NEET 2026

LIVE ANSWER KEY

Last updated · 07:36:39 pm

LIVE

SHARE

TOTAL TRACKED	PHYSICS	CHEMISTRY	BIOLOGY
180 / 180	45 / 45	45 / 45	90 / 90

All | Physics | Chemistry | Biology

All Sets

Sort: Set, Q#

Search Q#, question,

180 questions

01

SET Code 12 - Set A

PHYSICS

A 100-turn closely wound circular coil of radius 5 cm has a magnetic field of 3.14×10^{-3} T at its centre. The current flowing through the coil, and the magnitude of the magnetic moment of this coil are, respectively: (Take $\mu_0 = 4\pi \times 10^{-7}$ T m/A)

- A 2.5 A, 2 A m²
- B 2.5 A, 20 A m²
- C 2 A, 4 A m²
- D 2 A, 10 A m²

02

SET Code 12 - Set A

PHYSICS

Match List I with List II: A. E = hν B. Diffraction and Interference C. λ = h/p D. Compton effect; with I. de Broglie wavelength II. Particle nature of light III. Wave nature of light IV. Energy of photon

- A A-IV, B-III, C-I, D-II
- B A-I, B-IV, C-III, D-II
- C A-IV, B-I, C-II, D-III
- D A-IV, B-III, C-II, D-I

03

SET Code 12 - Set A

PHYSICS

The current I in the circuit shown below is (all diodes are ideal and identical; circuit has 4Ω, 3Ω, 2Ω, 5Ω resistors with 10 V battery):

- A 5/3 A

Link copied to clipboard

04

SET Code 12 - Set A

PHYSICS

The speed of light in vacuum is taken as unity. If light takes 6 min 40 s to reach the Earth from the Sun, the distance between the Sun and the Earth in new unit is:

- A 3×10^8

B 15/2 A

C 1/3 A

D 5/9 A

B 3×10^{10}

C 400

D 500

05

SET Code 12 - Set A

PHYSICS

The following plots show variation of velocity (v) with time (t), of a ball thrown vertically upward, and falling back. Which of the following plots is/are correct? [Plots A-E shown]

A C only

B A and E only

C D only

D B only

06

SET Code 12 - Set A

PHYSICS

In a vernier callipers, 20 VSD coincide with 16 MSD (each division of length 1 mm). The least count of the vernier callipers is:

A 0.01 cm

B 0.1 cm

C 0.02 cm

D 0.2 cm

07

SET Code 12 - Set A

PHYSICS

An ac circuit contains a resistance of 1 kΩ, a capacitor of 0.1 μF and an inductor of 1 mH connected in series. The resonance frequency of the circuit is approximately:

A 10.1 kHz

B 20.7 kHz

C 15.9 kHz

D 13.5 kHz

08

SET Code 12 - Set A

PHYSICS

The figure given below shows a long straight solid wire of circular cross-section of radius 'a' carrying steady current I. The current I is uniformly distributed across its cross-section. The plot which correctly represents the variation of magnetic field (B) with distance (r) from the axis of the conductor in the region is: [4 plots shown]

A Plot (1)

B Plot (2)

C Plot (3)

D Plot (4)

Link copied to clipboard

09

SET Code 12 - Set A

PHYSICS

A uniform metallic wire having resistance 4 Ω is bent to form a square loop (ABCD). A resistance of 2 Ω is connected between points B and D and a battery of 2 V is connected across points A and C. The value of current (I) is:

- A 2 A
- B 4 A
- C 8 A
- D 4.5 A

10

SET Code 12 - Set A

PHYSICS

An unknown nucleus has a nuclear density of 2.29×10^{17} kg/m^3 and mass of 19.926×10^{-27} kg. Its mass number A is approximately: (Take $R_0 = 1.2 \times 10^{-15}$ m, $4\pi = 12.56$)

- A 12
- B 19
- C 20
- D 16

11

SET Code 12 - Set A

PHYSICS

A rectangular wire loop of sides 8 cm and 3 cm with a small cut, is moving out of a region of uniform magnetic field of magnitude 0.3 T directed normal to the plane of the loop. The emf developed across the cut, if the velocity of the loop is 2 cm s^{-1}, in a direction normal to the shorter side of the loop, will be:

- A 1.8×10^{-4} volt
- B 1.2×10^{-4} volt
- C 1.3×10^{-4} volt
- D 4.8×10^{-4} volt

12

SET Code 12 - Set A

PHYSICS

A galvanometer of resistance 100 Ω gives full scale deflection for a current of 1 mA. It is converted into an ammeter of range 0–10 A. The shunt required is:

- A 0.01 Ω
- B 0.10 Ω
- C 0.001 Ω
- D 1.0 Ω

13

SET Code 12 - Set A

PHYSICS

In Young's double slit experiment, using monochromatic light of wavelength λ, the intensity of light at a point on the scree the path difference is λ is K units. The intensity

Link copied to clipboard

14

SET Code 12 - Set A

PHYSICS

The magnitude and direction of the acceleration produced in a body of mass 5 kg when two perpendicular forces 8 N and 6 N act on it, are respectively:

of light at a point where the path difference is $\lambda/3$ will be:

- A K/4
- B K
- C K/2
- D 2K

- A 2 m s^{-2}, $\tan^{-1}(3/4)$ with 6 N force
- B 2 m s^{-2}, $\tan^{-1}(4/3)$ with 8 N force
- C 2 m s^{-2}, $\tan^{-1}(3/4)$ with 8 N force
- D 20 m s^{-2}, $\tan^{-1}(4/3)$ with 8 N force

15

SET Code 12 - Set A

PHYSICS

Five capacitors of capacitances $C_1 = C_2 = C_3 = C_4 = 10\ \mu F$ and $C_5 = 2.5\ \mu F$ are connected as shown, along with a battery of 50 V. The equivalent capacitance and the charges on each capacitor respectively are:

- A 5 µF, 125 µC on all capacitors
- B 5 µF, 250 µC on all capacitors
- C 4 µF, 250 µC on C_1 to C_4 and 125 µC on C_5
- D 5 µF, 125 µC on C_1 to C_4 and 25 µC on C_5

16

SET Code 12 - Set A

PHYSICS

In a metre bridge experiment, the positions of the cell, E, and galvanometer, G, are interchanged. We shall observe in the galvanometer:

- A Only the right-sided deflection
- B Only the left-sided deflection
- C There will be no deflection irrespective of the position of the jockey
- D Both right-sided and left-sided deflection and at balance point, no deflection

17

SET Code 12 - Set A

PHYSICS

The power of a crane, which lifts a mass of 1000 kg to a height of 20 m in 10 s is: ($g = 9.8\ m/s^2$)

- A 19.6 W
- B 39.2 W
- C 39.2 kW
- D 19.6 kW

Link copied to clipboard

18

SET Code 12 - Set A

PHYSICS

Match List I with List II: A. Young's Modulus B. Compressibility C. Bulk Modulus D. Poisson's Ratio; with I. $(\Delta d/\Delta L)(L/d)$ II. $FL/(A \cdot \Delta L)$ III. $-(1/\Delta P)(\Delta V/V)$ IV. $-P(V/\Delta V)$

- A A-I, B-IV, C-III, D-II
- B A-IV, B-I, C-II, D-III
- , B-II, C-I, D-IV

D A-II, B-III, C-IV, D-I

19

SET Code 12 - Set A

PHYSICS

In a concave lens, a ray of light emanating from the object parallel to the principal axis of the lens, after refraction:

A emerges parallel to the principal axis.

B appears to diverge from the first principal focus.

C passes through 2F, which is the radius of curvature of the lens.

D passes through the second principal focus.

20

SET Code 12 - Set A

PHYSICS

A thin wire of length 'L' and linear mass density 'm' is bent into a circular ring (in x-y plane) with centre 'C'. The moment of inertia of the ring about an axis yy' will be:

A $3mL^3/8\pi^2$

B $3mL^3/(8\pi)$

C $3mL^2/8\pi^2$

D $3mL^2/(8\pi)$

21

SET Code 12 - Set A

PHYSICS

Each side of a metallic cube of mass 5.580 kg is measured to be 9.0 cm. Keeping the significant figures in view, the density of the material of the cube can be best expressed as $X \times 10^3$ kg m^{-3}, where the value of X is:

A 7.654

B 7.7

C 7.65

D 7.6

22

SET Code 12 - Set A

PHYSICS

For a travelling harmonic wave $y(x,t) = 2.0 \cos 2\pi(10t - 0.0080x + 0.35)$, where x and y are in cm and t in s. The phase difference between oscillatory motion of two points separated by a distance of 0.5 m is:

A 8π rad

B 0.08π rad

C 0.008π rad

D 0.8π rad

23

SET Code 12 - Set A

PHYSICS

A ray of monochromatic light is passing through an equilateral prism (ABC). The refract

Link copied to clipboard

(QR) is parallel to its base (BC) and the angle of

24

SET Code 12 - Set A

PHYSICS

In the circuit shown (half-wave/full-wave ype), the voltage appearing across the

incidence (i) is 50°. Then the angle of deviation (δ) is:

