AIIMS MBBS Entrance Exam - 2014
Physics (Solved Paper)

1. A closely wound solenoid of 2000 turns and area of cross-section 1.5×10^{-4} m^2 carries a current of 2.0 A. It is suspended through its centre and perpendicular to its length, allowing it to turn in a horizontal plane in a uniform magnetic field 5×10^{-2} T, making an angle of 30° with the axis of the solenoid. The torque on the solenoid will be

   (a) 3×10^{-3} N – m

   (b) 1.5×10^{-3} N – m

   (c) 1.5×10^{-2} N – m

   (d) 3×10^{-2} N – m

2. A freshly prepared radioactive source of half-life 2 h emits radiation of intensity which is 64 times the permissible safe level. Calculate, the minimum time after which it would be possible to work safely with this source.

   (a) 12 h
   (b) 24 h
   (c) 6 h
   (d) 130 h

3. A ball is dropped from a high rise platform t = 0 starting from rest. Afte4r 6 s another ball is thrown downwards from the same platform with a speed υ. The two balls meet at t = 18 s. What is the value of υ?

   (a) 74 m/s
   (b) 64 m/s
   (c) 84 m/s
   (d) 94 m/s

4. The thermo emf E (in volts) of a certain thermocouple is found to vary with Q (in C) according to equation $(E = 20Q - \frac{Q^2}{20}$, where Q is temperature of the

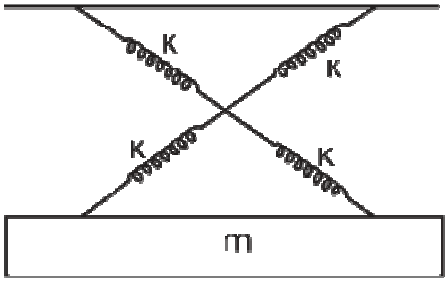
hot function, the cold function being kept at 0°C. Then the neutral temperature of the thermocouple is

(a) 300°C
(b) 400°C
(c) 100°C
(d) 200°C

5. The maximum vertical distance through which a full dressed astronaut can jump on the earth is 0.5 m. Estimate the maximum vertical distance through which he can jump on the moon, which has a mean density $2/3^{rd}$ that of the earth and radius one quarter that of the earth.

(a) 1.5 m
(b) 3 m
(c) 6 m
(d) 7.5 m

6. As shown in figure a simple harmonic motion oscillator having identical four springs has time period



(a) $T = 2\pi\sqrt{\frac{m}{4k}}$

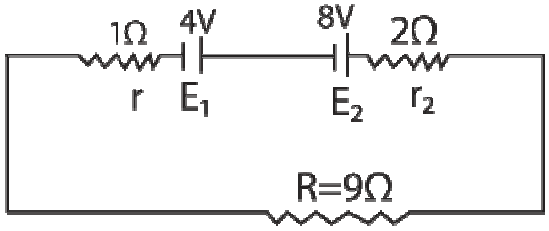
(b) $T = 2\pi\sqrt{\frac{m}{2k}}$

(c) $T = 2\pi\sqrt{\frac{m}{k}}$

(d) $T = 2\pi\sqrt{\frac{m}{8k}}$

7. If there were a reduction in gravitational effect, which of the following forces do you think would change in some respect?
   (a) Magnetic force
   (b) Electrostatic force
   (c) Viscous force
   (d) Archimede's uplift

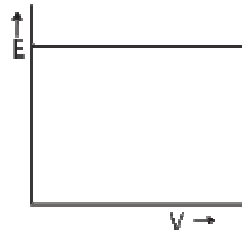
8. Two batteries of emf 4 V and 8 V with internal resistance 1 Ω and 2 Ω respectively are connected to an external resistance R = 9 Ω as shown in figure. The current in circuit and the potential difference between P and Q respectively will be



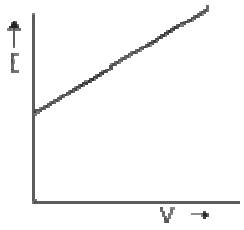
   (a) $\frac{1}{2}$A, 9V
   (b) $\frac{1}{12}$A, 12V
   (c) $\frac{1}{3}$A, 3V
   (d) $\frac{1}{6}$A, 4V

9. The correct graph respectively the relation between energy (E) of photoelectrons and frequency ν of incident light is

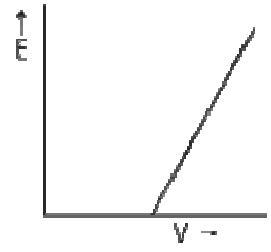
(a)



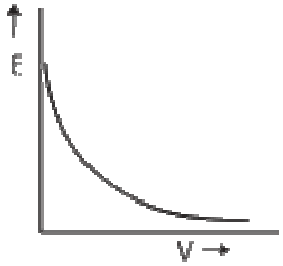
(b)



(c)

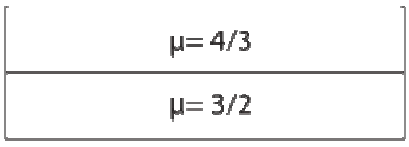


(d)



10. A body at temperature of 728°C and has surface area 5 cm^2, radiates 300 J of energy each minute. The emissivity is
(Given Boltzmann constant = 5.67×10^{-8} Wm^2K^4)
    (a) e = 0.18
    (b) e = 0.02
    (c) e = 0.2
    (d) e = 0.15

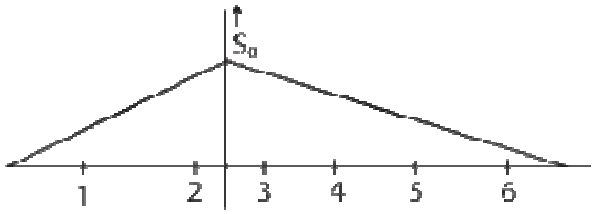
11. Considering normal incidence of ray, the equivalent refractive index of combination of two slabs shown in figure is



(a) 1.8
(b) 1.43
(c) 2
(d) None of the above

12. Three particles having charges in the ratio of 2 : 3 : 5 produce the same point on the photographic film in Thomson experiment. Their masses are in the ratio of
(a) 2 : 3 : 5
(b) 5 : 3 : 2
(c) 15 : 10 : 6
(d) 3 : 5 : 2

13. What will be ratio of speed in first two seconds to the speed in next 4s?



(a) $\sqrt{2}$: 1
(b) 3 : 1
(c) 2 : 1
(d) 1 : 2

14. A black body emits heat at the rate of 20 W. When its temperature is 727°C. Another black body emits heat at the rate of 15 W, when its temperature is 227°C. Compare the area of the surface of the two bodies, if the surrounding is at NTP.
(a) 16 : 1
(b) 1 : 4
(c) 12 : 1
(d) 1 : 12

15. The pressure on a square plate is measured by measuring the force on the plate and the length of the sides of the plate by using the formula $p = \frac{F}{l^2}$. If the maximum errors in the measurement of force and length are 4% and 2% respectively, then the maximum error in the measurement of pressure is
    (a) 1%
    (b) 2%
    (c) 8%
    (d) 10%

16. The transfer ratio β of a transistor is 50. The input resistance of the transistor, when used in the common emitter mode is 1 kΩ. The peak value of the collector alternative current for an input peak voltage of 0.01 V is
    (a) 0.25 μA
    (b) 0.01 μA
    (c) 500 μA
    (d) 100 μA

17. Four resistance 10 Ω, 5 Ω, 7 Ω and 3 Ω are connected so that they form the side of a rectangle AB, BC, CD and DA respectively. Another resistance of 10 Ω is connected across the diagonal AC. The equivalent resistance between A and B is
    (a) 2Ω
    (b) 5Ω
    (c) 7Ω
    (d) 10Ω

