (R): Glass has the property of transmitting shorter wavelength heat radiations through it while reflecting longer ones.
48. **Assertion (A):** If an electric fan be switched on in a closed room, the air of the room will be cooled.
Reason (R): It is possible for a system, unaided by an external agency to transfer heat from a body at lower temperature to another body at higher temperature.
49. **Assertion (A):** Increasing the number of observations minimizes random errors.
Reason (R): Positive and negative random errors occur with equal probability.
50. **Assertion (A):** Specific heat of a gas at constant pressure (C_p) is greater than its specific heat at constant volume (C_v).
Reason (R): At constant pressure, some heat is spent in expansion of the gas.
51. **Assertion(A):** The flash of lightening is seen before the sound of thunder is heard.
Reason(R): Speed of sound is less than speed of light.
52. **Assertion(A):** The resolving power of a moving electron microscope is higher than that of an optical microscope.
Reason(R): In general, The wavelength of electron is more than the wavelength of visible light.
53. **Assertion(A):** Coloured spectrum is seen when we look through a muslin cloth.
Reason(R): It is due to the dispersion of white light on passing through fine slits.
54. **Assertion(A):** A bird perches on a high power line and nothing happens to the bird.
Reason(R): The level of bird is very high from the ground.
55. **Assertion(A):** Electric appliances with metallic body; e.g. heaters, presses etc, have three pin connections, whereas an electric bulb has a two pin connection.
Reason(R): Three pin connections reduce heating of connecting cables.
56. **Assertion(A):** If a charged particle is moving on a circular path in a perpendicular magnetic field, the momentum of the particle is not changing,
Reason(R): Velocity of the particle is not changing in the magnetic field.
57. **Assertion(A):** In the process of photoelectric emission, all the emitted photoelectrons have the same kinetic energy.
Reason(R): The photon transfers part of its energy to the electron of the atom in photoelectric effect and the interaction is treated as a perfectly elastic collision.

58. **Assertion(A):** Lyman series can be found in both absorption and emission spectrum of hydrogen atom.
Reason(R): It is essential that all the lines available in the emission spectrum will also be available in the absorption spectrum.
59. **Assertion(A):** NAND or NOR gates are called digital building blocks.
Reason(R): The repeated use of NAND (or NOR) gates can produce all the basic or complicated gates.
60. **Assertion(A):** Television signals are received through sky-wave propagation.
Reason(R): The ionosphere reflects electromagnetic waves of wavelengths greater than a certain critical wavelength.

CHEMISTRY

61. **The energy of 2s e⁻ is least in**
 a) Li b) Na c) K d) Rb
62. **Smallest species among the following**
 a) F_(g)⁻ b) F_(g) c) Na_(g) d) Na_(g)⁺
63. **Hybridisation involving the following orbitals is not possible**
 a) 3p, 3d, 4s b) 2s, 2p c) 3s, 3p, 3d d) 4s, 4p, 3d
64. **Vapour density of a mixture of NO₂ and N₂O₄ at equilibrium is 38.3. The number of mole of NO₂ present in 100g of the equilibrium mixture is**
 a) 0.46 b) 0.43 c) 0.48 d) 0.49
65. **For an ideal gas the value of the compressibility factor is**
 a) 1 b) $\frac{8}{3}$ c) $\frac{3}{8}$ d) zero
66. **In the reaction $\text{Na}_2\text{S}_2\text{O}_3 + 4\text{Cl}_2 + 5\text{H}_2\text{O} \rightarrow \text{Na}_2\text{SO}_4 + \text{H}_2\text{SO}_4 + 8\text{HCl}$. The equivalent weight of Na₂S₂O₃ will be (M = molecular weight)**
 a) $\frac{M}{4}$ b) $\frac{M}{8}$ c) $\frac{M}{1}$ d) $\frac{M}{2}$
67. **In water gas shift reaction, the carbondioxide is removed by using**
 a) Sodium arsenate b) Sodium arsenite c) Sodium chloride d) Sodium chlorate
68. **Which of the following play an important role interneuronal transmission**
 a) Calcium b) Magnesium c) Sodium d) Potassium
69. **Diborane when heated with excess of ammonia liberates**
 a) N₂ gas b) H₂ gas
 c) a mixture of N₂ and H₂ gas d) N₂H₄ gas
70. **P – P bond is observed in**
 a) Phosphinic acid b) Diphosphinic acid c) Phosphoric acid d) Hypophosphoric acid
71. **Thermal decomposition of the following gives oxygen gas**
 a) Pb₃O₄ b) PbO₂ c) Ag₂O d) all the above

87. Gold number is least for

- a) Starch b) Gelatin c) Gum arabic d) Haemoglobin

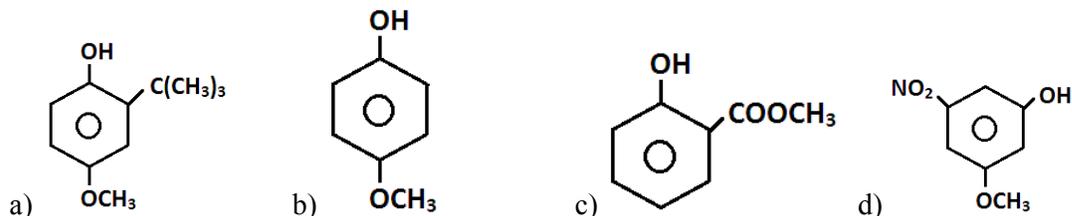
88. Caprolactam is the starting material to prepare

