Medical - UG

Time : 3 Hrs.
Marks : 720

AIPMT / NEET : 2016
CODE - A / P / W
PHYSICS

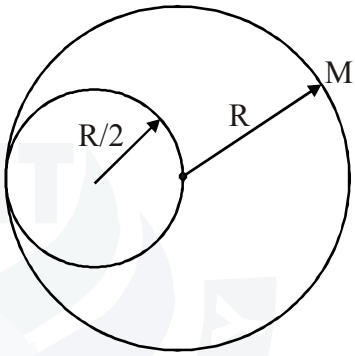
Date : 01-05-2016

Q.1 $I = \frac{MR^2}{2} - \frac{3\sigma}{2}\pi\left(R/2\right)^2\left(R/2\right)^2$

where $\sigma = \frac{M}{\pi R^2}$

$I = \frac{MR^2}{2} - \frac{3}{32}MR^2$

$I = \frac{13}{32}MR^2$



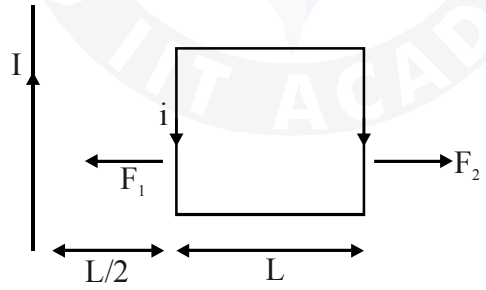
Topic:Mechanics ; Sub Topic:Rotaion ; L:2 ; Medical-UG ; AIPMT / NEET Exam - 2016

Q.2 $F_1 = \frac{\mu_0 I\, i\, L}{2\pi\, L/2} = \frac{\mu_0 I i}{\pi}$

$2 = \frac{\mu_0 I\ i\ L}{2\pi\frac{3L}{2}} = \frac{\mu_0\, I i}{3\pi}$

$\therefore F_{net} = F_1 - F_2$

$F_{net} = \frac{2}{3}\frac{\mu_0\, Ii}{\pi}$



Topic:Magnetism ; Sub Topic:Force between con. ; L:1 ; Medical-UG ; AIPMT / NEET Exam - 2016

Q.3 Magnetic susceptibility χ_m

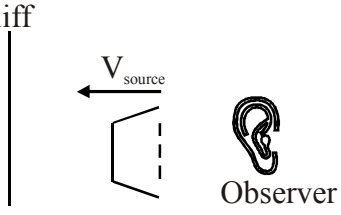
is negative for dimagnetic substance only

Topic:Magnetism ; Sub Topic:Magnetic ; L:1 ; Medical-UG ; AIPMT / NEET Exam - 2016

Q.4 $f_0 = 800\,Hz$ $V_{source} = 15\,m/s$

$f_a = \frac{330}{(330-15)}800 = \frac{330}{315}\times 800$

$f_a = 838\,Hz$



Topic:Sound ; Sub Topic:Popplers effect ; L:2 ; Medical-UG ; AIPMT / NEET Exam - 2016

Q.5 $Q = 2V$

$$U_i = \frac{1}{2} \times \frac{(2V)^2}{2} = V^2$$

$$\therefore V_y = \frac{1}{2}\frac{64V^2}{25 \times 8}$$

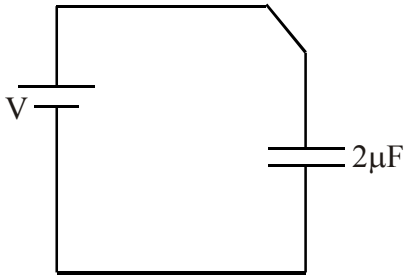
$$\frac{2V - q}{2} = \frac{q}{8}$$

$$+\frac{1}{2}\frac{4V^2}{25 \times 2}$$

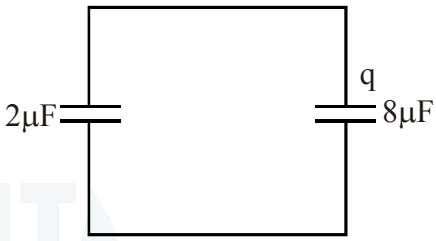
$$\therefore 8V - 4q = q$$

$$U_f = \frac{5V^2}{25} = \frac{V^2}{5}$$

$$\therefore q = \frac{8V}{5}$$



$$\text{Energy dissipiated} = \frac{4V^2}{5}$$



$\therefore$ % energy

$$\text{dissipiated} = \frac{4V^2}{5V^2} \times 100$$

$$= 80\%$$

Topic:Electrostatics ; Sub Topic:Capacitors ; L:2 ; Medical-UG ; AIPMT / NEET Exam - 2016