- A 40°
- B 45°
- C 55°
- D 35°

diode D will be of the form: [4 waveforms shown]

- A Waveform (1)
- B Waveform (2)
- C Waveform (3)
- D Waveform (4)

25

SET Code 12 - Set A

PHYSICS

For a simple pendulum, having time period T, the variation of kinetic energy (K.E.) with time (t) is represented by: [4 plots shown]

- A Plot (1)
- B Plot (2)
- C Plot (3)
- D Plot (4)

AWAITING VERIFIED ANSWER

26

SET Code 12 - Set A

PHYSICS

A resistor is connected to a battery of 12 V emf and internal resistance 2 Ω. If the current in the circuit is 0.6 A, the terminal voltage of the battery is:

- A 10 V
- B 10.8 V
- C 12 V
- D 1.2 V

27

SET Code 12 - Set A

PHYSICS

The amount of work done to raise a mass 'm' from the surface of the Earth to a height equal to the radius of the Earth 'R', will be:

- A 2 mgR
- B mgR
- C mgR/4
- D mgR/2

Link copied to clipboard

28

SET Code 12 - Set A

PHYSICS

An electric heater supplies heat to a system at a rate of 100 W. If the system performs work at a rate of 75 J/s, then the rate at which internal energy increases will be:

- A 125 W
- B 100 W
- C 25 W

D 75 W

29

SET Code 12 - Set A

PHYSICS

A room heater is rated 400 W, 220 V. If the supply voltage drops to 200 V, what will be the power consumed (approximately)?

A 121 W

B 331 W

C 200 W

D 400 W

30

SET Code 12 - Set A

PHYSICS

When a ruler falls vertically, 5 different persons catch it with different reaction times ($g = 9.8\ m\ s^{-2}$): A: 0.20 s, B: 0.22 s, C: 0.18 s, D: 0.19 s, E: 0.21 s. What is the correct order of the distance travelled by the ruler for each person?

A C > D > A > B > E

B C > D > A > E > B

C B > E > A > C > D

D B > E > A > D > C

31

SET Code 12 - Set A

PHYSICS

Consider two uncharged capacitors of equal capacitance 200 pF. One of them is charged by a 100 V supply and disconnected. Now this capacitor is connected to the uncharged capacitor. The amount of electrostatic energy lost in the process is:

A 1.0×10^{-6} J

B 0.5×10^{-6} J

C 0.5 J

D 1.0 J

32

SET Code 12 - Set A

PHYSICS

Savitha, a XI standard student, while conducting an experiment to determine the effective length of a simple pendulum L, notes down the data of time taken to complete 30 oscillations as 60 s and hence calculates the length of the simple pendulum as: (Take $\pi^2 = 9.8$ and $g = 9.8\ m/s^2$)

A 2 m

B 0.75 m

C 1.5 m

D 1 m

33

SET Code 12 - Set A

PHYSICS

The peak value of an alternating curren
and frequency is 60 Hz. How long will the

Link copied to clipboard

34

SET Code 12 - Set A

PHYSICS

erence and diffraction, light energy is redistributed. Statements: A. As there is no gain

current, starting from zero, take to reach the peak value?

- A 1/240 s
- B 1/30 s
- C 1/120 s
- D 1/60 s

or loss of energy, these phenomena are consistent with the principle of conservation of energy. B. Diffraction and interference are characteristics exhibited only by light waves.

- A A is true, but B is false
- B A is true and B is also true
- C A is false, but B is true
- D Both A and B are false

35

SET Code 12 - Set A

PHYSICS

A box of mass 15 kg is kept on the floor of a stationary trolley. The coefficient of static friction between the box and the trolley is 0.12. Keeping the box in stationary state over the trolley, the maximum acceleration with which the trolley can be moved horizontally in m s^{-2} is: ($g = 10\ m/s^2$)

- A 1.5
- B 1.8
- C 2.1
- D 1.2

36

SET Code 12 - Set A

PHYSICS

The sum of kinetic energy and potential energy of a simple pendulum bob is 0.02 joule. The speed of the simple pendulum bob at equilibrium position is approximately: (Consider mass of the bob = 20 g)

- A 1.41 m/s
- B 14.1 m/s
- C 0.2 m/s
- D 2.0 m/s

37

SET Code 12 - Set A

PHYSICS

Four statements (A is mass number): A. Volume of a nucleus is proportional to A^(1/3). B. Volume of a nucleus is proportional to A. C. Difference in mass of an atom and its nucleus is called the mass defect. D. Difference in mass of a nucleus and its constituents is called the mass defect. Choose correct.

Link copied to clipboard

38

SET Code 12 - Set A

PHYSICS

The angular speed of a flywheel is increased from 600 rpm to 1200 rpm in 10 s. The number of revolutions completed by the flywheel during this time is:

- A 600
- B 900

A B and D are true, but A and C are false

B A and D are true, but B and C are false

C A and C are true, but B and D are false

D B and C are true, but A and D are false

C 300

D 150

39

SET Code 12 - Set A

PHYSICS

A submarine is designed to withstand an absolute pressure of 100 atm. How deep can it go below the water surface? (Density of water = 1000 kg m^{-3}, 1 atm = 1×10^5 Pa, g = 10 m/s^2)

A 9900 m

B 99 m

C 9000 m

D 990 m

40

SET Code 12 - Set A

PHYSICS

Match List I (Electromagnetic wave) with List II (Production): A. Microwave B. Visible light C. Gamma rays D. Infra-red rays; I. Electrons emitting light when moving from higher to lower energy level II. Radioactive decay of nucleus III. Vibration of atoms and molecules IV. Klystron valve or magnetron valve

A A-III, B-I, C-II, D-IV

B A-III, B-IV, C-I, D-II

C A-IV, B-III, C-II, D-I

D A-IV, B-I, C-II, D-III

41

SET Code 12 - Set A

PHYSICS

Which of the following statements are correct? A. Inside a conductor, the electrostatic field is zero. B. Electric field at the surface of a charged conductor does not depend on its surface charge density. C. The interior of a charged conductor can have no excess charge in the static situation. D. At the surface of a charged conductor, the electrostatic field must be normal to the surface at every point. E. The electrostatic potential is zero everywhere inside a charged conductor.

A C, D and E only

B A, B and D only

42

SET Code 12 - Set A

PHYSICS

For a metal of work function 6.6 eV, which of the following wavelengths of incident radiation does NOT give rise to the photoelectric effect? (Take Planck's constant as 6.6×10^{-34} J s)

A 200 nm

B 150 nm

C 100 nm

nm

Link copied to clipboard

C A, C and D only

D A, C and E only

43

SET Code 12 - Set A

PHYSICS

In the first excited state of hydrogen atom, the energy of its electron is −3.4 eV. The radial distance of the electron from the hydrogen nucleus in this case is approximately: (1 eV = 1.6×10^{-19} J, e = 1.6×10^{-19} C, $1/4\pi\varepsilon_0 = 9\times10^9$ N m²/C²)

A 2.1×10^{-8} m

B 2.1×10^{-11} m

C 2.1×10^{-9} m

D 2.1×10^{-10} m

44

SET Code 12 - Set A

PHYSICS

Two statements: A. When the forward bias voltage across a p-n junction diode increases above a certain threshold voltage, the diode current increases significantly. B. This current is called reverse saturation current.

A Both Statements A and B are false

B Statement A is true, but Statement B is false

C Both Statements A and B are true

D Statement A is false, but Statement B is true

45

SET Code 12 - Set A

PHYSICS

A flask contains argon and chlorine in the ratio of 2:1 by mass. The temperature of the mixture is 27°C. The ratio of root mean square speed of the molecules of the two gases (V^Ar_rms / V^Cl_rms) is: (Atomic mass of argon = 40.0 u; molecular mass of chlorine = 70.0 u)

A √7/2

B 7/2

C 7/4

D 2/√7

46

SET Code 12 - Set A

CHEMISTRY

Match List I (reactant → product) with List II (reagent): A. C_6H_5-CH(CH_3)-OH on benzene ring (cumene → phenol) B. CH_3COOH → CH_3CH_2OH C. $CH_3CH_2CH_2OH$ → CH_3-CH=CH_2 D. Benzene → cyclohexane; I. (i) oleum, (ii) NaOH, (iii) H^+ II. (i) O_2, (ii) H_3O^+ III. (i) CH_3OH/H^+, (ii) H_2/catalyst IV. (i) conc. H_2SO_4, Δ, (ii) H^+/H_2O

A A-I, B-III, C-IV, D-II

B A-II, B-IV, C-III, D-I

C A-II, B-III, C-I, D-IV

D A-II, B-III, C-IV, D-I

Link copied to clipboard

47

SET Code 12 - Set A

CHEMISTRY

The major product Z formed in the following sequence: $C_2H_6 \rightarrow (Cl_2/UV)$ X (monochloro product) $\rightarrow (NaNO_2)$ Y $\rightarrow (HCl/H_2O)$ Z