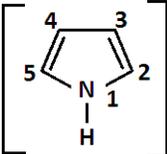
- a) Nylon, 6 b) Nylon 2, Nylon 6 c) Nylon – 6, 6 d) P.E.T

89. Glucose is converted to gluconic acid by using

- a) conc HNO_3 b) $\text{MnO}_4^- / \text{OH}^-$ c) $\text{Br}_2 / \text{H}_2\text{O}$ d) $(\text{CH}_3\text{CO})_2\text{O} / \text{D}$

90. The shelf life of Butter can be increased by adding

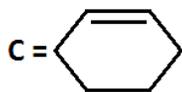
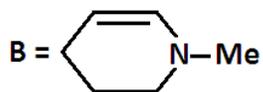
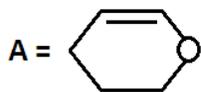


91. In pyrole ring  electron density is maximum on

- a) 2 and 3 b) 3 and 4 c) 2 and 4 d) 2 and 5

92. Acetylene can liberate hydrogen with

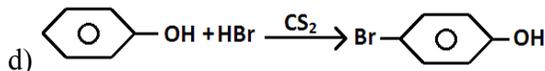
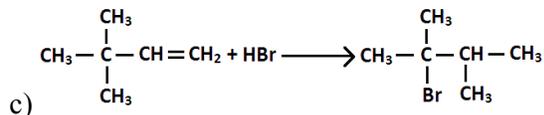
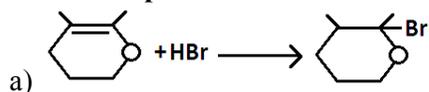
- 1) dil NaOH 2) conc NaOH 3) Na metal 4) Alc. KOH
a) 2 and 3 only b) only 2 c) only 3 d) 1, 2 and 3 only



93. . Ease of electrophilic addition order of the above species is

- a) $A > B > C$ b) $B > A > C$ c) $C > B > A$ d) $C > A > B$

94. In correct product formation is



95. $\text{C}_2\text{H}_5\text{MgBr} \xrightarrow{\text{C}_3\text{H}_4} \text{'X'}$. The organic compound 'X' is

- a) C_2H_6 b) $\text{C}_3\text{H}_5\text{Br}$ c) C_2H_2 d) C_5H_{12}

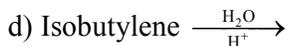
96. Ethanol $\xrightarrow{\text{Cu}/300^\circ\text{C}}$ X, Isopropyl alcohol $\xrightarrow{\text{Cu}/300^\circ\text{C}}$ Y. 'X' is converted to 'Y' by using

- a) $\text{MnO}_4^- / \text{H}^+$, $\text{CH}_3\text{MgBr} / \text{H}_3\text{O}^+$ b) $\text{C}_2\text{H}_5\text{MgBr} / \text{H}_3\text{O}^+$, $\text{MnO}_4^- / \text{H}^+$
c) $\text{CH}_3\text{MgBr} / \text{H}_3\text{O}^+$, dry Ag_2O d) $\text{MnO}_4^- / \text{H}^+$, Ca / D

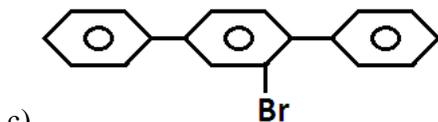
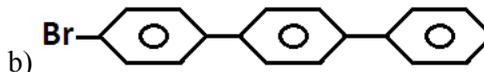
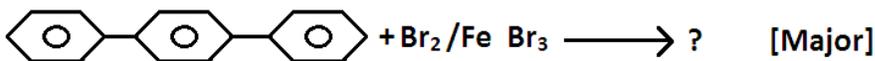
97. Iodination of methane is carried out by using HIO_3 . This is to

- a) Increase the free radical formation b) Increase the I^+ ion formation
c) Eliminate the bi product HI d) Prevent possible explosion

98. Alcohols are not formed in the following reaction

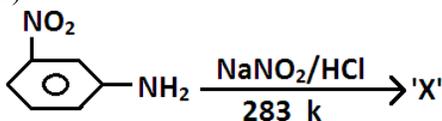


99.

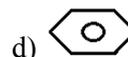
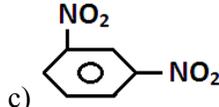
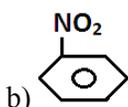
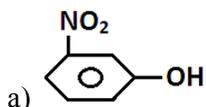


d) All are in equal proportione

100.



. Here 'X' is



DIRECTIONS:

In the following questions: (Q.No – 101 to Q.No – 120), a statement of Assertion (A) is followed by a statement of Reason (R).

Mark the Correct Choice as:

a. A and R are true and R is the correct explanation of A

b. Both A and R are true and R is not the correct explanation of A

c. A is true, R is false

d. Both A and R are false

101. A: In both CO and N_2 the bond order is same.

R: The bond dissociation energy of N_2 is greater than that of CO.

102. A: H_2O_2 is stored by adding urea.

R: Decomposition of H_2O_2 is a disproportionation reaction.

103. A: H_3PO_2 is a stronger acid when compared to H_3PO_4 .

R: H_3PO_2 is dibasic where as H_3PO_4 is tribasic acid.

104. A: SO_2 is a reducing agent where as TeO_2 is an oxidizing agent.

R: In both SO_2 and TeO_2 , the oxidation number of chalcogen is +4.

105. A: Moist HCl gas can be dried by using conc H_2SO_4 .

R: H_2SO_4 is dibasic where as HCl is mono basic.

106. A: Starch on hydrolysis gives b -D-glucose.

R: Amylose of starch is made up of b -D-glucose units.