Q.6 $a \sin 30 = \lambda$

$$a \sin\theta = \frac{3\lambda}{2}$$

$$\frac{\sin\theta}{\sin 30} = \frac{3}{2}$$

$$\sin\theta = \frac{3}{2} \times \frac{1}{2}$$

$$\sin\theta = \frac{3}{4}$$

$$\theta = \sin\left(\frac{3}{4}\right)$$

Topic:Optics ; Sub Topic:Differaction ; L:2 ; Medical-UG ; AIPMT / NEET Exam - 2016

Q.7 $V = \frac{GM}{R+h} = -5.4 \times 10^7$

$$g = \frac{GM}{(R+h)^2} = 6$$

$$\therefore \quad \frac{5.4}{6} \times 10^7 = R + h$$

$\therefore\ a\times10^6 = 6.4\times10^6 + h$

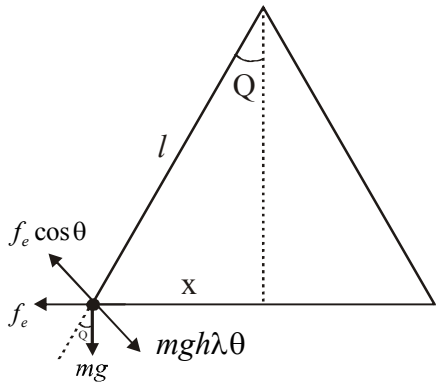
$\therefore\ \boxed{h = 2600km}$

Topic:Gravition ; Sub Topic:Earth's gravity ; L:2 ; Medical-UG ; AIPMT / NEET Exam - 2016

Q.8 an accelerating charge can produce electromagnetic wave.

Topic:E-M waves ; Sub Topic:Charged partial ; L:1 ; Medical-UG ; AIPMT / NEET Exam - 2016

Q.9



$\theta = x/2l$

$f_e\cos\theta = mgh\lambda\theta$

$f_e = mg.\left(x/2\right)$

$\frac{kq^2}{x^2} = \frac{mgx}{2e}$

$kq^2 = \frac{mg}{2l}x^3$

$q \propto x^{3/2}$

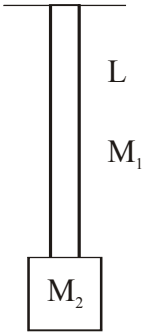
$\frac{dq}{dt} \propto 3/2\ x^{1/2}.\frac{dx}{dt}$

$\Rightarrow\ x^{1/2}.\nu = \text{constant}$

$\nu \propto x^{-1/2}$

Topic:Electrostatics ; Sub Topic:Force between charge ; L:3 ; Medical-UG ; AIPMT / NEET Exam - 2016

Q.10 at bottom



$\nu_1 = \sqrt{\frac{M_2gL}{M_1}}$

$\therefore \lambda_1 = \sqrt{\frac{M_2}{M_1}gL}\frac{1}{f}$

at top.

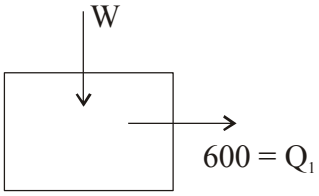
$\therefore\ \frac{\lambda_2}{\lambda_1} = \sqrt{\frac{M_1+M_2}{M_2}}$

$$\nu_1 = \sqrt{\frac{(M_1 + M_2)gL}{M_1}}$$

$$\therefore \quad \lambda_2 = \sqrt{\frac{(M_1 + M_2)gL}{M_1}}\frac{1}{f}$$

Topic:Waves ; Sub Topic:Transverse waves ; L:2 ; Medical-UG ; AIPMT / NEET Exam - 2016

Q.11



$$\frac{600 + w}{600} = \frac{303}{277}$$

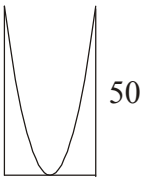
$$1 + \frac{w}{600} = 1 + \frac{26}{277}$$

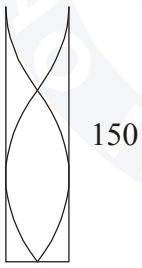
$$w = 600 \times \frac{26}{277} \times 4.2$$

$$w = 236.5$$

Topic:Heat and Thermo ; Sub Topic:Relricirators ; L:1 ; Medical-UG ; AIPMT / NEET Exam - 2016