A C_2H_5-N=N-OH

B C_2H_5OH

C $C_2H_5NO_2$

D $C_2H_5NH_2$

48

SET Code 12 - Set A

CHEMISTRY

In a qualitative analysis, Bi^{3+} is detected by appearance of precipitate of BiO(OH)(s). Calculate pH when the equilibrium BiO(OH)(s) $\rightleftharpoons BiO^+(aq) + OH^-(aq)$ exists at 298 K. $K = 4 \times 10^{-10}$. (Given: log 2 = 0.3010)

A 4.699

B 8.714

C 9.301

D 5.286

49

SET Code 12 - Set A

CHEMISTRY

When 1 dm^3 of CO_2 gas is passed over hot coke, the volume of gaseous mixture after complete reaction at STP becomes 1.4 dm^3. The composition of the gaseous mixture at STP is:

A 0.6 dm^3 of CO, 0.8 dm^3 of CO_2

B 0.8 dm^3 of CO, 0.8 dm^3 of CO_2

C 0.8 dm^3 of CO, 0.6 dm^3 of CO_2

D 0.6 dm^3 of CO, 0.4 dm^3 of CO_2

50

SET Code 12 - Set A

CHEMISTRY

Match List I (Quantum Numbers n,l) with List II (Orbital): A. n=2, l=1 B. n=4, l=0 C. n=5, l=3 D. n=3, l=2; I. 3d II. 2p III. 4s IV. 5f

A A-II, B-III, C-IV, D-I

B A-I, B-II, C-III, D-IV

C A-IV, B-II, C-III, D-I

D A-II, B-III, C-I, D-IV

51

SET Code 12 - Set A

CHEMISTRY

The number of chlorine atoms present in the organic products X and Y of the following reactions, respectively, are: Benzene + $6Cl_2$ $\rightarrow$(Anhydr. $AlCl_3$, dark, cold) X; Benzene + $3Cl_2$ $\rightarrow$(UV, 500 K) Y

52

SET Code 12 - Set A

CHEMISTRY

In the following reaction sequence: $CH_3CH_2CH_2$-OH + $PCl_5 \rightarrow CH_3CH_2CH_2Cl$ + X + HCl; $CH_3CH_2CH_2Cl \rightarrow$(alc. KOH, Δ) $\rightarrow$ propene $\rightarrow (HBr/(C_6H_5CO)_2O_2)$ Z. X and Z respectively are:

Link copied to clipboard

A 3 and 6

B 6 and 6

C 6 and 3

D 3 and 3

A $X = POCl_3$; $Z = CH_3$-CH(Br)-CH_3

B $X = H_3PO_3$; $Z = CH_3CH_2CH_2$-Br

C $X = H_3PO_3$; $Z = CH_3$-CH(Br)-CH_3

D $X = POCl_3$; $Z = CH_3CH_2CH_2$-Br

53

SET Code 12 - Set A

CHEMISTRY

Match List I (Transition metal/compound/complex) with List II (Catalytic Role): A. V_2O_5 B. Fe C. $PdCl_2$ D. Ni complex; I. Preparation of ammonia from N_2/H_2 mixture II. Polymerisation of alkynes III. Preparation of H_2SO_4 from SO_2 IV. Oxidation of ethyne to ethanal

A A-III, B-IV, C-I, D-II

B A-II, B-I, C-IV, D-III

C A-IV, B-I, C-III, D-II

D A-III, B-I, C-IV, D-II

54

SET Code 12 - Set A

CHEMISTRY

Identify the correct statement about ClF_3:

A It has a trigonal pyramidal geometry with two lone pairs on Cl atom.

B It has T-shaped geometry with two lone pairs on Cl atom.

C It has a planar trigonal geometry with two lone pairs on Cl atom.

D It has T-shaped geometry with three lone pairs on Cl atom.

55

SET Code 12 - Set A

CHEMISTRY

Calculate emf of the half cell: Pt(s)|H_2(g, 2 atm)|HCl(aq, 0.02 M); $E°(H_2/H^+)$ = 0 V. (Given: 2.303RT/F = 0.059, log 2 = 0.3010)

A 0.109 V

B 0.035 V

C −0.035 V

D −0.109 V

56

SET Code 12 - Set A

CHEMISTRY

Match List I (Order of reaction) with List II (Unit of rate constant): A. Zero order B. First order C. Second order D. Third order; I. mol^{-1} L s^{-1} II. mol^{-2} L^2 s^{-1} III. s^{-1} IV. mol L^{-1} s^{-1}

A A-IV, B-III, C-II, D-I

B A-I, B-II, C-III, D-IV

C A-IV, B-III, C-I, D-II

D …/, B-II, C-I, D-III

Link copied to clipboard

57

SET Code 12 - Set A

CHEMISTRY

The calculated 'spin-only' magnetic moment of Ti^{2+} ($3d^2$) is:

- A 2.84 BM
- B 5.92 BM
- C 4.90 BM
- D 3.87 BM

58

SET Code 12 - Set A

CHEMISTRY

Two products X and Y are formed in the following reaction sequence: Benzene + CH_3Cl →(Anhydr. $AlCl_3$) W →(dil. HNO_3 + dil. H_2SO_4, warm) X + Y. The suitable method that can be used for separation of products X and Y is:

- A Continuous extraction
- B Differential extraction
- C Fractional distillation
- D Sublimation

59

SET Code 12 - Set A

CHEMISTRY

A bulb is rated at 150 watt, converting 8% energy into light. If energy of one photon is 4.42×10^{-19} J, how many photons are emitted by the bulb per second?

- A 1.35×10^{19}
- B 4.06×10^{19}
- C 2.71×10^{19}
- D 27.2×10^{19}

60

SET Code 12 - Set A

CHEMISTRY

In a test tube containing a salt, a few drops of dilute H_2SO_4 was added, which gave colourless vapours having the smell of vinegar. The vapours turned the blue litmus paper red. Identify the correct anion:

- A Acetate, CH_3COO^-
- B Carbonate, CO_3^{2-}
- C Sulphate, SO_4^{2-}
- D Sulphide, S^{2-}

61

SET Code 12 - Set A

CHEMISTRY

Select the reagents that reduce nitriles to primary amines: A. (i) $LiAlH_4$; (ii) H_2O B. Sn + HCl C. H_2/Ni D. Na(Hg)/C_2H_5OH E. Br_2/aq. NaOH

- A A, B and C only

Link copied to clipboard

62

SET Code 12 - Set A

CHEMISTRY

Identify the INCORRECT statement:

- A Carbon has the ability to form pπ-pπ multiple d with itself.

B A, C and D only

C A, D and E only

D B, D and E only

B ECl_3 (E = B and Al) is a monomer when E = B and a dimer when E = Al.

C Oxygen exhibits only –2 oxidation state.

D The order of catenation property of Group 14 elements is C >> Si > Ge ≈ Sn.

63

SET Code 12 - Set A

CHEMISTRY

Although +3 oxidation state is most common in lanthanoids, cerium still shows +4 oxidation state because:

A Its nearest inert gas is Radon.

B After losing one more electron, it acquires $4f^{14}$ electronic configuration.

C Its atomic number is 61.

D After losing one more electron, it acquires $4f^{0}$ electronic configuration.

64

SET Code 12 - Set A

CHEMISTRY

During Lassaigne's test, the elements present in an organic compound are converted from:

A covalent form to covalent form

B ionic form to ionic form

C covalent form to ionic form

D ionic form to covalent form

65

SET Code 12 - Set A

CHEMISTRY

The number of hydrogen atoms present in 5.4 g of urea is: (Molar mass of urea: 60 g mol^{-1}; N_A: 6.022×10^{23} particles mol^{-1})

A 2.168×10^{23}

B 2.168×10^{22}

C 1.084×10^{22}

D 1.084×10^{23}

66

SET Code 12 - Set A

CHEMISTRY

The pair of molecules that are metamers among the following is:

A $CH_3CH_2CH_2OH$ and CH_3-CH(OH)-CH_3

B $CH_3OCH_2CH_2CH_3$ and $CH_3CH_2OCH_2CH_3$

C H_3C-CO-CH_3 and H_3C-CH_2-CHO

D $CH_3CH_2CH_2CH_2CH_3$ and $(CH_3)_2CHCH_2CH_3$

67

SET Code 1

CHEMISTRY

Link copied to clipboard

SET Code 12 - Set A

CHEMISTRY

Identify the INCORRECT statement:

A $P(C_2H_5)_3$ and $As(C_6H_5)_3$ form $d\pi$-$d\pi$ bond with transition metals.

B Nitrogen can form $d\pi$-$p\pi$ bond with oxygen.

C Nitrogen can form $p\pi$-$p\pi$ multiple bonds with itself.

D Phosphorus, arsenic and antimony show catenation property.