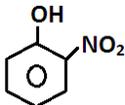
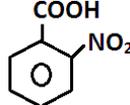
107. A: P^{ka} of CF_3COOH is more than that of CH_3COOH .

R: F destabiliser COO^- to a greater extent than H.

108. A: Formaldehyde is more reactive towards nucleophilic addition reaction than acetaldehyde.

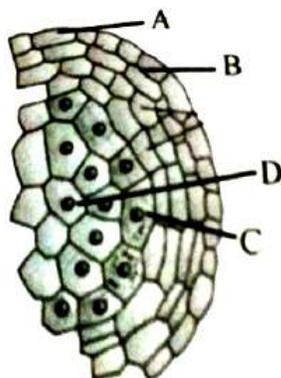
R: Both CH_3CHO & HCHO can react with dilute base to undergo aldol condensation.

109. **A:** Pyridine is more basic than pyrrole.
R: Both pyridine and pyrrole are aromatic.
110. **A:** Azulene is anti aromatic.
R: Azulene is non planar.
111. **A:** Bond polarity of BF_3 is greater than that of NF_3 .
R: Bond polarity depends on electro negativity difference.
112. **A:** On heating percentage loss in weight of washing soda is 62.93%.
R: Washing soda is deca hydrate.
113. **A:** Thermodynamic stability of lime stone is greater than that of BeCO_3 .
R: BeCO_3 is water insoluble where as lime stone is water soluble.
114. **A:** Caustic soda is not stored in a glass container.
R: Caustic soda react with silica to form water glass.
115. **A:** Cu_2I_2 exist but not CuI_2 .
R: Cu^+ has a tendency to oxidize iodide to iodine.
116. **A:** CO can form a stronger bond with Haemoglobin to form carboxy haemoglobin.
R: Haemoglobin is sink for carbon monoxide.
117. **A:** Elivation is boiling point of 0.1 m aq NaCl is greater than that of 0.1 m aq urea.
R: NaCl is a non electrolyte where as urea is an electrolyte.
118. **A:** Copper pyrites on roasting gives only FeO but not CuO.
R: Copper has more affinity for oxygen where as Fe has more affinity for sulphur.
119. **A:** For 'H' like species the energy order is $1s < 2s = 2p < 3s = 3p = 3d \dots$
R: For $1e^-$ system, the energy of an electron depends only on 'n'.

120. **A:** P^{ka} of  is greater than that of .
- R:** In both phenols and aromatic carboxylic acids ortho effect does not exist.

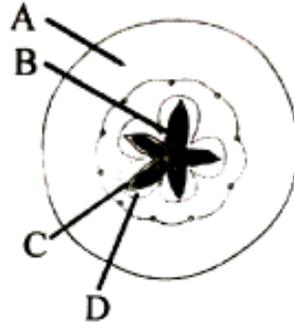
BOTANY

121. **Depicted picture is an enlarged view of microsporangium in which labeled structure A, B, C and D are respectively –**



- a) Tapetum, epidermis, endothecium, middle layer
b) Epidermis, endothecium, tapetum, microspore mother cell
c) Endothecium, middle layer, tapetum, epidermis
d) Endothecium, middle layer, tapetum, microspore mother cell

128.



Which of the following correctly represent the labeling A, B, C and D with respect to given diagram ?

- | A | B | C | D |
|-------------|----------|----------|----------|
| a) Thalamus | Seed | Endocarp | Mesocarp |
| b) Seed | Thalamus | Endocarp | Mesocarp |
| c) Endocarp | Mesocarp | Thalamus | Seed |
| d) Thalamus | Seed | Mesocarp | Endocarp |

129. During oxidation of one mole of glucose, 36 ATP can be obtained by which of the following distribution ?

- | | |
|--|--|
| a) Glycolysis-2, Citric acid cycle-6, ETS-28 | b) Glycolysis-2, Citric acid cycle-2, ETS-32 |
| c) Glycolysis-4, Citric acid cycle-2, ETS-30 | d) Glycolysis-2, Citric acid cycle-4, ETS-30 |

130. Which of the following set represents micronutrients ?

- | | | | |
|----------------------|--------------------|---------------------|---------------------|
| a) B, Ni, Mo, Mn, Fe | b) B, N, Mo, Mn, P | c) S, Ca, B, Mo, Fe | d) N, Mo, Mn, K, Mg |
|----------------------|--------------------|---------------------|---------------------|

131. Which of the following set contains natural hormones ?

- | | |
|----------------------------|--------------------------|
| a) 2,4-D, IBA, Gibberellin | b) Cytokinin, 2,4-D, NAA |
| c) IAA, Zeatin, ABA | d) Ethylene, NAA, ABA |

132. Which of the following is not a genetically modified plant ?

- | | | | |
|--------------|----------------------|-----------------|----------------|
| a) Bt-cotton | b) Flavr Savr tomato | c) Pusa swarnim | d) Golden rice |
|--------------|----------------------|-----------------|----------------|

133. Which of the following is a free living biocontrol microbial agent for plant pathogen ?

- | | | | |
|----------|-----------|-----------------------|---------------------|
| a) Mucor | b) Glomus | c) <i>Trichoderma</i> | d) <i>Rhizobium</i> |
|----------|-----------|-----------------------|---------------------|

134. Match the columns and choose the correct option:

	Column-I (Fruit)		Column-II (Edible part)
a	Walnut	I	Cotyledon
b	Cashewnut	II	Seed
c	Orange	III	Endocarp
d	Strawberry	IV	Thalamus