Q.12





Topic:Sound ; Sub Topic:Standing waves ; L:1 ; Medical-UG ; AIPMT / NEET Exam - 2016

Q.13 $V_A - V_3 = 4 - (-6) = 10$

$$\therefore i = \frac{10}{1000} = 10^{-2}\,A$$

Topic:Semiconductor ; Sub Topic:Diode ; L:1 ; Medical-UG ; AIPMT / NEET Exam - 2016

Q.14 $Q = at - bt^2 \qquad \therefore t \in \left[0, a/b\right]$

$$i = \frac{dq}{dt} = a - 2bt$$

Note : i is + ve $t \in \left[0, a/2b\right]$

and i is – ve $t \in \left(\frac{a}{2b}, \frac{a}{b}\right)$

positive current means current one direction and negative current means current in opposite direction.

$\therefore dH = i^2 R\,dt$

$= (a-2bt)^2 R\,dt$

$H = \int_0^{\frac{a}{b}} (a-2bt)^2 R\,dt$

$= \frac{(a-2bt)^3 R}{3(-2b)}\Big|_0^{\frac{a}{b}}$

$= \frac{1}{-b}\left[\left(a-2b\frac{a}{b}\right)^3 - (a)^3\right]R$

$= -\frac{1}{6b}\left[(-a)^3 - a^3\right]R$

$H = \frac{a^3 R}{3b}$

Topic:Current ; Sub Topic:Heat developed ; L:1 ; Medical-UG ; AIPMT / NEET Exam - 2016

Q.15 $\lambda T = b$

$\therefore \lambda = \frac{2.88\times10^6}{5760}$

$\lambda = 500\,nm$

'U_2' *of* 500 nm will be largest

$\therefore U_2 > U_1$

Topic:Heat and thermo ; Sub Topic:Radiation ; L:1 ; Medical-UG ; AIPMT / NEET Exam - 2016

Q.16 difference in length are same so increase in length are equal

$\Delta l_1 = \Delta l_2$

$l_1\alpha_2\Delta T = l_2\alpha_2\Delta T$

$\Rightarrow l_1\alpha_1 = l_2\alpha_2$

Topic:Heat ; Sub Topic:Thermal expansion ; L:1 ; Medical-UG ; AIPMT / NEET Exam - 2016

Q.17 Voltage gain $= \beta.\left(R_C / R_B\right)$

$V = 0.96\left(\frac{80}{192}\right)$

$V = \frac{96\times8}{192} = 4$

and power gain of the amplifier is

$\beta_{ac}.A_v$

$= 0.96 \times 4$

$= 3.84$

Topic:Semi conductors ; Sub Topic:Transistor ; L:1 ; Medical-UG ; AIPMT / NEET Exam - 2016

Q.18 In YDSE $I_{max} = I_0$

path difference at a point in front of one of shifts is

$$\Delta x = d\left(y/D\right) = d\left(\frac{d/2}{D}\right) = \frac{d^2}{2D}$$

$$\Delta x = \frac{d^2}{2(10d)} = \frac{d}{20} = \frac{5\lambda}{20} = \frac{\lambda}{4}$$

path difference is

$$\phi = \frac{2\pi}{\lambda} = (\Delta x) = \frac{2\pi}{\lambda}\left(\frac{\lambda}{4}\right)$$

$$\phi = \frac{\pi}{2}$$

So intensity at that pt is

$$I = I_{max}\cos^2(\theta/2)$$

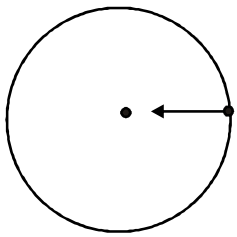
$$I = I_0\cos^2(\pi/4) = \frac{I_0}{2}$$

Topic:Optics ; Sub Topic:YDSE ; L:2 ; Medical-UG ; AIPMT / NEET Exam - 2016

Q.19 At the end of 2 sec , $w = w_0 + \alpha t$

$$w = 0 + 2(2) = 4 rad/\sec$$

particle acceleration towards the cetre is $= a_c = rw^2$



$$a_r = \frac{1}{2}(4)^2 = 8 m/s$$

Topic:Mechanics ; Sub Topic:Rotation ; L:1 ; Medical-UG ; AIPMT / NEET Exam - 2016