Phenolphthalein is used as an indicator for the titration of sodium hydroxide solution against a standard solution of oxalic acid. The colour change observed at an alkaline pH close to the equivalence point during this titration is:

A pinkish red to yellow

B yellow to pinkish red

C colourless to pink

D pink to colourless

AWAITING VERIFIED ANSWER

69

SET Code 12 - Set A

CHEMISTRY

Match List I with List II (bonds): A. C_2H_4 B. C_2H_2 C. CH_4 D. NH_3; I. 3 σ bonds, 2 π bonds II. 3 σ bonds, one lone pair III. 4 σ bonds IV. 5 σ bonds, 1 π bond

A A-IV, B-I, C-III, D-II

B A-III, B-IV, C-II, D-I

C A-I, B-II, C-IV, D-III

D A-II, B-III, C-I, D-IV

70

SET Code 12 - Set A

CHEMISTRY

At a certain temperature, T (K), during a process, 500 J is absorbed by the system and work of 200 J is done by the system. Then change in internal energy of the system is:

A 700 J

B 300 J

C 400 J

D 500 J

71

SET Code 12 - Set A

CHEMISTRY

Methane reacts with steam at 1273 K in the presence of nickel catalyst to form:

A CO and H_2

B CO and H_2O

C CO_2 and H_2O

Link copied to clipboard

72

SET Code 12 - Set A

CHEMISTRY

Compound P (C_8H_8O) gives a red orange precipitate with 2,4-DNP reagent and does not reduce Fehling's reagent. On drastic oxidation with chromic acid, P gives an aromatic product Q that produces effervescence on treating with aq. $NaHCO_3$. Compounds P and Q, respectively, are:

A P = C_6H_5-CO-CHO; Q = C_6H_5-CO-OH

D CO_2 and H_2

B P = C_6H_5-CO-CH_3 (acetophenone); Q = C_6H_5-COOH (benzoic acid)

C P = p-CH_3-C_6H_4-CHO; Q = HOOC-C_6H_4-COOH

D P = p-CH_3-C_6H_4-CHO (variant); Q = p-CH_3-C_6H_4-COOH

73

SET Code 12 - Set A

CHEMISTRY

A solution of copper sulphate is electrolysed for 10 minutes with a current of 1.5 amperes. The mass of copper deposited at cathode is: (Molar mass of Cu = 63 g mol^{-1}; 1 F = 96487 C mol^{-1})

A 2.4036 g

B 1.7018 g

C 0.5876 g

D 0.2938 g

74

SET Code 12 - Set A

CHEMISTRY

The functional group that can be identified through phthalein dye test is:

A Phenolic

B Alcohol

C Aldehyde

D Carboxylic acid

75

SET Code 12 - Set A

CHEMISTRY

The correct statement with regard to the secondary structure of DNA/RNA is:

A DNA possesses a single strand helix structure and contains uracil as one of the four bases.

B RNA possesses a single strand helix structure and contains thymine as one of the four bases.

C DNA possesses a double strand helix structure and contains thymine as one of the four bases.

D RNA possesses a double strand helix structure and contains uracil as one of the four bases.

Link copied to clipboard

76

SET Code 12 - Set A

CHEMISTRY

Identify the correct statements: A. Molality of 2.5 g ethanoic acid (M=60 g/mol) in 75 g of benzene is 0.556 m. B. Molarity of solution containing 5 g NaOH (M=40 g/mol) in 450 mL is 0.278 M at 298 K. C. Aquatic species are more comfortable in cold water. D. Solubility of gas increases with decrease in pressure. E. For binary mixture A and B with moles n_A and n_B, mole fraction of B is x_B = n_A/(n_A+n_B).

A A and C only

B A, B and C only

and E only

D A and B only

77

SET Code 12 - Set A

CHEMISTRY

Mixture of chloroform and acetone forms a solution with negative deviation from Raoult's law due to:

A formation of hydrogen bonding between acetone and chloroform.

B increase in escaping tendency of molecules of each component.

C stronger intermolecular forces between chloroform molecules than those between chloroform and acetone molecules.

D repulsive forces.

78

SET Code 12 - Set A

CHEMISTRY

At 298 K, a certain buffer solution contains equal concentrations of X^- and HX. K_b for X^- is 10^{-10}. What is the pH of this buffer solution?

A 2

B 10

C 4

D 6

79

SET Code 12 - Set A

CHEMISTRY

Identify the INCORRECT statement:

A The IUPAC name of the element with atomic number 107 is Unnilseptium.

B The largest and the smallest species among Mg, Mg^{2+}, Al and Al^{3+} are Al and Mg^{2+}, respectively.

C The similarity in behaviour of Li with Mg is referred to as 'diagonal relationship'.

D The oxidation state and covalency of Al in $[AlCl(H_2O)_5]^{2+}$ are 3 and 6 respectively.

80

SET Code 12 - Set A

CHEMISTRY

The correct order of increasing metallic character of Na, Be, P, Mg and Si is:

A P < Si < Be < Mg < Na

B Be < Si < P < Mg < Na

C P < Si < Na < Mg < Be

D P < Mg < Be < Si < Na

81

SET Code 12 - Set A

CHEMISTRY

The correct IUPAC name of the compo... CH_2-$CH(C_2H_5)$-CH_2-$CH(CH_3)$-CH_2-CH_3 (3-ethyl,

Link copied to clipboard

82

SET Code 12 - Set A

CHEMISTRY

...t I (Complex/ion) with List II (Shape/geometry): A. $[Pt(Cl_2)(NH_3)_2]$ B.

5-methyl branching on a 7-carbon chain) is:

A 2,4-diethylhexane

B 3,5-diethylhexane

C 3-ethyl-5-methylheptane

D 3-methyl-5-ethylheptane

$[Co(NH_3)_6]Cl_3$ C. $[NiCl_4]^{2-}$ D. $[Fe(CO)_5]$; I. Octahedral II. Trigonal bipyramidal III. Square planar IV. Tetrahedral

A A-I, B-III, C-IV, D-II

B A-III, B-IV, C-I, D-II

C A-IV, B-I, C-III, D-II

D A-III, B-I, C-IV, D-II

83

SET Code 12 - Set A

CHEMISTRY

For a certain reaction R → Product, the plot of concentration [R] vs time has a negative slope (linear). The order of reaction is:

A 0

B 1

C 2

D 2.5

84

SET Code 12 - Set A

CHEMISTRY

Which one of the following is an ambidentate ligand?

A Ethylenediaminetetraacetate ion

B Oxalate

C Ethane-1,2-diamine

D Thiocyanate

85

SET Code 12 - Set A

CHEMISTRY

Consider $2A(g) + B(g) \rightarrow 2D(g)$; $\Delta U^\circ = -10$ kJ mol^{-1} and $\Delta S^\circ = -44$ J K^{-1} at 298 K. Identify the correct option with ΔG° for the reaction and spontaneity at 298 K. ($R = 8.31$ J mol^{-1} K^{-1})

A −1.635 kJ mol^{-1}, spontaneous

B #ERROR!

C −0.63568 kJ mol^{-1}, spontaneous

D #ERROR!

86

SET Code 12 - Set A

CHEMISTRY

For a structure showing three oxygen atoms numbered (1) double-bonded to S, (2) negatively charged with lone pair, (3) positively charged with lone pair (ozone-like). The correct formal charges on oxygen atoms numbered 2, 1 and 3 respectively are:

A −1, 0, +1

B 0, +1, −1

C , 0

Link copied to clipboard

D #ERROR!

87

SET Code 12 - Set A

CHEMISTRY

Identify the reaction for which K_p ≠ K_c:

A $H_2(g) + I_2(g) \rightleftharpoons 2HI(g)$

B $N_2(g) + O_2(g) \rightleftharpoons 2NO(g)$

C $N_2(g) + 3H_2(g) \rightleftharpoons 2NH_3(g)$

D $H_2O(g) + CO(g) \rightleftharpoons H_2(g) + CO_2(g)$

88

SET Code 12 - Set A

CHEMISTRY

Given expression for rate constant of a first order reaction at temperature T (K): ln k = 14.34 − (1.25 × 10^4/T). The energy of activation in kcal mol^{-1} for the reaction is: (k in s^{-1}, R = 1.987 cal mol^{-1} K^{-1})

A 12.42

B 14.34

C 18.63

D 24.84

89

SET Code 12 - Set A

CHEMISTRY

The following two reactions give the same foul smelling product Z: $C_2H_5Cl \rightarrow (X)$ Z; $C_2H_5CONH_2 \rightarrow (Br_2, NaOH)$ Y $\rightarrow (CHCl_3$/ethanolic KOH, Δ) Z. X and Z respectively are:

A X = AgCN; Z = C_2H_5CN

B X = KCN; Z = C_2H_5CN

C X = KCN; Z = C_2H_5NC

D X = AgCN; Z = C_2H_5NC

90

SET Code 12 - Set A

CHEMISTRY

Match List I (Complex) with List II (Type of isomerism): A. $[Pt(NH_3)_2Cl_2]$ B. $[Co(en)_3]^{3+}$ C. $[Co(NH_3)_5NO_2]Cl_2$ D. $[Cr(H_2O)_6]Cl_3$; I. Optical II. Solvate III. Geometrical IV. Linkage

A A-III, B-I, C-II, D-IV

B A-I, B-III, C-II, D-IV

C A-III, B-I, C-IV, D-II

D A-II, B-IV, C-III, D-I

91

SET Code 12 - Set A

BIOLOGY

The Evil Quartet' of biodiversity loss includes which of the following?