- | | a | b | c | d | a | b | c | d | |
|----|----|----|-----|-----|----|----|-----|-----|----|
| a) | II | I | III | IV | b) | II | III | I | IV |
| c) | I | II | IV | III | d) | I | II | III | IV |

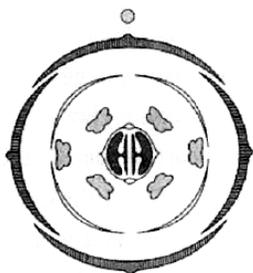
135. Double fertilization is characteristic feature of

- a) Only angiosperm
 b) Angiosperm and gymnosperm
 c) Gymnosperm and pteridophyte
 d) Angiosperm and pteridophyte

136. Which of the following is involved in translation ?

- a) DNA
 b) mRNA, tRNA, DNA
 c) mRNA, tRNA
 d) Only mRNA

137. Choose the correct floral formula with the help of given floral diagram :



- a) $\oplus \text{♀} \text{K}_{2+2} \text{C}_4 \text{A}_{2+4} \underline{\text{G}}_{(2)}$
 b) $\% \text{♀} \text{K}_{(5)} \text{C}_{1+2+(2)} \text{A}_{(9)+1} \underline{\text{G}}_1$
 c) $\oplus \text{♀} \text{K}_{(5)} \text{C}_{(5)} \text{A}_5 \underline{\text{G}}_{(2)}$
 d) $\text{Br} \oplus \text{♀} \text{P}_{(3+3)} \text{A}_{3+3} \underline{\text{G}}_{(3)}$

138. Which of the following is not a direct method of gene transfer in plants :

- a) *Agrobacterium tumefaciens*
 b) Gene gun method
 c) Biolistic method
 d) Electroporation

139. Find out correct recognition sequence of following restriction endonuclease enzyme :

a)	BamHI GGATCC CCTAGG	Eco RI GAATTC CTTAAG
b)	Bam HI GAATCAA CTTAGTT	Eco RI TTGCAAC AACGTTG
c)	Bam HI GCATGG CGTACC	Eco RI AGCTCC TCGAGG
d)	Bam HI GACTAA CTGATT	Eco RI GCCTTA CGGAAT

140. Which of the following is incorrect about C_4 plants ?

- a) They show photorespiration
 b) Calvin cycle occurs
 c) First CO_2 fixation product is OAA
 d) Rubisco is present in bundle sheath cell

DIRECTIONS:

In the following questions: (Q.No – 141 to Q.No – 150), a statement of Assertion (A) is followed by a statement of Reason (R).

Mark the Correct Choice as:

- a. A and R are true and R is the correct explanation of A
b. Both A and R are true and R is not the correct explanation of A
c. A is true, R is false d. Both A and R are false
141. A: In angiosperms, endosperm nucleus is triploid as it is formed due to triple fusion.
R: Gymnosperms lack endosperm because they lack triple fusion.
142. A: *Acetobacter aceti* can be used for commercial production of acetic acid.
R: *Agrobacter rhizogenus* produces secondary metabolite.
143. A: Roots of plants of Fabaceae help in N₂-fixation.
R: Fabaceae family have nodulated roots.
144. A: Mycorrhiza is parasitic association.
R: In lichen, both partners are affected.
145. A: Chromoplast is essential cell organelle because it contain pigment.
R: Ribosome is a double membranous organelle.
146. A: In eukaryotic cell during splicing, introns are removed and exons are combined.
R: In eukaryote, m-RNA is polycistronic.
147. A: Xerophytes grow in arid environment.
R: In xerophytes, vascular bundles are less developed.
148. A: Whittaker proposed the five kingdom classification.
R: He included virus, viroids and lichen on the basis of cellular mode of organization.
149. A: Vernalization induces flowering in plants.
R: Gymnosperms do not show flowering even after the effect of vernalization.
150. A: Somatic hybrid can be developed only through genetic engineering.
R: Apomictic seed can be produced by mutation.

ZOOLOGY

151. Identify the given figure and select the correct option



- a) Dense regular connective tissue – orientation of collagen is in a regular pattern
b) Areolar connective tissue – serves as a supporting framework for epithelium
c) Dense irregular connective tissue – has fibroblasts and fibres that are oriented differently
d) Adipose connective tissue – fat storing tissue found beneath the skin

152. Which of the following is not a correct match of the characteristic feature and the two examples given

- a) Water vascular system – Sea cucumber, sea lily
- b) Stinging capsules – sea fan, sea pen
- c) Radial symmetry – sea urchin, sea anemone
- d) Metamerism – Sea mouse, sea hare

153. DPT vaccine is used against

- a) Diphtheria, plague, Tetanus
- b) Diphtheria, Pertussis, Tetanus
- c) Dysentery, Pertussis, Typhoid
- d) Diphtheria, Pertussis, Tuberculosis

154. In the life cycle of Plasmodium, sporogony takes place in

- a) Liver of humans
- b) Salivary glands of mosquito
- c) RBC of humans
- d) Gut of mosquito

155. Proliferative phase of menstrual cycle is characterized by

- a) Proliferation of disintegrated uterine myometrium
- b) Gradual increase in the secretion of gonadotropins from the ovary
- c) Regeneration of endometrium under the influence of progesterone
- d) Growth of primary follicles into mature follicles

156. Biological product used in the treatment of emphysema

- a) α - 1 trypsin
- b) α - interferon
- c) α - Lactalbumin
- d) α - 1 antitrypsin

157. Choose the incorrect match

- a) Ascaris in human intestine – Parasitism
- b) Clown fish and sea anemone – Amensalism
- c) Barnacles on the back of whale – Commensalism
- d) Fig tree and wasp – Mutualism