18. The velocity of a particle moving in the x-y plane is given by $\frac{dx}{dt} = 8\pi \sin 2\pi t$ and $\frac{dy}{dt} = 5\pi \cos 2\pi t$ where, t = 0 x = 8 and y = 0, the path of the particle is
    (a) a straight line
    (b) an ellipse
    (c) a circle

(d) a parabola

19. A rod of length L is hinged from one end. It is brought to a horizontal position and released. The angular velocity of the rod, when it is in vertical position is

(a) $\sqrt{\frac{2g}{L}}$

(b) $\sqrt{\frac{3g}{L}}$

(c) $\sqrt{\frac{g}{2L}}$

(d) $\sqrt{\frac{g}{L}}$

20. A weight w is suspended from the mid-point of a rope, whose ends are at the same level. In other to make the rope perfectly horizontal, the force applied to each of its ends must be

(a) less than w

(b) equal to w

(c) equal to 2 w

(d) infinitely large

21. A particle moves along a curve of unknown shape but magnitude of force F is constant and always acts along tangent to the curve. Then,

(a) F may be conservative

(b) F must be conservative

(c) F may be non-conservative

(d) F must be non-conservative

22. A block has been place on an inclined plane with the slope angle θ, block slide down the plane at constant speed. The coefficient of kinetic friction is equal to

(a) sin θ

(b) cos θ

(c) g

(d) $\tan\theta$

23. A charge q is located at the centre of a cube. The electric flux through any face is

(a) $\dfrac{\pi q}{6(4\pi\varepsilon_0)}$

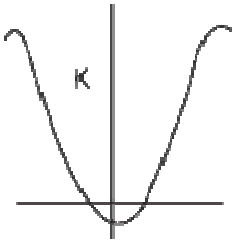
(b) $\dfrac{q}{6(4\pi\varepsilon_0)}$

(c) $\dfrac{2\pi q}{6(4\pi\varepsilon_0)}$

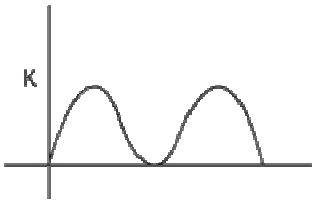
(d) $\dfrac{4\pi q}{\frac{1}{6}(4\pi\varepsilon_0)}$

24. During SHM, a particle has displacement x form mean position. If acceleration. Kinetic energy and excess potential energy are represented by a K and U respectively, the choose the appropriate graph

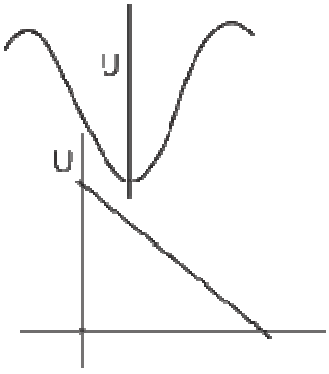
(a)



(b)



(c)



25. The root mean square velocity of hydrogen molecule at 27°C is υ_H and that of oxygen at 402°C is υ_0. then

(a) $v_0 > v_H$

(b) $4v_0 = 9v_H$

(c) $2v_0 = 3v_H$

(d) $9v_0 = 134v_H$

26. A charged spherical conductor a radius a and charge q, is surrounded by another charged concentric sphere of radius b(b > a). The potential difference between conductors is V. When, the spherical conductor of radius b is discharged completely, then the potential difference between conductor will be

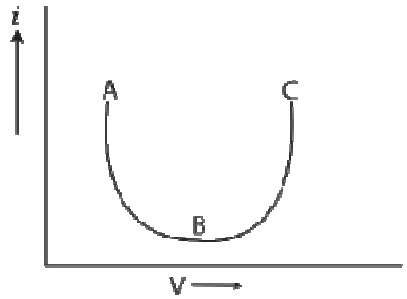
(a) V

(b) $\frac{V_a}{b}$

(c) $\frac{q_1}{4\pi\varepsilon_0 a} - \frac{q_2}{4\pi\varepsilon_0 b}$

(d) None of the above

27. The current-voltage graph for a device is shown in figure. The resistance is negative in region.



(a) AB

(b) BC

(c) ABC
(d) None of these

28. Silver and copper voltmeters are connected in parallel with a battery of emf 12 V. In 30 min 1 g of silver and 1.8 g of copper are liberated. The energy supplied by the battery is
(a) 720 J
(b) 2.41 J
(c) 24.12 J
(d) 4.34×10^4 J

29. At a specific instant emission of radioactive compound is deflected in a magnetic field. The compound can emit
(a) electron
(b) protons
(c) He^{2+}
(d) neutrons

30. A magnet is cut in three equal parts by cutting it perpendicular to its length. The time period of original magnet is T_0 in a uniform magnetic field B. Then, the time period of each part in the same magnetic field is
(a) $\frac{T_0}{2}$
(b) $\frac{T_0}{3}$
(c) $\frac{T_0}{4}$
(d) None of these

31. A 50 Hz AC current of crest value 1 A flows through the primary of a transformer. If the mutual inductance between the primary and secondary be 0.5 H, the crest voltage induced in the secondary is
(a) 75 V
(b) 150 V

(c) 100 V
(d) None of these

32. If the length and are of cross-section of a conductor are doubled, then tits resistance will be
(a) unchanged
(b) halved
(c) doubled
(d) quadrupled

33. According to Wien's law
(a) $\lambda_m T = \text{constant}$
(b) $\frac{\lambda_m}{T} = \text{constant}$
(c) $\lambda_m \sqrt{T} = \text{constant}$
(d) $\frac{\lambda_m}{\sqrt{T}} = \text{constant}$

34. A source of light lies on the angle bisector of two plane mirrors inclined at angle θ. The values of θ, so that the light reflected from one mirror does not reach the other mirror will be
(a) $\theta \geq 120°$
(b) $\theta \geq 90°$
(c) $\theta \leq 120°$
(d) None of the above

35. A ruby laser produces radiations of wavelengths, 662.6 nm in pulse whose duration are 10^{-9} s. If the laser produces 0.39 J of energy per pulse, how many photons are produced in each pulse
(a) 1.3×10^{9}
(b) 1.3×10^{18}
(c) 1.3×10^{27}

(d) 3.9×10^{18}

36. Balmer gives an equation for wavelength of visible radiation of H^- spectrum as $\lambda = \frac{kn^2}{n^2 - 4}$. The value of k in terms of Ryberg's constant R is
    (a) R
    (b) 4R
    (c) R/4
    (d) 4/R

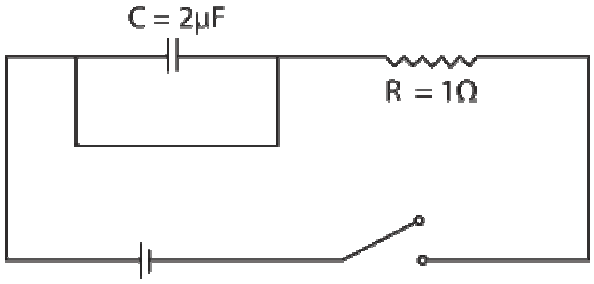
37. In μ_e and μ_h are electron and hole mobility. E be the applied electric field, the current density τ for intristic semiconductor is equal to
    (a) $n_i e(\mu_e + \mu_h)E$
    (b) $n_i e(\mu_e - \mu_h)E$
    (c) $\frac{n_i e(\mu_e + \mu_h)}{E}$
    (d) $\frac{E}{n_i e(\mu_e + \mu_n)}$

38. The KE of the electron in an orbit of radius r in hydrogen atom is (e = electronic charge)
    (a) $\frac{e^2}{r}$
    (b) $\frac{e^2}{2r}$
    (c) $\frac{e^2}{r}$
    (d) $\frac{e^2}{2r^2}$

39. Three charged particles are collinear and are in equilibrium, then
    (a) all the charged particles have the same polarity

(b) the equilibrium is unstable
(c) all the charged particles cannot have the same polarity
(d) Both (b) and (c) are correct

40. The capacitive time constant of the RC circuit shown in the figure is



(a) zero
(b) infinity
(c) 2s
(d) 2 μs

Directions (Q. Nos. 41 to 60**)** *In each of the following questions, two statements are given, One is assertion and the other is reason. Examine the statement carefully and mark the correct answer according to the instruction given below*

41. **Assertion** Mass of moving photon varies inversely as the wavelength.
Reason Energy of the particle = Mass × (speed of light)^2
(a) If both the assertion and reason are true and reason explains the assertion.
(b) If both the assertion and reason are true but reason does not explain the assertion.
(c) If assertion is true but reason false
(d) If assertion is false but reason is true

42. **Assertion** A hollow metallic closed container maintie4d at a uniform temperature can act as a source of a black body radiation.
Reason The inertial mass and gravitational mass of a body are equivalent.
(a) If both the assertion and reason are true and reason explains the assertion.
(b) If both the assertion and reason are true but reason does not explain the assertion.