92

SET Code 12 - Set A

BIOLOGY

Which one of the following is the site for active ... RNA synthesis?

Link copied to clipboard

A Over-exploitation; Alien species invasions; Air pollution; Co-extinctions

B Habitat loss and fragmentation; over-exploitation; Alien species invasions; Co-extinctions

C Habitat loss and fragmentation; Air pollution; Water pollution; Co-extinctions

D Over-exploitation; Alien species invasions; Soil pollution; Co-extinctions

A Nucleolus

B Chromatin

C Centrosome

D Kinetochore

93

SET Code 12 - Set A

BIOLOGY

Match List I (Phase of cell cycle) with List II (Activity): A. G_1 phase B. S phase C. G_2 phase D. M phase; I. Actual cell division occurs II. Cell is metabolically active and continuously grows but does not replicate its DNA III. Synthesis of DNA occurs and the amount of DNA per cell doubles IV. Proteins are synthesized while cell growth continues

A A-II, B-III, C-IV, D-I

B A-III, B-IV, C-I, D-II

C A-I, B-II, C-III, D-IV

D A-IV, B-I, C-II, D-III

94

SET Code 12 - Set A

BIOLOGY

Match List I with List II (productivity definitions): A. Productivity B. Net primary productivity C. Gross primary productivity D. Secondary productivity; I. Gross primary productivity minus respiration losses II. Rate of formation of new organic matter by consumers III. Rate of biomass production IV. Rate of production of organic matter during photosynthesis

A A-I, B-II, C-III, D-IV

B A-III, B-I, C-IV, D-II

C A-III, B-I, C-II, D-IV

D A-I, B-III, C-IV, D-II

95

SET Code 12 - Set A

BIOLOGY

Which of the following statements are correct? A. The Amazon rainforest being cut and cleared for cultivation of soyabeans is an example of habitat loss. B. Steller's sea cow and passenger pigeon became extinct due to over-exploitation by humans. C. The Nile perch introduced into Lake Victoria in East Africa helped in po... growth of cichlid fish in the lake. D. Wa... hyacinth is an invasive species. E. When a

Link copied to clipboard

96

SET Code 12 - Set A

BIOLOGY

Identify the correct statements about biomolecules. A. Lipids are generally water soluble. B. Proteins are polypeptides. C. Polysaccharides are long chains of sugars. D. Adenine and guanine are substituted pyrimidines. E. Almost all enzymes are proteins.

A C, D and E only

species becomes extinct, the plant and animal species associated with it are not affected.

A B, C and D only

B A, B and D only

C A, B and E only

D C, D and E only

B B, C and E only

C B, D and E only

D A, B and C only

97

SET Code 12 - Set A

BIOLOGY

How many ATP and NADPH molecules are required to make one molecule of glucose through the Calvin pathway?

A 18 ATP and 12 NADPH

B 6 ATP and 12 NADPH

C 24 ATP and 18 NADPH

D 12 ATP and 18 NADPH

98

SET Code 12 - Set A

BIOLOGY

Which of the following statements are NOT true regarding restriction endonucleases? A. They are called molecular scissors. B. They are responsible for restricting growth of bacteriophages in E. coli. C. They cut DNA only at the centre of the palindromic sites. D. They remove nucleotides only from the ends of DNA fragments. E. They recognise specific palindromic base-pair sequences.

A A and B only

B D and E only

C C and D only

D A and E only

99

SET Code 12 - Set A

BIOLOGY

Match List I with List II: A. Decomposition B. Detritus C. Mineralisation D. Humification; I. Accumulation of dark coloured amorphous colloidal substance II. Release of inorganic nutrients by the activity of microbes in soil III. Breaking down of complex organic matter into inorganic substances IV. Dead remains of plants and animals including fecal matter

Link copied to clipboard

100

SET Code 12 - Set A

BIOLOGY

In which one of the following are the ovules NOT enclosed by an ovary wall (and remain exposed)?

A Selaginella

B Funaria

C Pinus

A A-I, B-II, C-III, D-IV

B A-IV, B-III, C-I, D-II

C A-III, B-IV, C-II, D-I

D A-III, B-II, C-I, D-IV

D Wolffia

101

SET Code 12 - Set A

BIOLOGY

Match List I (Placentation) with List II (Example): A. Marginal B. Axile C. Parietal D. Basal; I. Mustard II. Pea III. Marigold IV. Lemon

A A-I, B-III, C-II, D-IV

B A-IV, B-II, C-I, D-III

C A-II, B-IV, C-I, D-III

D A-III, B-I, C-IV, D-II

102

SET Code 12 - Set A

BIOLOGY

In angiosperms, root hairs arise from which one of the following regions of the root?

A The root cap zone

B The region of meristematic activity

C The region of elongation

D The region of maturation

103

SET Code 12 - Set A

BIOLOGY

Which one of the following is NOT a characteristic of plant cells in the phase of elongation?

A Increased vacuolation

B Large conspicuous nuclei

C Cell enlargement

D New cell wall deposition

104

SET Code 12 - Set A

BIOLOGY

Which of the following statements are correct with reference to a transcription unit? A. A transcription unit in DNA is defined primarily by three regions: promoter, structural gene and terminator. B. The promoter is said to be located towards the 5'-end of the structural gene. C. The promoter is a DNA sequence that provides binding site for RNA polymerase. D. The promoter defines the template and coding strands. E. The terminator is located towards the 3'-end of the coding strand and it defines the end of the process of transcription.

A A, B, C, D and E

, D and E only

Link copied to clipboard

C A, C, D and E only

D A, B, C and D only

105

SET Code 12 - Set A

BIOLOGY

Alpha-helix is found in which level of protein structure?

A Quaternary structure

B Tertiary structure

C Primary structure

D Secondary structure

106

SET Code 12 - Set A

BIOLOGY

Which of the following statements are correct regarding amino acids? A. They are substituted methanes. B. Serine is an aromatic amino acid. C. Valine is a neutral amino acid. D. Lysine is an acidic amino acid.

A C and D only

B A and B only

C A and C only

D B and C only

107

SET Code 12 - Set A

BIOLOGY

The main function of bulliform cells in grasses is:

A to make the leaf impermeable to fungal spores.

B to perform photosynthesis.

C to minimize water loss during water stress.

D to transport water.

108

SET Code 12 - Set A

BIOLOGY

Find the INCORRECT statement(s) about photosynthesis: A. The water splitting complex is associated with PS I. B. C_4 plants use the C_3 pathway of CO_2 fixation as the main biosynthetic pathway. C. In C_4 plants, photorespiration does not occur. D. C_3 plants exhibit 'Kranz' anatomy. E. ATP synthesis in chloroplast occurs through chemiosmosis.

A B only

B A and D only

C B and C only

D B and E only

Link copied to clipboard

109

SET Code 12 - Set A

110

SET Code 12 - Set A

BIOLOGY

Match List I with List II: A. Conjunctive tissue B. Casparian strips C. Subsidiary cells D. Starch sheath; I. Specialised cells in the vicinity of guard cells II. Endodermal cells rich in starch III. Tissue between xylem and phloem IV. Endodermal cells with suberin deposition

A A-IV, B-III, C-I, D-II

B A-III, B-IV, C-II, D-I

C A-III, B-IV, C-I, D-II

D A-IV, B-III, C-II, D-I

BIOLOGY

Match List I with List II: A. Genetically modified organism B. Thermostable DNA polymerase C. Ti plasmid D. pBR322; I. Agrobacterium tumefaciens II. Bt cotton III. Thermus aquaticus IV. Escherichia coli

A A-II, B-I, C-IV, D-III

B A-I, B-IV, C-III, D-II

C A-II, B-III, C-I, D-IV

D A-I, B-II, C-IV, D-III

111

SET Code 12 - Set A

BIOLOGY

Heterophyllous development in response to environment is an example of which of the following phenomena?

A Dedifferentiation

B Elasticity

C Redifferentiation

D Plasticity

112

SET Code 12 - Set A

BIOLOGY

In racemose inflorescence,

A the main axis terminates in a flower

B the growth is limited

C flowers are borne in an acropetal succession

D flowers are solitary

113

SET Code 12 - Set A

BIOLOGY

Which one of the following disorders is caused by the substitution of Glutamic acid (Glu) by Valine (Val) at the sixth position of the beta globin chain of the haemoglobin molecule?