158. Which of the following is characteristic of pectoral girdle

- a) Olecranon process
- b) Odontoid process
- c) Acromion process
- d) Mastoid process

159. The practice of mating of animals within the same breed but having no common ancestor on either side of their pedigree up to 4 - 6 generations is

- a) Close breeding
- b) Out crossing
- c) Line breeding
- d) Cross breeding

160. A sexually transmitted disease caused by Treponema pallidum is

- a) Gonorrhoea
- b) Trichomoniasis
- c) Syphilis
- d) Chlamydia

161. Homo erectus evolved during the epoch

- a) Pliocene
- b) Holocene
- c) Miocene
- d) Pleistocene

162. Match the following

Pollutant

- a) Mercury
- b) Nitrate
- c) Cadmium
- d) Arsenic

Effect

- 1) Blue baby syndrome
- 2) Minamata
- 3) Itai itai
- 4) Black foot disease

- | | A | B | C | D |
|----|---|---|---|---|
| a) | 2 | 1 | 3 | 4 |
| c) | 2 | 1 | 4 | 3 |

- | | A | B | C | D |
|----|---|---|---|---|
| b) | 1 | 2 | 3 | 4 |
| d) | 1 | 2 | 4 | 3 |

163. At a particular locus, frequency of 'A' allele is 0.7 and of 'a' is 0.3. What would be the frequency of heterozygotes in a randomly mating population of equilibrium
a) 0.9 b) 0.21 c) 0.42 d) 0.49
164. In the brain, cerebral aqueduct is enclosed within
a) Cerebral hemisphere b) Cerebellum
c) Thalamus d) Mid brain
165. Presence of plants arranged into well defined vertical layers depending on their height can be seen best in
a) Temperate forests b) Tropical savannahs
c) Grass lands d) Tropical rain forests
166. Largest tiger reserve in India is
a) Indravathi b) Nagarjunasagar – Srisailam
c) Ranthambore d) Sunderbans
167. In DNA fingerprinting, electrophoresis is used for
a) Generation of DNA fragments b) Transferring DNA fragments onto nitro cellulose
c) Hybridisation of DNA fragments d) Separation of DNA fragments
168. Which of the following is a wrong match of vitamin and its deficiency disorder
a) Niacin – Pellagra b) Thiamine - Beriberi
c) Ascorbic acid – Burning feet syndrome d) Folic acid - Tropical sprue
169. Volume of air that will remain in the lungs after a normal expiration is equal to
a) TV+ERV b) ERV+RV c) VC+RV d) RV+IRV
170. Which of the following is an inverted pyramid
a) Pyramid of numbers in a pond ecosystem b) Pyramid of energy in a pond ecosystem
c) Pyramid of biomass in a pond ecosystem d) Pyramid of energy in a grassland ecosystem

DIRECTIONS:

In the following questions: (Q.No – 171 to Q.No – 180), a statement of Assertion (A) is followed by a statement of Reason (R).

Mark the Correct Choice as:

- a. A and R are true and R is the correct explanation of A
b. Both A and R are true and R is not the correct explanation of A
c. A is true, R is false d. Both A and R are false

171. A: RAAS mechanism results in increase in the blood pressure and GFR.

R: Aldosterone causes reabsorption of Na^+ and water from the proximal parts of the renal tubule.

172. A: In cockroach, blood cannot transport oxygen to the tissues.

R: Cockroach has open type of blood vascular system with poorly developed blood vessels.

173. A: Fovea is the thinned out portion of the retina where the visual acuity is the greatest.

R: Photoreceptor cells namely rods and cones are densely packed at fovea.

174. A: Cortisol is a protein hormone that is used in the organ transplantation.

R: Cortisol promotes immune responses by stimulating inflammatory reactions.

187. Which State Government has launched the “Bharat Ratna Atal Bihar Vajpayee International Schools” for students in rural areas?
 a) Himachal Pradesh b) Odisha c) Haryana d) Tamil Nadu
188. Who has become the first cricket player-ever in history to win all three of top ICC awards to win ICC Test, ODI Player And Cricketer Of The Year?
 a) MS Dhoni b) Kumar Dharmasena
 c) Virat Kohli d) Kane Williamson
189. The Ministry of Finance has started which series on Twitter to educate general public about the budgetary process?
 a) Know your Economy b) Know your Budget
 c) Know your Finances d) Know Making of Budget
190. What is the theme of the National Voters Day (NVD-2019) ?
 a) Accessible Elections b) Proud to be a Voter-Ready to Vote
 c) No Voter to be Left Behind d) Proud to be a Voter
191. A man purchases 40 dozens bananas at Rs. 5 per dozen. Of these 30 are rotten. At what price per dozen should he sell the remaining bananas in order to get a profit of 20% ?
 a) Rs. 6.40 b) Rs. 5.90 c) Rs. 6.75 d) None
192. The average weight of 50 men is increased by 1/2 kgs. when one of them whose weight is 52 kgs. is replaced by a new man. What is the weight of the new man?
 a) 79 b) 82 c) 77 d) None
193. The ratio between the ages of Sue and Nancy is 5 : 4. Sue is 4 years more than Nancy the ratio of Sue's age to Nancy age after 6 years will be ?
 a) 11:13 b) 13:11 c) 10:11 d) 11:10
194. If a train covers 18 miles in 20 minutes. What is the speed of the train in miles per hour ?
 a) 48 b) 51 c) 54 d) 57
195. If in a certain code, COVET is written as FRYHW, which word would be written as SHDUO ?
 a) REPAY b) PEARL c) QUAKE d) STINK
196. If Sky is called Sea, Sea is called Water, Water is called Air, Air is called Cloud and Cloud is called River, then what do we drink when we are thirsty ?
 a) Sky b) Water c) Air d) Sea
197. Pavani's brother's mother's son's son is Kishore. How is Kishore related to Pavani?
 a) Son b) Cousin c) Brother d) Nephew
198. A man walks 10m in front and 10m to the right. Then every time turning to his left, he walks 5,15 and 15m. How far is he now from his starting point?
 a) 5m b) 10m c) 15m d) 20m
199. By how many degrees will the minutes hand move, in the same time in which the hour hand moves 6 deg; ?
 a) 54° b) 84° c) 72° d) 60°
200. What is the code for 'sky' in the code language ?
Statements:
I. In the code language, 'sky is clear' is written as 'de ra fa'.
II. In the same code language, 'make it clear' is written as 'de ga jo'.
 a) I alone is sufficient while II alone is not sufficient
 b) II alone is sufficient while I alone is not sufficient
 c) Either I or II is sufficient
 d) Neither I nor II is sufficient