(c) If assertion is true but reason false
(d) If assertion is false but reason is true

43. **Assertion** The ratio of inertial mass to gravitational mass is equal to one.
Reason The inertial mass and gravitational mass of a body are equivalent.
(a) If both the assertion and reason are true and reason explains the assertion.
(b) If both the assertion and reason are true but reason does not explain the assertion.
(c) If assertion is true but reason false
(d) If assertion is false but reason is true

44. **Assertion** In a stationary wave, there is not transfer of energy.
Reason There is no outward motion of the disturbance from one particle to adjoining particle in a stationary wave.
(a) If both the assertion and reason are true and reason explains the assertion.
(b) If both the assertion and reason are true but reason does not explain the assertion.
(c) If assertion is true but reason false
(d) If assertion is false but reason is true

45. **Assertion** In photoelectron emission the velocity of electron ejected from near the surface is larger than that coming from interior of metal.
Reason The velocity of ejected electron will be zero.
(a) If both the assertion and reason are true and reason explains the assertion.
(b) If both the assertion and reason are true but reason does not explain the assertion.
(c) If assertion is true but reason false
(d) If assertion is false but reason is true

46. **Assertion** If the ice on the polar caps of the earth melts, then length of day will increase.
Reason Moment of inertia of the earth increases, as ice on polar caps melts.
(a) If both the assertion and reason are true and reason explains the assertion.
(b) If both the assertion and reason are true but reason does not explain the assertion.

(c) If assertion is true but reason false
(d) If assertion is false but reason is true

47. **Assertion** Dielectric polarization means formation of positive and negative charges inside the dielectric.
Reason Free electron are formed in this process.
(a) If both the assertion and reason are true and reason explains the assertion.
(b) If both the assertion and reason are true but reason does not explain the assertion.
(c) If assertion is true but reason false
(d) If assertion is false but reason is true

48. **Assertion** Static crashes are heard on radio, when lightning flash occurs in the sky.
Reason Electromagnetic waves having frequency of radiowave range, interfere with radiowaves.
(a) If both the assertion and reason are true and reason explains the assertion.
(b) If both the assertion and reason are true but reason does not explain the assertion.
(c) If assertion is true but reason false
(d) If assertion is false but reason is true

49. **Assertion** The satellites equipped with electronic devices are called active satellites.
Reason Passive satellite works as active satellite
(a) If both the assertion and reason are true and reason explains the assertion.
(b) If both the assertion and reason are true but reason does not explain the assertion.
(c) If assertion is true but reason false
(d) If assertion is false but reason is true

50. **Assertion** In He-Ne laser, population inversion takes place between energy levels of neon atoms.
Reason The base to emitter region is forward biased.
(a) If both the assertion and reason are true and reason explains the assertion.

(b) If both the assertion and reason are true but reason does not explain the assertion.
(c) If assertion is true but reason false
(d) If assertion is false but reason is true

51. **Assertion** A transistor amplifier in common emitter configuration has a low input impedance.
Reason The base to emitter region is forward biased.
(a) If both the assertion and reason are true and reason explains the assertion.
(b) If both the assertion and reason are true but reason does not explain the assertion.
(c) If assertion is true but reason false
(d) If assertion is false but reason is true

52. **Assertion** Thermodynamic process in nature are irreversible.
Reason Dissipative effects cannot be eliminated.
(a) If both the assertion and reason are true and reason explains the assertion.
(b) If both the assertion and reason are true but reason does not explain the assertion.
(c) If assertion is true but reason false
(d) If assertion is false but reason is true

53. **Assertion** Crystalline solids can cause X-rays to diffract.
Reason Interatomic distance in crystalline solids is of the order of 0.1 nm.
(a) If both the assertion and reason are true and reason explains the assertion.
(b) If both the assertion and reason are true but reason does not explain the assertion.
(c) If assertion is true but reason false
(d) If assertion is false but reason is true

54. **Assertion** For higher temperature, the peak emission wavelength of a black body shifts to lower wavelength.
Reason Peak emission wavelength of a black body is proportional to the fourth power of temperature.
(a) If both the assertion and reason are true and reason explains the assertion.

(b) If both the assertion and reason are true but reason does not explain the assertion.
(c) If assertion is true but reason false
(d) If assertion is false but reason is true

55. **Assertion** Displacement of a body may be zero, when distance travelled by it is not zero.
Reason The displacement is the longer distance between initial and final position.
(a) If both the assertion and reason are true and reason explains the assertion.
(b) If both the assertion and reason are true but reason does not explain the assertion.
(c) If assertion is true but reason false
(d) If assertion is false but reason is true

56. **Assertion** Magnetic field interacts with a moving charge and not with a stationary charge.
Reason A moving charge produces a magnetic field.
(a) If both the assertion and reason are true and reason explains the assertion.
(b) If both the assertion and reason are true but reason does not explain the assertion.
(c) If assertion is true but reason false
(d) If assertion is false but reason is true

57. **Assertion** There is no current in the metals in the absence of electric field.
Reason Motion of free electrons are randomly.
(a) If both the assertion and reason are true and reason explains the assertion.
(b) If both the assertion and reason are true but reason does not explain the assertion.
(c) If assertion is true but reason false
(d) If assertion is false but reason is true

58. **Assertion** When height of a tube is less than liquid rise in the capillary tube, the liquid does not overflow.

Reason Product of radius of meniscus and height of liquid in capillary tube always remains constant.

(a) If both the assertion and reason are true and reason explains the assertion.
(b) If both the assertion and reason are true but reason does not explain the assertion.
(c) If assertion is true but reason false
(d) If assertion is false but reason is true

59. **Assertion** Sound would travel faster on a hot summer day than on cold winter day.

Reason Velocity of sound is directly proportional to the square of its absolute temperature.

(a) If both the assertion and reason are true and reason explains the assertion.
(b) If both the assertion and reason are true but reason does not explain the assertion.
(c) If assertion is true but reason false
(d) If assertion is false but reason is true

60. **Assertion** When charges are shared between any two bodies no charge is really lost some loss of energy does occurs.

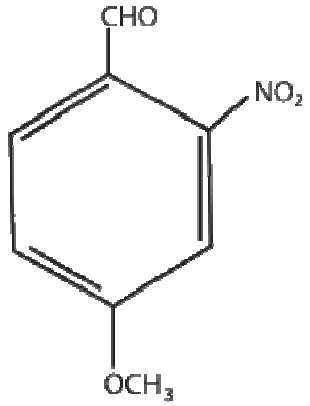
Reason Some energy disappears in the form of heat, sparking etc.