A Haemophilia

B Thalassemia

114

SET Code 12 - Set A

BIOLOGY

Match List I with List II: A. Incomplete dominance B. Co-dominance C. Pleiotropy D. Polygenic inheritance; I. Human skin colour II. Inheritance of flower colour in Antirrhinum sp. III. Phenylketonuria disease in humans IV. ABO blood groups

A A-II, B-IV, C-III, D-I

Link copied to clipboard

C Sickle-cell anaemia

D Phenylketonuria

B A-I, B-III, C-II, D-IV

C A-II, B-I, C-III, D-IV

D A-I, B-IV, C-III, D-II

115

SET Code 12 - Set A

BIOLOGY

Arrange the following in the correct developmental sequence related to microsporogenesis: A. Microspore tetrads B. Sporogenous tissue C. Pollen grains D. Pollen mother cells

A D, A, C, B

B B, D, C, A

C B, D, A, C

D A, D, C, B

116

SET Code 12 - Set A

BIOLOGY

Arrange the following steps of DNA fingerprinting in a correct sequence: A. Isolation of DNA and its digestion by restriction endonucleases. B. Hybridisation using a labelled VNTR probe. C. Transferring of separated DNA fragments to synthetic membranes. D. Detection of hybridised DNA fragments by autoradiography. E. Separation of DNA fragments by electrophoresis.

A A, E, C, B, D

B A, E, B, C, D

C A, B, D, C, E

D A, D, B, E, C

117

SET Code 12 - Set A

BIOLOGY

Exploring molecular, genetic and species-level diversity for products of economic importance is called:

A Biomagnification

B Biofortification

C Bioremediation

D Bioprospecting

Link copied to clipboard

118

SET Code 12 - Set A

BIOLOGY

Which of the following statements are true with reference to the sex-determination in honeybees? A. An offspring formed from the union of a sperm and an egg, develops as a female (queen or worker). B. An unfertilized egg develops as a male by parthenogenesis. C. A male has half the number of chromosomes than that of a female. D. Males produce sperms by meiosis. E. Honeybees have a haplodiploid sex-determination system.

A B, C, D and E only

B A, B, C and D only

C A, B, D and E only

D A, B, C and E only

119

SET Code 12 - Set A

BIOLOGY

Identify the correct sequence of steps in each cycle of Polymerase Chain Reaction:

A Denaturation → Annealing → Extension

B Denaturation → Extension → Annealing

C Extension → Annealing → Denaturation

D Annealing → Denaturation → Extension

120

SET Code 12 - Set A

BIOLOGY

Which of the following statements are correct with respect to DNA separation, isolation and visualization? A. The cutting of DNA is done by molecular scissors. B. The DNA fragments separate according to their size in an agarose gel, upon electrophoresis. C. The separated DNA fragments can be seen without staining when exposed to UV light. D. The separated DNA fragments, when stained with ethidium bromide, can be seen in visible light.

A A and D only

B B and D only

C B and C only

D A and B only

121

SET Code 12 - Set A

BIOLOGY

The main criteria used for Five Kingdom Classification proposed by R.H. Whittaker (1969) included: A. Cell structure B. Body organization C. Presence of flagellum D. Reproduction E. Phylogenetic relationships

A A, B, D and E only

B A, B, C, D and E

C A, B and E only

D B, C and D only

122

SET Code 12 - Set A

BIOLOGY

Which one of the following is a triploid cell?

A Central cell

B Primary endosperm cell

C Zygote

D Synergid

Link copied to clipboard

123

SET Code 12 - Set A

BIOLOGY

Which of the following statements are correct with reference to packaging of DNA helix? A. Histones are organised to form a unit of eight molecules called histone octamer. B. Histones are negatively charged basic proteins. C. Histones are rich in the basic amino acid residues - lysine and arginine. D. The positively charged DNA is wrapped around the histone octamer to form nucleosome. E. The packaging of chromatin at higher levels requires an additional set of proteins called non-histone chromosomal proteins.

A. A, B and D only

B. A, C and E only

C. C, D and E only

D. B, D and E only

124

SET Code 12 - Set A

BIOLOGY

Which of the following is an in situ conservation method?

A. Sacred Groves

B. Wildlife Safari Parks

C. Botanical Gardens

D. Seed Banks

125

SET Code 12 - Set A

BIOLOGY

In the lac operon, the z gene codes for:

A. transacetylase

B. the repressor of lac operon

C. permease

D. beta-galactosidase

126

SET Code 12 - Set A

BIOLOGY

Match List I (Growth Regulator) with List II (Function/Effect): A. 2,4-D B. GA_3 C. Kinetin D. ABA; I. Brewing industry II. Stimulation of stomatal closure III. Herbicide IV. Nutrient mobilisation

A. A-IV, B-III, C-II, D-I

B. A-I, B-II, C-IV, D-III

C. A-III, B-I, C-IV, D-II

D. A-I, B-IV, C-III, D-II

127

SET Code 1

Link copied to clipboard

SET Code 12 - Set A

BIOLOGY

Arrange the following steps of somatic hybridisation in a correct sequence: A. Digestion of cell walls. B. Isolation of naked protoplasts. C. Fusion of protoplasts to get hybrid protoplast. D. Isolation of single cells from two different varieties of plants. E. Growing of hybrid protoplast to form a new plant.

A. E, A, B, C, D
B. D, A, B, C, E
C. E, B, A, D, C
D. D, B, A, E, C

$2(C_{51}H_{98}O_6) + 145\ O_2 \rightarrow 102\ CO_2 + 98\ H_2O$ + energy. The Respiratory Quotient (RQ) of a biomolecule used for respiration, as per the above equation, would be:

A. Less than 0.5
B. Between 0.5 and 0.95
C. Between 1.25 and 2
D. 1

129

SET Code 12 - Set A

BIOLOGY

Since the origin and diversification of life on Earth, there have been five episodes of mass extinction of species. How is the sixth extinction, which is in progress, different from the previous episodes?

A. The current species extinction rates are far lower than those in previous episodes.
B. The present species extinction rates are 100 to 1000 times faster than in the pre-human times.
C. The present net species extinction rate is zero.
D. The current species extinction rate is nearly 10 times faster than that in previous episodes.

130

SET Code 12 - Set A

BIOLOGY

Match List I with List II: A. Trypsin B. Morphine C. Concanavalin A D. Collagen; I. Intercellular ground substance II. Lectin III. Enzyme IV. Alkaloid

A. A-III, B-IV, C-II, D-I
B. A-I, B-II, C-III, D-IV
C. A-III, B-II, C-IV, D-I
D. A-IV, B-III, C-II, D-I

131

SET Code 12 - Set A

BIOLOGY

Which one of the following statements is NOT true about the universal rules of binomial nomenclature?

Link copied to clipboard

132

SET Code 12 - Set A

BIOLOGY

The enzyme required for carboxylation in the Calvin cycle is:

A. PEP carboxylase

A Both the words in a biological name, when handwritten, are separately underlined or printed in italics.

B The specific epithet in the biological name starts with a small letter.

C **The first word in the biological name represents the specific epithet, while the second component denotes the genus.**

D Biological names are generally in Latin.

B **RuBP carboxylase – oxygenase**

C Carboxypeptidase

D Hexokinase

133

SET Code 12 - Set A

BIOLOGY

Which of the following floral formula is the correct floral formula of Solanaceae family?

A **⊕♂ K(5) C(5) A5 G(2)**

B ⊕♀ K5 C(5) A5 G(2)

C ⊕♂ K(5) C(5) A5 G(2)

D ⊕♂ K5 C5 A5 G(2)

134

SET Code 12 - Set A

BIOLOGY

Which one of the following types of pollination brings genetically different types of pollen grains to the stigma?

A Geitonogamy

B Autogamy

C **Xenogamy**

D Cleistogamy

135

SET Code 12 - Set A

BIOLOGY

Match List I (Process) with List II (Location): A. Glycolysis B. ETS C. Accumulation of protons D. Krebs' cycle; I. Inner mitochondrial membrane II. Mitochondrial matrix III. Cytoplasm IV. Intermembrane space

A A-I, B-IV, C-III, D-II

B **A-III, B-I, C-IV, D-II**

C A-IV, B-II, C-I, D-III

136

SET Code 12 - Set A

BIOLOGY

Insertion of a foreign DNA at BamHI site in an E. coli cloning vector pBR322 results in the loss of antibiotic resistance towards:

A Gentamycin

B Ampicillin and tetracycline

C **Tetracycline**

D Ampicillin

Link copied to clipboard

D A-II, B-III, C-IV, D-I

137

SET Code 12 - Set A

BIOLOGY

The sixth mutant codon of beta globin gene causing polymerization of Haemoglobin and change in RBC shape is:

A CAG

B GUG

C AUG

D GAG

138

SET Code 12 - Set A

BIOLOGY

Choose the correct statement regarding GIFT to overcome infertility.

A Ova collected from a female donor are transferred to the uterus of an infertile female.

B It is the transfer of an ovum collected from a donor into the fallopian tube of another female who cannot produce ovum but can provide suitable environment for fertilization and development.

C Early embryos with up to 8 blastomeres are transferred to the uterus of an infertile female.

D Early embryos with up to 8 blastomeres are transferred into the fallopian tube of an infertile female.