SRI CHAITANYA EDUCATIONAL INSTITUTIONS,INDIA

A . P, TELANGANA, KARNATAKA, TAMILNADU, MAHARASHTRA, DELHI , RANCHI

SR ELITE, AIIMS SUPER 60, NEET MPL & MEDICON AIIMS GRAND TEST - 4 KEY

Date : 30-01-19

PHYSICS

1) b	2) d	3) c	4) a	5) c	6) b	7) c	8) c	9) a	10) d
11) d	12) b	13) a	14) a	15) c	16) c	17) a	18) c	19) b	20) b
21) d	22) d	23) d	24) d	25) b	26) d	27) b	28) b	29) d	30) b
31) c	32) a	33) d	34) d	35) a	36) a	37) a	38) d	39) b	40) b
41) a	42) c	43) c	44) a	45) a	46) a	47) a	48) d	49) a	50) a
51) a	52) c	53) c	54) c	55) c	56) d	57) d	58) c	59) a	60) c

CHEMISTRY

61) d	62) b	63) a	64) b	65) a	66) b	67) b	68) a	69) b	70) d
71) d	72) a	73) a	74) b	75) b	76) b	77) a	78) a	79) c	80) a
81) a	82) d	83) b	84) c	85) a	86) b	87) b	88) a	89) c	90) a
91) d	92) c	93) b	94) d	95) a	96) d	97) c	98) c	99) c	100) a
101) c	102) b	103) c	104) b	105) b	106) d	107) d	108) c	109) b	110) d
111) a	112) a	113) c	114) a	115) c	116) c	117) c	118) d	119) a	120) c

BOTANY

121) b	122) c	123) d	124) a	125) a	126) d	127) a	128) a	129) b	130) a
131) c	132) c	133) c	134) a	135) a	136) c	137) a	138) a	139) a	140) a
141) c	142) b	143) a	144) d	145) d	146) c	147) c	148) c	149) b	150) d

ZOOLOGY

151) c	152) d	153) b	154) d	155) d	156) d	157) b	158) c	159) b	160) c
161) d	162) a	163) c	164) d	165) d	166) b	167) d	168) c	169) b	170) c
171) c	172) b	173) c	174) d	175) b	176) c	177) c	178) a	179) c	180) a

GENERAL KNOWLEDGE

181) d	182) b	183) c	184) c	185) b	186) b	187) c	188) c	189) b	190) c
191) a	192) c	193) b	194) c	195) b	196) c	197) d	198) a	199) c	200) d

SOLUTIONS

1. Theory point

2. For balloon, $h_1 = ut$

For object, $h_2 = -ut + \frac{1}{2}gt^2$

Hence the separation = $h_1 + h_2 = \frac{1}{2}gt^2$

3. Time of flight, $t = \frac{2uz}{g}$

$$R_x = u_x t$$

$$R_y = u_y t$$

$$R = \sqrt{R_x^2 + R_y^2} = t \sqrt{u_x^2 + u_y^2} = 40m$$

4. For A : $T = m_1 a = (7.5m_2) \frac{g}{7} = \left(\frac{7.5}{7}\right) m_2 g$

For B : $T = m_2 g + u m_2 a$

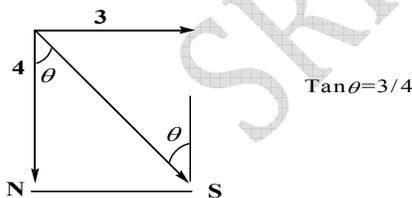
$$\text{Here } \left(\frac{7.5}{7}\right) m_2 g = m_2 g + u m_2 \left(\frac{g}{7}\right)$$

$$u = 0.5$$

5. mass $m = 1500 - (10 \times 50) = 1000 \text{ kg}$; $ma = \left(\frac{dm}{dt}\right) u$

$$(1000) a = (10) (5000) \therefore a = 50 \text{ m/s}^2$$

6.