(a) If both the assertion and reason are true and reason explains the assertion.
(b) If both the assertion and reason are true but reason does not explain the assertion.
(c) If assertion is true but reason false
(d) If assertion is false but reason is true

AIIMS MBBS Entrance Exam - 2014

Chemistry (Solved Paper)

1. The IUPAC name of the compound



(a) 4-methoxy-2-nitrobenzaldehyde
(b) 4-fromyl-3-nitro anisole
(c) 4-methoxy-6-nitro benzaldehyde
(d) 2-formyl-5-methoxy nitrobenzene

2. Butyne-1 on oxidation with hot alkaline $KMnO_4$ would give
(a) $CH_3CH_2CH_2COOH$
(b) CH_3CH_2COOH
(c) $CH_3CH_2COOH + CO_2 + H_2O$
(d) $CH_3CH_2COOH + HCOOH$

3. Which one of the following statements is false?
(a) Photochemical smog causes irritation in eyes
(b) London smog is a mixture of smoke and fog
(c) Photochemical smog results in the formation of PAN
(d) London smog is oxidizing in nature

4. Which of the following aqueous solutions has the highest boiling point?
(a) 0.1 M KNO_3
(b) 0.1 M Na_3PO_4
(c) 0.1 M $BaCl_2$
(d) 00.1 M K_2SO_4

5. An increase in equivalence conductance of a strong electrolyte with dilution is mainly due to
   (a) increase in number of ions
   (b) increase in ionic mobility of ions
   (c) increase in both, i.e., number of ions and ionic mobility of ions
   (d) at normal dilution 100% ionization of electrolyte

6. The rate constant for a first order reaction becomes six times when the temperature is raised from 350 K to 400 K. Calculate the activation energy for the reaction.
   [$R = 8.314\ J\ K^{-1}\ mol^{-1}$]
   (a) $4.17\ kJ\ mol^{-1}$
   (b) $41.7\ kJ\ mol^{-1}$
   (c) $417.0\ kJ\ mol^{-1}$
   (d) $4170\ kJ\ mol^{-1}$

7. When dilute aqueous solution of $AgNO_3$ (excess) is added to KI solution, positively charged sol of AgI in formed due to adsorption of
   (a) NO_3^-
   (b) O_2^-
   (c) Ag^+
   (d) K^+

8. In electrorefining of copper some gold is deposited at
   (a) cathode
   (b) anode mud
   (c) cathode mud
   (d) electrode

9. $CaCN_2 + C$ is called on
   (a) urea

(b) thomas slag
(c) nitrolim
(d) triple super phosphate

10. Which one of the following forms vortex ring?
(a) P_2O_5
(b) PH_3
(c) NH_3
(d) P_4O_{10}

11. What is X, in the following reaction?
$KHSO_4 + F_2 \rightarrow HF + X$
(a) K_2SO_4
(b) $K_2S_2O_4$
(c) $K_2S_2O_3$
(d) $K_2S_2O_8$

12. Europium is
(a) s- block element
(b) p- block element
(c) d- block element
(d) f- block element

13. The stability of ferric ion is due to
(a) half-filled d-orbitals
(b) half-filled f-orbitals
(c) completely filled d-orbitals
(d) completely filled f-orbitals

14. An octahedral complex is formed when hybrid orbitals of the following types are involved.
(a) sp^3
(b) dsp^2

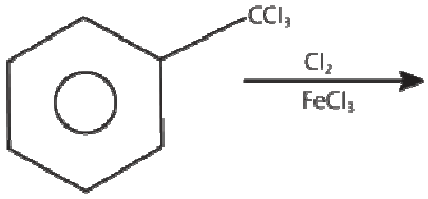
(c) d^2sp^3

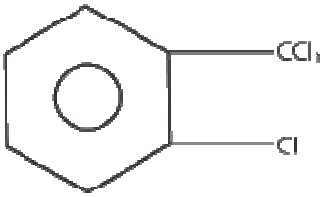
(d) sp^3d^2

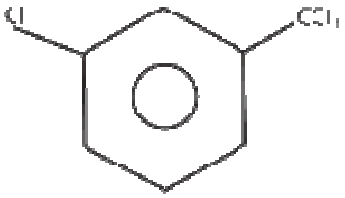
15. Which one amongst of the following isomerism is shown by $[Pt(NH_3)_2Cl_{20}]$?
    (a) Structural
    (b) Geometrical
    (c) Optical
    (d) Conformational

16. What is the structural formula of lithium tetrahydrido aluminate?
    (a) $Al[LiH_4]$
    (b) $Al_2[LiH_4]_3$
    (c) $Li[AlH_4]$
    (d) $li[AlH_4]_2$

17. Find the major product in the following reaction,

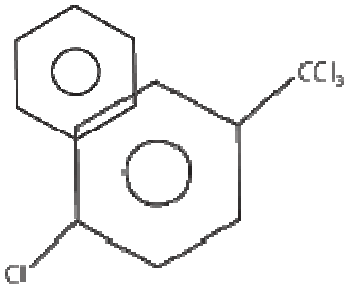


(a) 

(b) 

(c)

(d)



18. An organic compound which produces a bluish green coloured flame on heating in presence of copper is
    (a) chlorobenzene
    (b) benzaldehyde
    (c) aniline
    (d) benzoic acid

19. In Williamson's synthesis, ethoxy ethane is prepared by
    (a) heating sodium ethoxide with ethyl bromide
    (b) passing ethanol over heated alumina
    (c) treating ethyl alcohol with excess of conc. H_2SO_4 at 430-440 K
    (d) heating ethanol wit dry Ag_2O

20. Which among the following compounds will give a secondary alcohol on reacting with Grignard reagent followed by acid hydrolysis?
    I. HCHO II. C_2H_5CHO
    III. CH_3COCH_3 IV. $RCOOC_2H_5$
    Select the correct answer using the codes given below.
    (a) Only II
    (b) Only III
    (c) II and IV
    (d) III and IV

21. Which of the following is the industrial method of preparation of acetaldehyde?

(a) $CH_3CN \xrightarrow[HCl]{SnCl_2} CH_3CH=NH \xrightarrow{H_3O^+} CH_3CHO$

(b) $CH_3COCl + H_2 \xrightarrow[BaSO_4]{Pd} CH_3CO + HCl$

(c) $CH_2=CH_2 + H_2O \xrightarrow{Pd^{2+}} CH_3CHO$

(d) All of the above

22. C_3H_6O did not give a silver mirror with Tollen's reagent, but gave an oxime with hydroxylamine. It can give positive
    (a) iodoform test
    (b) Fehling's test
    (c) Schiff's test
    (d) carbylamines test

23. Which of the following carboxylic acids undergoes decarboxylation easily?
    (a) $C_6H_5COCOOH$
    (b) $C_6H_5COCH_2COOH$
    (c) $C_6H_5CHOHCOOH$
    (d) $C_6H_5\underset{\displaystyle NH_2}{\underset{|}{C}}HCOOH$

24. The stoichiometry of the following reaction is $K_2S_2O_8(aq) + 2KI(aq) \rightarrow 2K_2SO_4(aq) + I_2(aq)$
    (a) 2 : 1
    (b) 1 : 2
    (c) 2 : 2
    (d) 1 : 3

25. $\Psi^2 = 0$ represents
    (a) a node
    (b) an orbital
    (c) angular wave function
    (d) wave function

26. If the de-Broglie wavelength of a particle of mass m is 100 times its velocity then its value in terms of its mass (m) and Planck's constant (h) is

(a) $\frac{1}{10}\sqrt{\frac{m}{h}}$

(b) $10\sqrt{\frac{h}{m}}$

(c) $\frac{1}{10}\sqrt{\frac{h}{m}}$

(d) $10\sqrt{\frac{m}{h}}$

27. The pair having similar geometry is

(a) PCl_3, NH_4^+0

(b) $BeCl_2$, H_2O

(c) CH_4, CCl_4

(d) IF_5, PF_5

28. The correct order in which the O—O bond length increases is

(a) $H_2O < O_2 < O_3$

(b) $O_3 < H_2O_2 < O_2$

(c) $O_2 < O_3 < H_2O_2$

(d) $O_2 < H_2O_2 < O_3$

29. An LPG cylinder, containing 15 kg butane at 27°C and 10 atm pressure, is leaking. After one day, its pressure decreased to 8 atm. The quantity of gas leaked is