139

SET Code 12 - Set A

BIOLOGY

Which one of the following is an appropriate example of 'sexual deceit'?

A Female wasp and fig

B Cuckoo and crow

C Ophrys and bumblebee

D Sea anemone and clown fish

140

SET Code 12 - Set A

BIOLOGY

Evolution of human appears parallel to the progressive development of brain and language skills. The evolution of individual species in the sequence of their appearance is:

A Homo habilis → Homo erectus → Ramapithecus → Neanderthal → Homo sapiens

B Ramapithecus → Homo habilis → Homo erectus → Neanderthal → Homo sapiens

C Homo sapiens → Ramapithecus → Homo habilis → Neanderthal → Homo erectus

D Neanderthal → Ramapithecus → Homo habilis → Homo erectus → Homo sapiens

Link copied to clipboard

141

SET Code 12 - Set A

BIOLOGY

Match List I with List II related to embryonic development: A. The foetus movement starts and hair appears on the head B. The foetus develops limbs and digits C. The foetus develops external genital organs D. The foetus body is covered with fine hair; eyelids separate and eyelashes are formed; I. 24 weeks of pregnancy II. 20 weeks of pregnancy III. 8 weeks of pregnancy IV. 12 weeks of pregnancy

A A-III, B-II, C-IV, D-I

B A-II, B-IV, C-III, D-I

C A-IV, B-II, C-III, D-I

D A-II, B-III, C-IV, D-I

142

SET Code 12 - Set A

BIOLOGY

A group of researchers procured fish-like animals and observed: A. Endoskeleton was made of cartilage. B. Ectoparasitic; found attached on fish skin with circular sucking mouth. C. Paired fins and scales were absent, but 7 pairs of gill slits were present. Which species fits these characters?

A Exocoetus sp.

B Branchiostoma sp.

C Petromyzon sp.

D Scoliodon sp.

143

SET Code 12 - Set A

BIOLOGY

Spermatogonia undergo a series of cell divisions to produce sperms. Select the correct statements: A. Spermatogonia always undergo meiotic cell division. B. Primary spermatocytes divide mitotically to produce secondary spermatocytes. C. Secondary spermatocytes, through their second meiotic division, produce haploid spermatids. D. Spermatids produce spermatozoa through mitosis. E. Spermatids transform into spermatozoa by spermiogenesis.

A C and E only

B A, C and E only

C B, C and D only

D A and E only

144

SET Code 12 - Set A

BIOLOGY

What is the probability of having children with 'O' blood group, where both mother and father are heterozygous for 'A' and 'B' blood group, respectively?

A 50%

B 0%

C 75%

D 25%

Link copied to clipboard

145

SET Code 12 - Set A

BIOLOGY

Arrange the following events occurring in Renin-Angiotensin mechanism in the correct order: A. Increase in blood pressure and Glomerular filtration rate. B. Reabsorption of Na^+ and water from distal parts of tubule due to Aldosterone. C. Fall in Glomerular filtration rate. D. Vasoconstriction by Angiotensin II and release of Aldosterone. E. Renin converts Angiotensinogen into Angiotensin I, followed by Angiotensin II.

A C, A, B, D, E

B A, D, B, E, C

C A, C, E, B, D

D C, E, D, B, A

146

SET Code 12 - Set A

BIOLOGY

Match List I (Respiratory Volume) with List II (Capacity in mL): A. ERV (Expiratory Reserve Volume) B. RV (Residual Volume) C. IRV (Inspiratory Reserve Volume) D. TV (Tidal Volume); I. 2500 - 3000 mL II. 500 mL III. 1000 - 1100 mL IV. 1100 - 1200 mL

A A-III, B-I, C-IV, D-II

B A-I, B-III, C-II, D-IV

C A-III, B-IV, C-I, D-II

D A-I, B-II, C-III, D-IV

147

SET Code 12 - Set A

BIOLOGY

Match List I with List II: A. Progestasert B. Multiload 375 C. Diaphragm D. Saheli; I. Barrier made of rubber used by females II. Oral contraceptive III. Hormone releasing IUD IV. Copper releasing IUD

A A-III, B-IV, C-I, D-II

B A-III, B-IV, C-II, D-I

C A-IV, B-II, C-I, D-III

D A-IV, B-III, C-I, D-II

148

SET Code 12 - Set A

BIOLOGY

Non-membrane bound cell organelles found in both prokaryotic and eukaryotic cells are:

A Centrosomes

B Ribosomes

C Lysosomes

D Mitochondria

149

SET Code 12 - Set A

BIOLOGY

Ecological pyramids represent the relationship between organisms at different trophic levels

150

SET Code 12 - Set A

BIOLOGY

The flightless bird with forelimbs modified as paddle-like structures suited for swimming is

Link copied to clipboard

and they are generally inverted for:

A Pyramid of energy in pond ecosystem

B Pyramid of biomass in sea

C Pyramid of number in grassland

D Pyramid of biomass in grassland

known as:

A Struthio

B Psittacula

C Neophron

D Aptenodytes

151

SET Code 12 - Set A

BIOLOGY

Match List I (Bioactive molecules) with List II (Importance): A. Streptokinase B. Statins C. Lipases D. Cyclosporin A; I. Immunosuppressive agent II. Removal of clots from the blood vessels III. Blood cholesterol-lowering agent IV. Detergent formulations

A A-II, B-III, C-IV, D-I

B A-IV, B-III, C-II, D-I

C A-II, B-III, C-I, D-IV

D A-III, B-II, C-IV, D-I

152

SET Code 12 - Set A

BIOLOGY

Choose the correct statements regarding cell organelles and their inclusions: A. The endomembrane system includes Golgi complex, endoplasmic reticulum and mitochondria. B. Rough endoplasmic reticulum bears ribosomes on its surface. C. Both mitochondria and plastids have circular DNA. D. A network of microtubules, microfilaments and intermediate filaments present in the cytoplasm is called cytoskeleton. E. Mitochondrion is a single membrane-bound structure.

A C, D and E only

B A and B only

C A, B and C only

D B, C and D only

153

SET Code 12 - Set A

BIOLOGY

Select the set of fishes which belong to the class Osteichthyes:

A Devil fish, Cuttlefish and Hagfish

B Starfish, Hagfish and Cuttlefish

Link copied to clipboard

154

SET Code 12 - Set A

BIOLOGY

In a population of a grasshopper species, the chromosome number of some members is 23 and some other members possess 24 chromosomes. The 23 and 24 chromosome-bearing members in this species are:

A all males

C Flying fish, Angel fish and Fighting fish

D Saw fish, Fighting fish and Dog fish

B all females

C females and males, respectively

D males and females, respectively

155

SET Code 12 - Set A

BIOLOGY

The WBC count of a person's blood sample is 8000/cu.mm. How many eosinophils and lymphocytes would be in the same blood sample approximately?

A 160 - 240/cu.mm and 1600 - 2000/cu.mm, respectively

B 100 - 120/cu.mm and 160 - 200/cu.mm, respectively

C 300 - 500/cu.mm and 500 - 700/cu.mm, respectively

D 300 - 500/cu.mm and 1200 - 1500/cu.mm, respectively

156

SET Code 12 - Set A

BIOLOGY

The toxin proteins isolated from Bacillus thuringiensis, coded by which of the following genes would control cotton bollworms and corn borer, respectively?

A crylAc and crylIIAb

B crylAc and crylIAb

C crylAc and crylAb

D crylIAb and crylAc

157

SET Code 12 - Set A

BIOLOGY

Match List I (Drug) with List II (Effect): A. Nicotine B. Morphine C. Heroin D. Cocaine; I. Causes sense of euphoria and increased energy II. Stimulates adrenal gland to release catecholamines into blood circulation III. Effective sedative and painkiller IV. A depressant; slows down body function

A A-III, B-II, C-IV, D-I

B A-II, B-III, C-IV, D-I

C A-II, B-III, C-I, D-IV

D A-III, B-II, C-I, D-IV

158

SET Code 12 - Set A

BIOLOGY

Match List I with List II related to muscular/skeletal system: A. Tetany B. Arthritis C. Myasthenia gravis D. Muscular dystrophy; I. Inflammation of joints II. Autoimmune disorder affecting neuromuscular junction III. Wild contraction in muscle due to low Ca^{++} in body fluid IV. Progressive degeneration of skeletal muscle

A A-III, B-I, C-II, D-IV

B A-IV, B-III, C-II, D-I

B-II, C-III, D-IV

Link copied to clipboard

D A-III, B-II, C-I, D-IV

159

SET Code 12 - Set A

BIOLOGY

In which animal do haploid cells divide mitotically to produce gametes?