7. $W = Fs \cos \theta$; $\cos \theta = \frac{W}{Fs} = \frac{25}{50} = \frac{1}{2}$; $\theta = 60^\circ$

8. $P = Fv = mav = m \left(\frac{dv}{dt}\right) v$; $\frac{P}{m} dt = v dv$; $\frac{P}{m} \times t = \frac{v^2}{2}$; $v = \left(\frac{2P}{m}\right)^{1/2} (t)^{1/2}$

$$\text{Now } s = \int v dt = \int \left(\frac{2P}{m}\right)^{1/2} t^{1/2} dt \quad \therefore s = \left(\frac{2P}{m}\right)^{1/2} \left[\frac{2t^{3/2}}{3}\right] \Rightarrow s \propto t^{3/2}$$

9. Here $I_1 W_2$

$$\left(\frac{2}{5}m\pi_1^2\right)\frac{2\pi}{T_1} = \left(\frac{mr_2^2}{2}\right)\frac{2\pi}{T_2} \quad ; \quad \frac{2}{5}r_1^2\left(\frac{1}{T_1}\right) = \left(\frac{r_2^2}{2}\right)\left(\frac{1}{T_2}\right)$$

$$\frac{2}{5}r_1^2\left(\frac{1}{0.5}\right) = \left(\frac{4r_1^2}{2}\right)\left(\frac{1}{T_2}\right) \quad \therefore \left(\text{But } \frac{4}{3}\pi r_1^3 = \pi r_2^2 h r_2 = 2r_1\right)$$

$$T_2 = 2.5 \text{ Sec}$$

$$10. \quad L = L_T + L_r = mur + I\omega = mur + \left(\frac{2}{5}mr^2\right)\left(\frac{u}{r}\right) = \frac{7}{5}mur = \frac{7pr}{5}$$

11. Telecommunication satellites are geostationary satellite

$$12. \quad \text{As we know } g = \frac{GM}{R^2} \Rightarrow \frac{g_{\text{earth}}}{g_{\text{planet}}} = \frac{M_e}{M_p} \times \frac{R_p^2}{R_e^2} \Rightarrow \frac{g_e}{g_p} = \frac{2}{1}$$

$$\text{Also } T \propto \frac{1}{\sqrt{g}} \Rightarrow \frac{T_e}{T_p} = \sqrt{\frac{g_p}{g_e}} \Rightarrow \frac{2}{T_p} = \sqrt{\frac{1}{2}} \quad ; \quad T_p = 2\sqrt{2} \text{ sec.}$$

$$13. \quad B = \frac{\Delta p}{\Delta V/V} = \frac{h\rho g}{0.1/100} = \frac{200 \times 10^3 \times 9.8}{1/1000} = 19.6 \times 10^8 \text{ N/m}^2$$

$$14. \quad \frac{2T}{r} = hdg \Rightarrow r = \frac{2T}{hdg}$$

$$15. \quad a_1 v_1 = a_2 v_2 \Rightarrow \frac{v_2}{v_1} = \frac{a_1}{a_2} = \left(\frac{r_1}{r_2}\right)^2 \Rightarrow v_2 = 3 \times (2)^2 = 12 \text{ m/s}$$

$$16. \quad \alpha = \frac{\Delta L}{L_0 \times \Delta \theta} = \frac{0.01}{5 \times 100} = 2 \times 10^{-5} / ^\circ\text{C}$$

$$17. \quad \text{According to Wein's law } \lambda_m T = \text{constant} \Rightarrow \lambda_{m_1} T_1 = \lambda_{m_2} T_2 \Rightarrow T_2 = \frac{\lambda_{m_1}}{\lambda_{m_2}} T_1 = \frac{\lambda_0}{3\lambda_0/4} \times T_1 = \frac{4}{3} T_1$$

$$\text{Now } P \propto T^4 \Rightarrow \frac{P_2}{P_1} = \left(\frac{T_2}{T_1}\right)^4 \Rightarrow \frac{P_2}{P_1} = \left(\frac{4/3 T_1}{T_1}\right)^4 = \frac{256}{81}$$

$$18. \quad \Delta Q = \Delta U + \Delta W = (U_f - U_i) + \Delta W \Rightarrow 30 = (U_f - 40) + 10 \Rightarrow U_f = 60 \text{ J}$$

19. The cyclic process 1 is clockwise where as process 2 is anticlockwise. Clockwise area represents positive work and anticlockwise area represents negative work. Since negative area (2) > positive area (1), hence net work done is negative.

$$20. \quad \text{speed is doubled then temperature becomes 4 times. } PV = nRT ; \text{ hence } P_2 = 4P_1$$

21. Conducting surface behaves as equipotential surface.

$$22. \quad \text{By using } C_{\text{air}} = \frac{\epsilon_0 A}{d}, \quad C_{\text{medium}} = \frac{\epsilon_0 A}{d-t + \frac{t}{K}}; \quad \text{For } K = \infty \quad C_{\text{medium}} = \frac{\epsilon_0 A}{d-t}$$

$$\Rightarrow \frac{C_m}{C_a} = \frac{d}{d-t} \Rightarrow \frac{C_m}{15} = \frac{6}{6-3} \Rightarrow C_m = 30 \mu\text{C}$$

$$23. \quad \frac{\rho_1}{\rho_2} = \frac{(1+\alpha t_1)}{(1+\alpha t_2)} \Rightarrow \frac{1}{2} = \frac{(1+0.00125 \times 27)}{(1+0.00125 \times t)} \Rightarrow t = 854^\circ\text{C} \Rightarrow T = 1127 \text{ K}$$

24. The last two resistance are out of circuit. Now 8Ω is in parallel with $(1+1+4+1+1)\Omega$.

$$\therefore R = 8\Omega \parallel 8\Omega = \frac{8}{2} = 4\Omega \Rightarrow R_{AB} = 4 + 2 + 2 = 8\Omega$$

25. Because for inside the pipe $i = 0 \therefore B = \frac{\mu_0 i}{2\pi r} = 0$

26. It comes from the work done by the electric force qE on the particle as it covers a distance $2a$ along the x -axis. Thus $\frac{3}{2}mv^2 = qE \times 2a \Rightarrow E = \frac{3}{4} \frac{mv^2}{qa}$.