(a) 1 kg

(b) 2 kg

(c) 3 kg

(d) 4 kg

30. Assume each reaction is carried out in a open container. For which reaction $\Delta H = \Delta E$?
    (a) $H_2(g) + Br_2(g) \rightarrow 2HBr(g)$
    (b) $C(s) + 2H_2O(g) \rightarrow 2H_2(g) + CO_2(g)$
    (c) $PCl_5(g) \rightarrow PCl_3(g) + Cl_2(g)$
    (d) $2CO(g) + O_2(g) \rightarrow 2CO_2(g)$

31. In a basic buffer, 0.0025 mole of NH_4Cl and 0.15 mole of NH_4OH are present. The pH of the solution will be $(pK_a) = 4.74$.
    (a) 11.04
    (b) 10.24
    (c) 6.62
    (d) 5.48

32. Strongest conjugate base is
    (a) Cl^-
    (b) Br^-
    (c) F^-
    (d) I^-

33. For the gas phase reaction, $C_2H_4 + H_2 \rightleftharpoons C_2H_6$; [$\Delta H = -32.7$ kcal]
    Carried out in a vessel, the equilibrium concentration of C_2H_4 can be increased by
    (a) decreasing the pressure
    (b) increasing the temperature
    (c) removing some C_2H_6
    (d) adding some H_2

34. Which one of the following is a conjugated protein?
    (a) Phosphoprotein
    (b) Glycoprotein
    (c) Chromoprotein
    (d) All of these

35. A solution containing 0.319 g of $CrCl_3 \cdot 6H_2O$ was passed through a cation exchange resin and acid coming out of the cation exchange resin required 28.5 mL of 0.125 M NaOH. Determine correct formula of the complex [mol. wt. of the complex = 266.5]
    (a) $[Cr(H_2O)_6]Cl_3$
    (b) $[Cr(H_2O)_5Cl]H_2O \cdot Cl_2$
    (c) $[Cr(H_2O)_4Cl_2]Cl \cdot 2H_2O$
    (d) $[Cr(H_2O)_3Cl_3]3H_2O$

36. Which of the following is not an actinoid?
    (a) Curium (Z = 96)
    (b) Californium (Z = 98)
    (c) Uranium(Z = 92)
    (d) Terbium (Z = 65)

37. The period number in the long form of the periodic table is equal to
    (a) magnetic quantum number of any element of the period
    (b) atomic number of any element of the period
    (c) maximum principal quantum number of any element of the period
    (d) maximum azimuthal quantum numbers of any element of the period

38. If the IP of Na is 5.48 eV, the ionsation potential of K will be
    (a) same as that of Na
    (b) 4.4 eV
    (c) 5.68 eV
    (d) 10.88 eV

39. The entropy change involved in the isothermal reversible expansion of 2 moles of an ideal gas from a volume of 10 dm^3 at 27°C is to a volume of 100 dm^3
    (a) 42.3 J $mol^{-1}K^{-1}$
    (b) 38.3 J $mol^{-1}K^{-1}$

(c) 35.8 J $mol^{-1}K^{-1}$

(d) 32.3 J $mol^{-1}K^{-1}$

40. Which of the following reagents may by used to distinguish between phenol and benzoic acid?
    (a) Neutral $FeCl_3$
    (b) Aqueous NaOH
    (c) Tollen's reagent
    (d) Molisch reagent

Directions (Q. Nos. 41 to 60**)** *In each of the following questions, two statements are given. One is assertion and the other is reason. Examine the statement carefully and mark the correct answer according to the instruction given below*

41. **Assertion** Conformers are impractical to separate.
    Reason Conformers have negligibly small difference in their potential energy.
    (a) Both Assertion and Reason are true and Reason is the correct explanation of Assertion
    (b) Both Assertion and Reason are true and Reason is not the correct explanation of Assertion
    (c) Assertion is true but Reason is false
    (d) Both Assertion and Reason are false

42. **Assertion** p-toluidine is a stronger base than m-toluene.
    Reason Methyl group from m-position exerts smaller electron donating inductive (+I) effect than from p-position.
    (a) Both Assertion and Reason are true and Reason is the correct explanation of Assertion
    (b) Both Assertion and Reason are true and Reason is not the correct explanation of Assertion
    (c) Assertion is true but Reason is false
    (d) Both Assertion and Reason are false

43. **Assertion** 2-butyne on controlled hydrogenation with $Pd/CaCO_3$ in presence of PbO gives cis-2-butene.
Reason Hydrogenation occur at the surfaces of metal containing adsorbed hydrogen.
(a) Both Assertion and Reason are true and Reason is the correct explanation of Assertion
(b) Both Assertion and Reason are true and Reason is not the correct explanation of Assertion
(c) Assertion is true but Reason is false
(d) Both Assertion and Reason are false

44. **Assertion** Treatment of chloroethane with a saturated solution of AgCN gives ethyl isocyanide as the major product.
Reason Cyanide (CN^-) is an ambident nucelophile.
(a) Both Assertion and Reason are true and Reason is the correct explanation of Assertion
(b) Both Assertion and Reason are true and Reason is not the correct explanation of Assertion
(c) Assertion is true but Reason is false
(d) Both Assertion and Reason are false

45. **Assertion** Reaction of alcohols with $SOCl_2$ is catalysed by the presence of a tertiary amine (R_3N).
Reason Tertiary amine promote the reaction by reacting with the by-product HCl.
(a) Both Assertion and Reason are true and Reason is the correct explanation of Assertion
(b) Both Assertion and Reason are true and Reason is not the correct explanation of Assertion
(c) Assertion is true but Reason is false
(d) Both Assertion and Reason are false

46. **Assertion** Aldol condensation is usually carried out in dilute solution of a strong base.
Reason Concentrated solution of strong base involved Cannizzaro reaction.

(a) Both Assertion and Reason are true and Reason is the correct explanation of Assertion
(b) Both Assertion and Reason are true and Reason is not the correct explanation of Assertion
(c) Assertion is true but Reason is false
(d) Both Assertion and Reason are false

47. **Assertion** Malonic acid (HOOC—CH_2—COOH) does not form cyclic anhydride on heating.
Reason It is like β-keto acid, on heating it prefer to decarboxylate.
(a) Both Assertion and Reason are true and Reason is the correct explanation of Assertion
(b) Both Assertion and Reason are true and Reason is not the correct explanation of Assertion
(c) Assertion is true but Reason is false
(d) Both Assertion and Reason are false

48. **Assertion** Both 106 g of sodium carbonate and 12 g of graphite have same number of carbon atoms.
Reason Both 106 g sodium carbonate and 12 g of graphite contain 1 g-atom of carbon atoms.
(a) Both Assertion and Reason are true and Reason is the correct explanation of Assertion
(b) Both Assertion and Reason are true and Reason is not the correct explanation of Assertion
(c) Assertion is true but Reason is false
(d) Both Assertion and Reason are false

49. **Assertion** Energy of electron is largely determined by its principal quantum number.
Reason Principal quantum number is a measure of the most possible distance of finding the electron around the nucleus.
(a) Both Assertion and Reason are true and Reason is the correct explanation of Assertion

(b) Both Assertion and Reason are true and Reason is not the correct explanation of Assertion
(c) Assertion is true but Reason is false
(d) Both Assertion and Reason are false

50. **Assertion** When 1.0 mol of NaCl is doped with 10^{-3} mol $SrCl_2$, the number of cationic sites remaining vacant is 10^{-3}.
Reason Each $SrCl_2$ unit produces tow cationic vacancy.
(a) Both Assertion and Reason are true and Reason is the correct explanation of Assertion
(b) Both Assertion and Reason are true and Reason is not the correct explanation of Assertion
(c) Assertion is true but Reason is false
(d) Both Assertion and Reason are false