A Male honeybees

B Male grasshoppers

C Male earthworms

D Male frogs

160

SET Code 12 - Set A

BIOLOGY

In humans, respiration occurs in the following steps. Arrange these steps in the correct order: A. Diffusion of O_2 and CO_2 between blood and tissues B. Diffusion of O_2 and CO_2 across alveolar membrane C. Pulmonary ventilation by which atmospheric air is drawn in and CO_2 rich alveolar air is released out D. Cellular respiration E. Transport of gases by the blood

A A, B, C, D, E

B E, A, C, D, B

C C, A, B, E, D

D C, B, E, A, D

161

SET Code 12 - Set A

BIOLOGY

Arrange the following cell layers/structures around the female gamete, from outer to inner side: A. Zona pellucida B. Perivitelline space C. Corona radiata D. Plasma membrane of ovum

A C, A, D, B

B C, A, B, D

C D, B, A, C

D A, C, B, D

162

SET Code 12 - Set A

BIOLOGY

The human protein named α-1-antitrypsin, obtained from transgenic animals, is used for the treatment of:

A Alzheimer's disease

B Emphysema

C Rheumatoid arthritis

D Cystic fibrosis

163

SET Code 12 - Set A

164

SET Code 12 - Set A

BIOLOGY

Link copied to clipboard

Select the correct statements regarding cell membrane in eukaryotic cell. A. Membrane of human RBCs has approximately 52% protein. B. Major phospholipids are arranged in a bilayer. C. Extensions of the plasma membrane into the cell form mesosomes. D. Tails towards the inner part of lipids are hydrophobic and thus protected from aqueous medium. E. Glycocalyx is present on the outer surface of the plasma membrane.

A. A, C and E only
B. B, C and E only
C. C, D and E only
D. A, B and D only

AWAITING VERIFIED ANSWER

Male frogs can be distinguished from female frogs due to the presence of: A. Bulging eyes B. Vocal sacs C. Webbed digits in feet D. Copulatory pad on first digit of fore limbs E. Olive green-coloured skin with dark irregular spots

A. B and D only
B. B and C only
C. A and B only
D. C and E only

165

SET Code 12 - Set A

BIOLOGY

Which of the following equations depicts Verhulst-Pearl logistic population growth?

A. dN/dt = rN((K-N)/K)
B. dN/dt = rN((K+N)/K)
C. dN/dt = rN(K/(K-N))
D. dN/dt = rN((K-N)/N)

AWAITING VERIFIED ANSWER

166

SET Code 12 - Set A

BIOLOGY

Choose the correct statements regarding frog's anatomy: A. Hepatic portal system is the special venous connection between liver and intestine. B. There are twelve pairs of cranial nerves arising from the brain. C. The ureters and oviducts open separately into the cloaca in female frogs. D. Hind-brain consists of cerebellum, medulla oblongata and optic lobes. E. Sinus venosus joins the right atrium of heart.

A. B and D only
B. A, C and E only
C. A, B and C only
D. B and C only

167

SET Code 12 - Set A

BIOLOGY

Select the INCORRECT statements with reference to Rh grouping: A. Erythroblastosis

Link copied to clipboard

168

SET Code 12 - Set A

BIOLOGY

Which of the following statements are correct with reference to human endoskeleton? A.

foetalis is a condition observed having foetus with Rh^- blood and mother with Rh^+ blood. B. Rh antigen is observed on RBCs in the majority of human beings. C. Before blood transfusion, Rh group should also be matched. D. Rh incompatibility is observed when a pregnant mother is Rh^- and the foetus is Rh^+. E. Erythroblastosis foetalis can be avoided by administering anti-Rh antibodies to the mother immediately after the delivery of the second child.

- A A and E only
- B A and B only
- C B and C only
- D C and D only

Human skull is monocondylic. B. The joint between any two adjoining vertebrae is a cartilaginous joint. C. In human beings, the number of cervical vertebrae is seven. D. All ribs except the last 2 pairs are bicephalic. E. The occipital bone of skull is articulated with atlas vertebra.

- A A, B and D only
- B B and E only
- C B, C and E only
- D C, D and E only

169

SET Code 12 - Set A

BIOLOGY

Match List I with List II: A. Cortisol B. Aldosterone C. Cholecystokinin D. Progesterone; I. Stimulates the formation of alveoli in mammary glands II. Produces anti-inflammatory reactions III. Stimulates reabsorption of Na^+ and water from renal tubule IV. Stimulates secretion of pancreatic enzymes and bile juice

- A A-III, B-II, C-IV, D-I
- B A-II, B-III, C-IV, D-I
- C A-IV, B-II, C-I, D-III
- D A-II, B-III, C-I, D-IV

170

SET Code 12 - Set A

BIOLOGY

The following are the stages of life cycle of Plasmodium. Arrange the stages in the proper order: A. The parasites reproduce asexually in RBCs, bursting the cells. B. The parasites reproduce asexually in liver cells, bursting the cells and releasing into blood. C. Gametocytes develop in RBCs. D. Sporozoites reach the liver through the blood. E. Female mosquito injects sporozoites into humans during bite.

- A A, B, C, D, E
- B E, D, B, A, C
- C C, A, B, D, E
- D E, C, D, B, A

171

SET Code 12 - Set A

172

SET Code 12 - Set A

BIOLOGY

Link copied to clipboard

Select the INCORRECT statements: A. Digestive system in Platyhelminthes is incomplete. B. Bilateral symmetry is a characteristic feature of adult Echinoderms. C. Pseudocoelom is possessed by Aschelminthes. D. Notochord is persistent throughout life in the class Chondrichthyes. E. Members of class Reptilia maintain a constant body temperature.

- A B and E only
- B C and D only
- C A and C only
- D B and D only

The specific receptors for neurotransmitters in a synapse are present on:

- A Post-synaptic membrane
- B Pre-synaptic membrane
- C Myelin sheath
- D Schwann cell

173

SET Code 12 - Set A

BIOLOGY

Choose the correct statements regarding muscle contraction: A. A motor neuron carries a signal sent by the Central Nervous System (CNS) to the sarcolemma of the muscle fibre. B. The neural signal generates an action potential which causes the release of Ca^{++} into sarcoplasm. C. Increase in Ca^{++} inactivates the actin for breaking cross bridges. D. Actin binds to the myosin head to form a cross bridge. E. Shortening of sarcomere takes place, by pulling actin filaments towards the centre of 'A' band.

- A A, B, D and E only
- B C and D only
- C C and E only
- D A and B only

174

SET Code 12 - Set A

BIOLOGY

Which of the following is NOT an example of convergent evolution?

- A Eyes of octopuses and mammals
- B Fore limbs of whales and bats
- C Wings of butterflies and birds
- D Flippers of penguins and dolphins

175

SET Code 12 - Set A

BIOLOGY

The JGA (Juxta Glomerular Apparatus) is a special sensitive region formed by cellular

Link copied to clipboard

176

SET Code 12 - Set A

BIOLOGY

The following reaction depicts the activity of a particular class of enzymes: substrate (C-C with

modifications in _____ related to the same nephron.

A Distal convoluted tubule and efferent renal arteriole

B Proximal convoluted tubule and afferent renal arteriole

C **Distal convoluted tubule and afferent renal arteriole**

D Proximal convoluted tubule and efferent renal arteriole

X, Y attached) →(E) X-Y + C=C (forms a double bond by elimination). Identify the enzyme class 'E':

A Ligases

B **Lyases**

C Isomerases

D Transferases

177

SET Code 12 - Set A

BIOLOGY

Match List I with List II: A. Molluscs B. Reptiles C. Adult amphibians D. Amoeba; I. Pulmonary respiration only II. Branchial respiration III. Cellular respiration IV. Pulmonary and Cutaneous respiration

A **A-III, B-II, C-I, D-IV**

B A-II, B-I, C-IV, D-III

C A-II, B-I, C-III, D-IV

D A-I, B-II, C-III, D-IV

178

SET Code 12 - Set A

BIOLOGY

What is the reason behind production of large holes in 'Swiss Cheese'?

A The production of large amount of CO_2 by Clostridium butylicum

B The production of large amount of CO_2 and H_2 by Trichoderma polysporum

C The production of large amount of CO_2 and H_2 by lactic acid bacteria called Lactobacillus

D **The production of large amount of CO_2 by Propionibacterium sharmanii**

179

SET Code 12 - Set A

BIOLOGY

Match List I with List II with respect to chronology of evolution of life forms: A. About 65 mya B. About 500 mya C. About 350 mya D. About 320 mya; I. Jawless fish probably evolved II. The dinosaurs suddenly disappeared from the earth III. Seaweeds and few plants probably existed IV. Invertebrates were formed and became active

A A-II, B-IV, C-I, D-III

180

SET Code 12 - Set A

BIOLOGY

Choose the correct statements regarding population interactions between two species: A. In both parasitism and commensalism, only one species benefits and the other species is harmed. B. Both species benefit in mutualism. C. Both species benefit in commensalism. D. In parasitism, only one species benefits and the other species is harmed. E. In amensalism, one harmed and the other is unaffected.

Link copied to clipboard

B A-II, B-IV, C-III, D-I

C A-I, B-II, C-III, D-IV

D A-III, B-IV, C-I, D-II

A A and D only

B A and B only

C B and E only

D B, D and E only

Auto-refreshes every 60 seconds · Data updates from AglaSem in real time