The rate of work done by the electric field at $P = F \times v = qE \times v = 3 \frac{mv^3}{4a}$

Hence rate of work done by electric field $= \vec{F}_e \cdot \vec{v} = 0$ ($\because \theta = 90^\circ$)

Hence the rate of work done by the magnetic field $= 0$

27. $\tan \phi' = \frac{\tan \phi}{\cos \beta}$; where ϕ' = Apparent angle of dip,

ϕ = True angle of dip, β = Angle made by vertical plane with magnetic meridian.

$$\Rightarrow \tan \phi' = \frac{\tan 60^\circ}{\cos 30^\circ} = 2 \Rightarrow \phi' = \tan^{-1}(2)$$

28. This is the case of periodic EMI

29. The voltage V_L and V_C are equal and opposite so voltmeter reading will be zero.

Also $R = 30 \Omega, X_L = X_C = 25 \Omega$ So $i = \frac{V}{\sqrt{R^2 + (X_L - X_C)^2}} = \frac{V}{R} = \frac{240}{30} = 8 A$

30. theory point

31. $h = \sqrt{2Rh}$

32. $\Delta n = n_1 - n_2 \Rightarrow 10 = \frac{v}{2l_1} - \frac{v}{2l_2} = \frac{v}{2} \left[\frac{1}{l_1} - \frac{1}{l_2} \right] \Rightarrow 10 = \frac{v}{2} \left[\frac{1}{0.25} - \frac{1}{0.255} \right] \Rightarrow v = 255 \text{ m/s}$.

33. For successive refraction through different media $\mu \sin \theta = \text{constant}$. Here as θ is same in the two extreme media, $\mu_1 = \mu_4$

34. formula

35. theory point

36. $\lambda = \frac{h}{\sqrt{2mE}} = \frac{6.6 \times 10^{-34}}{\sqrt{2 \times 9.1 \times 10^{-31} \times 5 \times 1.6 \times 10^{-19}}} = 5.469 \times 10^{-10} \text{ m} = 5.47 \text{ \AA}$

37. Energy of incident light $E = \frac{12375}{2000} = 6.18 \text{ eV}$

According to relation $E = W_0 + eV_0 \Rightarrow V_0 = \frac{(E - W_0)}{e} = \frac{(6.18 \text{ eV} - 5.01 \text{ eV})}{e} = 1.17 \text{ V} \approx 1.2 \text{ V}$

38. Bohr radius $r = \frac{\epsilon_0 n^2 h^2}{\pi Z m e^2}$; $\therefore r \propto n^2$

39. $R = \frac{dN}{dt} \propto N \Rightarrow \frac{R_2}{R_1} = \frac{N_2}{N_1}$; But $\frac{N_2}{N_1} = \left(\frac{1}{2}\right)^{t/2} \Rightarrow \frac{25}{200} = \frac{1}{8} = \left(\frac{1}{2}\right)^3 \Rightarrow \frac{t}{t/2} = 3$

$$\therefore t_{1/2} = \frac{t}{3} = \frac{3}{3} = 1 \text{ hour} = 60 \text{ minutes}$$

$$40. V_{rms} = \frac{V_0}{2} = \frac{200}{2} = 100V$$

191. Given each dozen = 5 rs then 40 dozens = 200

if 30 are rotten that means 2.5 dozens

hence the remaining are 37.5 dozens by selling this he got 20% more than 200

i.e;240 hence cost per dozen = $240/37.5 = 6.40$

192. After replacing a man by a new man the avg got increased hence the new man is efficient in terms of weight.

$$\text{i.e; } 52 + 1/2(50) = 52 + 25 = 77$$

193. Given Sue is 4 years more than Nancy $\Rightarrow 5 - 4 = 1 \text{ part} = 4$

Then after 6 years Sue = $5 * 4 + 6 = 26$ and Nancy = $4 * 4 + 6 = 22$

ratio of Sue's age to Nancy age after 6 years will be $26:22 = 13:11$

194. We know that Distance = Speed \times Time.

Given that distance = 18 miles and time = 20 mins = $20/60 = 1/3$ hours.

So, the speed = Distance/Time = $18/(1/3) = 54$ miles per hour.

195. Sol: Here the logic is +3, +3, +3, +3,..... So on

So the answer for 'SHDUO' is 'PEARL'

196. Find out the code for your answer Here, the given question is ' what do we drink when we are thirsty'

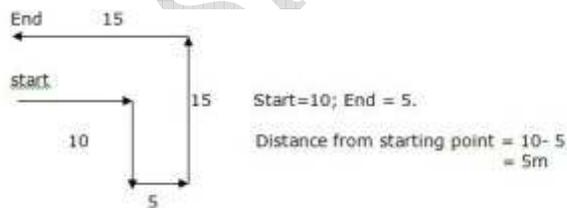
Answer is 'Water' Now, 'Water' is coded as 'Air' So, answer is 'Air'.

197. Pavani's brother's mother is pavani's mother and

Pavani's mother's son's son is Kishore.

That means pavani is Aunt of kishore and kishore is Nephew of Pavani.

198. Explanation:



199. Hours hand moved 6 degrees means

we know that for 1 minute hours hand moves $1/2$ degree then for 6 degrees it moved 12 minute

hence in 12 minutes minutes hand will move $12 \times 6 = 72$ degrees

200. Explanation:

The only word common to I and II is 'clear' and as such, only the code for 'clear' can be ascertained from the given information