51. **Assertion** A process for which $\Delta S_{syst.} > 0$ as well as $\Delta H > 0$, passes from non-spontaneous to spontaneous state as temperature is increased.
Reason At higher temperature, $T\Delta S$ exceeds ΔH.
(a) Both Assertion and Reason are true and Reason is the correct explanation of Assertion
(b) Both Assertion and Reason are true and Reason is not the correct explanation of Assertion
(c) Assertion is true but Reason is false
(d) Both Assertion and Reason are false

52. **Assertion** A catalyst does not influence the value of equilibrium constant.
Reason Catalyst influence the rate of both forward and backward reactions equally.
(a) Both Assertion and Reason are true and Reason is the correct explanation of Assertion
(b) Both Assertion and Reason are true and Reason is not the correct explanation of Assertion
(c) Assertion is true but Reason is false
(d) Both Assertion and Reason are false

53. **Assertion** Addition of a non-volatile solute to a volatile solvent increases the boiling point.
Reason Addition of non-volatile solute results in lowering of vapour pressure.
(a) Both Assertion and Reason are true and Reason is the correct explanation of Assertion
(b) Both Assertion and Reason are true and Reason is not the correct explanation of Assertion
(c) Assertion is true but Reason is false
(d) Both Assertion and Reason are false

54. **Assertion** Electrolysis of molten CaH_2 produces hydrogen gas at anode.
Reason In CaH_2, hydrogen is present in the form of hydride H^-.
(a) Both Assertion and Reason are true and Reason is the correct explanation of Assertion
(b) Both Assertion and Reason are true and Reason is not the correct explanation of Assertion
(c) Assertion is true but Reason is false
(d) Both Assertion and Reason are false

55. **Assertion** NaOH cannot be stored in a vessel made of aluminium or zinc.
Reason A protective layer of oixde is formed on the surface of the metal.
(a) Both Assertion and Reason are true and Reason is the correct explanation of Assertion
(b) Both Assertion and Reason are true and Reason is not the correct explanation of Assertion
(c) Assertion is true but Reason is false
(d) Both Assertion and Reason are false

56. **Assertion** Boron always forms covalent bond.
Reason The small size of B^{3+} favours formation of covalent bond.
(a) Both Assertion and Reason are true and Reason is the correct explanation of Assertion
(b) Both Assertion and Reason are true and Reason is not the correct explanation of Assertion
(c) Assertion is true but Reason is false

(d) Both Assertion and Reason are false

57. **Assertion** CaF_2 has been given the same fluorspar.
Reason Solid CaF_2 emits light when heated.
(a) Both Assertion and Reason are true and Reason is the correct explanation of Assertion
(b) Both Assertion and Reason are true and Reason is not the correct explanation of Assertion
(c) Assertion is true but Reason is false
(d) Both Assertion and Reason are false

58. **Assertion** The purple colour of $KMnO_4$ is due to the charge transfer transition.
Reason The intense colour in most of the transition metal complexes is due to d-d transition.
(a) Both Assertion and Reason are true and Reason is the correct explanation of Assertion
(b) Both Assertion and Reason are true and Reason is not the correct explanation of Assertion
(c) Assertion is true but Reason is false
(d) Both Assertion and Reason are false

59. **Assertion** Al_2O_3 is converted to aluminium by reduction with carbon.
Reason Carbon (graphite) has greater affinity for oxygen than Al.
(a) Both Assertion and Reason are true and Reason is the correct explanation of Assertion
(b) Both Assertion and Reason are true and Reason is not the correct explanation of Assertion
(c) Assertion is true but Reason is false
(d) Both Assertion and Reason are false

60. **Assertion** $[Ni(Co)_4]$ is a diamagnetic complex.
Reason All the electrons in the complex are paired.
(a) Both Assertion and Reason are true and Reason is the correct explanation of Assertion

(b) Both Assertion and Reason are true and Reason is not the correct explanation of Assertion
(c) Assertion is true but Reason is false
(d) Both Assertion and Reason are false

AIIMS MBBS Entrance Exam - 2014

Biology (Solved Paper)

1. Wings a pigeon, bat and mosquito shows
   (a) atavism
   (b) convergent evolution
   (c) divergent evolution
   (d) mutation

2. Gelatin, an important raw material for preparation of photographic emulsion is a by product of
   (a) chicken
   (b) forest
   (c) cattle
   (d) fish

3. Phylogenetic system of classification includes
   (a) evolutionary trends only
   (b) genetic trends only
   (c) evolutionary trend as well as morphology
   (d) behvarioural trends in environment

4. 'Red tide' is caused by
   (a) *Gonyaulax*
   (b) *Ceratium*
   (c) *Taceratium*
   (d) All of these

5. A person sitting at rest experiences a temporary cessation of breathing after forced deep breathing for a few minutes. This is due to

(a) too much CO_2 in the blood
(b) too much O_2 in the blood
(c) very little CO_2 in the blood
(d) both high O_2 and very little CO_2 in the blood

6. A physiological response of plants to the duration of light and darkness is a
   (a) daily phase cycle
   (b) circadian rhythms
   (c) biological clock
   (d) photoperiodism

7. ABA is involved in
   (a) shoot elongation
   (b) increased cell division
   (c) dormancy clock
   (d) root elongation

8. There is increase in blood urea when there is insufficient filtration in
   (a) loop of Henle
   (b) distal tubule
   (c) Bowman's capsule
   (d) collecting tubule

9. Aerobic respiration produces more usable chemical energy than fermentation, because fermentation involves
   (a) formation of lactic acid
   (b) complete oxidation of food
   (c) partial oxidation of food
   (d) evolution of CO_2 and alcohol

10. Which one of the following correctly describes the location of some body parts in the earthworm (*Pheretima*)?
   (a) Four pairs of spermathecae in 4-7 segments

(b) One pair of ovaries attached at inter-segmental septum of 14^{th} and 15^{th} segments
(c) Two pairs of testes in 10^{th} and 11^{th} segments
(d) Two pairs of accessory glands in 16-18^{th} segments

11. Hypothetical plant hormones are
(a) florigen
(b) vernalin
(c) florigen and vernalin
(d) auxin

12. Which one of the following shows heterothallism?
(a) Rhizopus
(b) Bacterium
(c) Cycas
(d) Ricinus

13. A drug addict showed symptoms such as increased appetite, chest pain, redness of eyes, increased urination. He was possibility taking
(a) cannabis compounds
(b) LSD
(c) cocaine
(d) amphetamines

14. The brain disease caused due to accumulation of amyloid β-peptide is
(a) Addison's disease
(b) Huntington's disease
(c) Parkinson's disease
(d) Alzheimer'disease

15. Which of the following is a 'cyanophage'?
(a) S-13
(b) $\phi \times 174$
(c) SV-40
(d) LPP-1

16. Match items in Column I with those in Column II.

Column I	Column II
A. Peritrichous flagella	1. Ginkgo
B. Lining fossil	2. Macrocystis
C. Smallest flowering plant	3. E. coli
D. Largest perennial alga	4. Wolffia

(a) A-3, B-1, C-4, D-5, E-2
(b) A-2, B-3, C-4, D-1, E-5
(c) A-4, B-2, C-1, D-5, E-3
(d) A-2, B-4, C-3, D-5, E-1

17. Osmosis is a type of
(a) imbibitions of solution
(b) diffusion of solvent
(c) evaporation of water
(d) diffusion of solute

18. RQ (Respiratory Quotient) is defined as
(a) volume of CO_2 evolved = volume of O_2 consumed
(b) $\frac{\text{volume of } O_2 \text{ consumed}}{\text{volume } CO_2 \text{ evolved}}$
(c) $\frac{\text{volume of } CO_2 \text{ evolved}}{\text{volume of } O_2 \text{ consumed}}$
(d) $\frac{\text{volume of } O_2 \text{ evolved}}{\text{volume of } CO_2 \text{ consumed}}$

19. Atretic follicles are found in the
(a) fallopian tubes
(b) uterus

(c) labia majora
(d) ovary

20. Which one is matched correctly?
(a) Arsenic—Black foot disease
(b) Flouride—Itai-itai
(c) Mercury—Skeletal fluorosis
(d) Cadmium—Minamata disease

21. Leghaemoglobin helps in
(a) nitrogen-fixation
(b) protecting nitrogenase from O_2
(c) destroy bacteria
(d) transport of food in plants

22. Math the Column I with Column II.

Column I	Column II
A. Bulliform cells	1. Stomata
B. Guard cells	2. Aerating pore
C. Lenticels	3. Accessory cells
D. Subsidiary cell	4. Isobilateral leaf

(a) A-1, B2-, C-3, D-4
(b) A-3, B-1, C-2, D-4
(c) A-4, B-1, C-2, D-3
(d) A-4, B-3, C-2, D-1

23. 'Cladode's is a characteristic morphological feature of
(a) *Asparagus* and *Ruscus*
(b) *Casuarina* and *Opuntia*
(c) *Cladophora* and *Cactus*
(d) *Citrus* and *Euphorbia*

24. The species diversity decreases from lower to higher altitudes on a mountain. This is due to
    (a) increase in temperature
    (b) decrease in temperature
    (c) greater seasonal variability
    (d) Both (b) and (c)

25. What is not a common feature is *Periplaneta* and *Scorpions*?
    (a) Excretory organs are malpighian tubules
    (b) No appendages in abdomen
    (c) Respiratory organs are trachea
    (d) Both are mostly terrestrial arthropods

26. *Cycas* is classified as a gymnosperms due to its
    (a) motile sperms
    (b) fruit formation
    (c) naked ovule
    (d) phycnoxylic wood

27. In an area, a population with large size individuals having long life span, more parental care and slow development was present. The type of population growth curve will be
    (a) S-shaped
    (b) J-shaped
    (c) Z-shaped
    (d) All of these

28. A gland called 'Clock of ageing' that gradually reduces and degenerates in ageing is
    (a) thyroid
    (b) thymus
    (c) parathyroid
    (d) pituitary

29. Which of the following statement is correct?

(a) DPD = OP – WP
(b) DPD = OP + WP
(c) DPD = WP – OP
(d) DPD = TP + OP

30. Censar mechanism of seed dispersal is found in
(a) Papaveraceae
(b) Liliaceae
(c) Leguminosae
(d) Rosaceae

31. At a particular locus, frequency of 'A' allele is 0.6 and that of 'a' is 0.4. What would be the frequency of heterozygotes in a randomly mating population of equilibrium?
(a) 0.16
(b) 0.36
(c) 0.48
(d) 0.24

32. The C_4 plants differ from C_3 plants with reference to the
(a) substrate that accepts CO_2 in carbon assimilation
(b) type of end product
(c) type of pigment involved in photosynthesis
(d) number of ATP that are consumed in preparing sugar

33. The colour in the brown fat is due is
(a) its larger capacity for generating heat
(b) large number of mitochondria present
(c) a high concentration of iron containing cytochrome pigments
(d) presence of chromatophores

34. Which of the following is common among mammals?
(a) They do not moult
(b) They have seven cervical vertebrae
(c) The are carnivores

(d) They have ventral nerve cord

35. Elater mechanism for seed dispersal is exhibited by
    (a) *Riccia*
    (b) *Marchantia*
    (c) *Dryopteris*
    (d) *Funaria*

36. In which one of the following pairs, the two items mean the same thing?
    (a) Haemophilia—Blood cancer
    (b) SA-node-Pacemaker
    (c) Malleus—Anuil
    (d) Leucocytes—Lymphocytes

37. Which of the following part of human brain is also called emotional brain?
    (a) Corpus callosum
    (b) Limbic system
    (c) Epithalamus
    (d) Broca's area

38. Which of the following set of elements are essential for the photosynthesis to occurs
    (a) Cu, Co, Fe
    (b) Cu, Mo, Zn
    (c) Mg, Co, Mn
    (d) Mg, Fe, Mn, Cu, Cl, P

39. The disease caused by *leishmania* and transmitted by *Phlebotomus* is
    (a) African sleeping sickness
    (b) Amoebic dysentry
    (c) Kala-azar fever
    (d) Chaga's disease

40. Saheli, is an oral contractive pill that has very high contraceptive value with little side effects. It is because

(a) it is taken once in a week
(b) it contains synthetic progesterone
(c) it contains centchroman
(d) it decreases risk of cancer

Direction (Q. Nos. 41-60) These questions consist two statement each printed as Assertion and Reason. While answering these question, you are required to choose any one of the following four options.

41. **Assertion** Rigon mortis is the state of body stiffering prior to death.
Reason It is due to relaxation of action and myosin filaments.
(a) Both Assertion and Reason are true and Reason is the correct explanation of Assertion
(b) Both Assertion and Reason are true, but Reason is not the correct explanation of Assertion
(c) Assertion is true but Reason is false
(d) Both Assertion and Reason are false

42. **Assertion** Seeds fails to germinate at very low and high temperature.
Reason Seeds sown deep into the soil fail to germinate.
(a) Both Assertion and Reason are true and Reason is the correct explanation of Assertion
(b) Both Assertion and Reason are true, but Reason is not the correct explanation of Assertion
(c) Assertion is true but Reason is false
(d) Both Assertion and Reason are false

43. **Assertion** Lysosomes are organelle in eukaryotic cells that contains digestive enzymes to digest macromolecules.
Reason Lysosoems are also called phagolysosomes or heterophagosomes or digestive vacuoles.
(a) Both Assertion and Reason are true and Reason is the correct explanation of Assertion
(b) Both Assertion and Reason are true, but Reason is not the correct explanation of Assertion
(c) Assertion is true but Reason is false

(d) Both Assertion and Reason are false

44. **Assertion** Reproductive isolation brings about sympatric speciation.
Reason It is the primary mode of speciation.
e.g., Darwin's finches.
(a) Both Assertion and Reason are true and Reason is the correct explanation of Assertion
(b) Both Assertion and Reason are true, but Reason is not the correct explanation of Assertion
(c) Assertion is true but Reason is false
(d) Both Assertion and Reason are false

45. **Assertion** Presence of photorespiration is considered as a wasteful and energy consuming process in crop plants, ultimately leads to reduction in yield.
Reason During C_3 synthesis up 50% CO_2 fixed may have to pass through photorespiratory process to form carbohydrate such as sucrose.
(a) Both Assertion and Reason are true and Reason is the correct explanation of Assertion
(b) Both Assertion and Reason are true, but Reason is not the correct explanation of Assertion
(c) Assertion is true but Reason is false
(d) Both Assertion and Reason are false

46. **Assertion** Enzymes becomes inactive below minimum temperature.
Reason The inactivity of the enzymes is due to denaturation.
(a) Both Assertion and Reason are true and Reason is the correct explanation of Assertion
(b) Both Assertion and Reason are true, but Reason is not the correct explanation of Assertion
(c) Assertion is true but Reason is false
(d) Both Assertion and Reason are false

47. **Assertion** Find structure of the objects can be observed by Transmission Electron Microscope (TEM).

Reason Study of living cells can not be done through TEM, because of high voltage, which is required to operate it, kills the cells.

(a) Both Assertion and Reason are true and Reason is the correct explanation of Assertion
(b) Both Assertion and Reason are true, but Reason is not the correct explanation of Assertion
(c) Assertion is true but Reason is false
(d) Both Assertion and Reason are false

48. **Assertion** The total content of iron in an adult body is 3.5 gram. The iron deficiency lead to ammonia.
Reason Iron (Fe^{2+}) combines with the pigment porphyrin to form heme.

(a) Both Assertion and Reason are true and Reason is the correct explanation of Assertion
(b) Both Assertion and Reason are true, but Reason is not the correct explanation of Assertion
(c) Assertion is true but Reason is false
(d) Both Assertion and Reason are false

49. **Assertion** Mammals have developed a complex respiratory system.
Reason Mammalian skin is impermeable to gases.

(a) Both Assertion and Reason are true and Reason is the correct explanation of Assertion
(b) Both Assertion and Reason are true, but Reason is not the correct explanation of Assertion
(c) Assertion is true but Reason is false
(d) Both Assertion and Reason are false

50. **Assertion** Removal of keystone species cause serious disruption in the functioning of the community.
Reason Keystone species are low in abundance (or biomass) than the dominant species.

(a) Both Assertion and Reason are true and Reason is the correct explanation of Assertion

(b) Both Assertion and Reason are true, but Reason is not the correct explanation of Assertion
(c) Assertion is true but Reason is false
(d) Both Assertion and Reason are false

51. **Assertion** In bacteria the chromosome is irregularly folded into a compact mass, the nucleoid or genophore of definite form.
Reason In bacteria there is no organized nucleus.
(a) Both Assertion and Reason are true and Reason is the correct explanation of Assertion
(b) Both Assertion and Reason are true, but Reason is not the correct explanation of Assertion
(c) Assertion is true but Reason is false
(d) Both Assertion and Reason are false

52. **Assertion** DNA is more stable while RNA is more reactive.
Reason DNA was first discovered by Watson and Crick (1953).
(a) Both Assertion and Reason are true and Reason is the correct explanation of Assertion
(b) Both Assertion and Reason are true, but Reason is not the correct explanation of Assertion
(c) Assertion is true but Reason is false
(d) Both Assertion and Reason are false

53. **Assertion** Second infection of the same pathogen is quickly eliminated.
Reason Preformed memory B and T-cells elicit a quick and vigorous attack on pathogens.
(a) Both Assertion and Reason are true and Reason is the correct explanation of Assertion
(b) Both Assertion and Reason are true, but Reason is not the correct explanation of Assertion
(c) Assertion is true but Reason is false
(d) Both Assertion and Reason are false

54. **Assertion** Eukaryotic cells have more DNA than prokaryotic cells

Reason Eukaryotic are more complex than prokaryotes genetically.

(a) Both Assertion and Reason are true and Reason is the correct explanation of Assertion
(b) Both Assertion and Reason are true, but Reason is not the correct explanation of Assertion
(c) Assertion is true but Reason is false
(d) Both Assertion and Reason are false

55. **Assertion** In open wate4r zone upto the depth to which light can penetrate, called photic zone.

Reason The photic zone is categorized into euphotic and disphotic zone.

(a) Both Assertion and Reason are true and Reason is the correct explanation of Assertion
(b) Both Assertion and Reason are true, but Reason is not the correct explanation of Assertion
(c) Assertion is true but Reason is false
(d) Both Assertion and Reason are false

56. **Assertion** Zoospores in *Chlamydomonas* are frequently formed in the night during favourable conditions.

Reason Zoospore swim for a certain time and then grows into a new plant.

(a) Both Assertion and Reason are true and Reason is the correct explanation of Assertion
(b) Both Assertion and Reason are true, but Reason is not the correct explanation of Assertion
(c) Assertion is true but Reason is false
(d) Both Assertion and Reason are false

57. **Assertion** After hearing a sound, nerve impulse passes from neurons to the brain

Reason The neurons which passes nerve impulse from body organ to brain is called afferent neuron.

(a) Both Assertion and Reason are true and Reason is the correct explanation of Assertion

(b) Both Assertion and Reason are true, but Reason is not the correct explanation of Assertion
(c) Assertion is true but Reason is false
(d) Both Assertion and Reason are false

58. **Assertion** Placenta in addition to connection with mother and foetus to ductless gland.
Reason It releases human gonadotropins.
(a) Both Assertion and Reason are true and Reason is the correct explanation of Assertion
(b) Both Assertion and Reason are true, but Reason is not the correct explanation of Assertion
(c) Assertion is true but Reason is false
(d) Both Assertion and Reason are false

59. **Assertion** A woman is capable of sucing a man of refusing to own a child, who has blood group O. The man has blood group B and woman has A.
Reason She is right as genetically, the can be the father of the child.
(a) Both Assertion and Reason are true and Reason is the correct explanation of Assertion
(b) Both Assertion and Reason are true, but Reason is not the correct explanation of Assertion
(c) Assertion is true but Reason is false
(d) Both Assertion and Reason are false

60. **Assertion** The thallus of *Riccia* is internally differentiated into an upper photosynthetic region and lower storage region.
Reason The lower storage region is formed from parenchymatous cells.
(a) Both Assertion and Reason are true and Reason is the correct explanation of Assertion
(b) Both Assertion and Reason are true, but Reason is not the correct explanation of Assertion
(c) Assertion is true but Reason is false
(d) Both Assertion and Reason are false

AIIMS MBBS Entrance Exam - 2014

General Knowledge & Aptitude

1. Who constructed Sanchi Stupa?
   (a) Chandragupta
   (b) Kautilya
   (c) Gautam Buddha
   (d) Ashok

2. Where did Lord Buddha breathe his last (Mahapari Nirvan)?
   (a) Rajgir
   (b) Bodh Gaya
   (c) Sarnath
   (d) Kushinagar

3. Sudden decrease of birth rate would cause
   (a) increase in per capita income
   (b) increase in investment
   (c) increase in savings
   (d) increase in loan requests

4. Among the following who was not a proponent of Bhakti cult?
   (a) Nagarjuna
   (b) Tukaram
   (c) Tyagaraja
   (d) Vallabhacharya

5. Who was the founder of Ram Krishna Mission?
   (a) Swami Vivekananda
   (b) Raja Ram Mohan Rai
   (c) Swami Dayananda Saraswati
   (d) Ram Krishna Paramhansa

6. Which is closest star to the Earth?
   (a) Sirius

(b) Sun
(c) Deneb
(d) Vega

7. Tsunamis are originated due to
   (a) Sea waves
   (b) Earthquake
   (c) Hurricane
   (d) Rotation of Earth

8. Which of the following is igneous rock?
   (a) Limestone
   (b) Slate
   (c) Marble
   (d) Basalt

9. Which river crosses the equator twice?
   (a) Amazon
   (b) Congo
   (c) Nile
   (d) Orinoco

10. Water vapour is turned into water droplets by the process of
    (a) evaporation
    (b) liquification
    (c) convection
    (d) condensation

11. Which sector of Indian economy contributes largest to the gross national product?
    (a) Primary sector
    (b) Secondary sector
    (c) Tertiary sector
    (d) Public sector

12. The most literate union territory in India is
    (a) Delhi
    (b) Lakshadweep
    (c) Chandigarh
    (d) Pondicherry

13. What is the fixed strength of Rajya Sabha?
    (a) 210
    (b) 220
    (c) 230
    (d) 250

14. Which one among following is not a fixed capital?
    (a) Tools
    (b) Machines
    (c) Building
    (d) Money

15. Who was the first woman Prime Minister to become the Prime Minister of a country?
    (a) Golda Meir
    (b) Margaret Thatcher
    (c) Indira Gandhi
    (d) Sirimavo Bhandharnaike

16. What is a modem connected to?
    (a) Processor
    (b) Mother board
    (c) Printer
    (d) Phone line

17. Spam is related to
    (a) Computer
    (b) Art
    (c) Music

(d) Game

18. Late Raja Ravi Verma was an eminent figure in which of the following fields?
    (a) Dance
    (b) Politics
    (c) History
    (d) Painting

19. Who is known as ‘Little Corporal’?
    (a) Adolf Hitler
    (b) Napolean Bonaparte
    (c) William E Gladstone
    (d) None of these

20. SAARC was founded in
    (a) New Delhi
    (b) Dhaka
    (c) Geneva
    (d) Thimpu