Q.20 de-Broglie wavelength is given by

$$\lambda_e = \frac{h}{p} = \frac{h}{\sqrt{2m.E}}$$ for electron

de-Broglie wavelength of photon is given by

$$\lambda_p = \frac{h}{p} = \frac{h}{E/c} = \frac{hc}{E}$$

$$\frac{\lambda_e}{\lambda_p} = \frac{1}{\sqrt{2mE}}.\frac{E}{c} = \frac{1}{c}\sqrt{\frac{E}{2m}}$$

Topic:Modern physics ; Sub Topic:de Broglie wavelength ; L:1 ; Medical-UG ; AIPMT / NEET Exam - 2016

Q.21 acceleration of the object on rough inclined plane is $a = \dfrac{g\sin\theta}{1+\dfrac{I}{mR^2}}$

for sphere $a_1 = \dfrac{5g\sin\theta}{7}$

for disc $a_2 = \dfrac{2g\sin\theta}{3}$

$a_1 > a_2$, so sphere will reach bottom first

Topic:Mechanics ; Sub Topic:Rotation ; L:2 ; Medical-UG ; AIPMT / NEET Exam - 2016

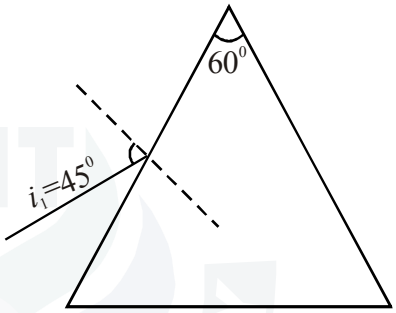
Q.22 At minimum deviation $\delta_{\min} = 2i - A$

$\delta_{\min} = 2(45) - 60$

$\delta_{\min} = 30^0$

refractive index of material is

$$\mu = \frac{\sin\left(\dfrac{\delta_{\min}+A}{2}\right)}{\sin\left(\dfrac{A}{2}\right)} = \frac{\sin\left(\dfrac{30+60}{2}\right)}{\sin(30^0)}$$



$$\mu = \frac{\sin 45^0}{\sin 30^0} = \frac{1/\sqrt{2}}{1/2} = \sqrt{2}$$

Topic:Optics ; Sub Topic:Prism ; L:2 ; Medical-UG ; AIPMT / NEET Exam - 2016

Q.23 At the distance of lowest approch, total K.E. of α – particale changes to P.E., so

$$\frac{1}{2}mv^2 = \frac{KQ.q}{r} = \frac{K(ze)(2e)}{r}$$

$$r = \frac{4K\,ze^2}{mv^2} \Rightarrow r \propto \frac{1}{m}$$

$$r \propto \frac{1}{m}$$

Topic:Modern physics ; Sub Topic:Radioactivity_ ; L:2 ; Medical-UG ; AIPMT / NEET Exam - 2016

Q.24 Tangental acceleration $a_t = r\alpha = \text{constant} = K$

$$\alpha = \frac{K}{r}$$

At the end of second revoluation angular velocity is w then

$$w^2 - w_0^2 = 2 \propto \theta$$

$$w^2 - O^2 = 2\left(\frac{K}{r}\right)(4\pi)$$

$$w^2 = \frac{8\pi K}{r}$$

$K.E.$ of the particle is $= K.E. = \frac{1}{2}mv^2$

$$K.E. = \frac{1}{2}mr^2w^2$$

$$K.E. = \frac{1}{2}m\left(r^2\right)\left(\frac{8\pi K}{r}\right)$$

$$8\times10^{-4} = \frac{1}{2}\times10\times10^{-3}\times6.4\times10^{-2}\times3.14\times K$$

$$K = \frac{2}{6.4\times3.14} = 0.1\,m/\sec^2$$

Topic:Mechanics ; Sub Topic:Circular motion ; L:2 ; Medical-UG ; AIPMT / NEET Exam - 2016

Q.25 *Rms* speed of molecules is $V_{ms} = \sqrt{\frac{3RT}{M}}$

so it depends only on temperature

$$V_{rms} \propto \sqrt{T}$$

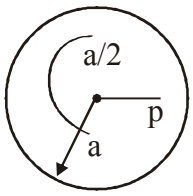
$$\frac{V_1}{V_2} = \sqrt{\frac{T_1}{T_2}} \Rightarrow \frac{200}{V_2} = \sqrt{\frac{300}{400}}$$

$$\frac{200}{V_2} = \frac{\sqrt{3}}{2} \Rightarrow V_2 = \frac{400}{\sqrt{3}}\,m/\sec$$

Topic:Heat and thermodynamics ; Sub Topic:KTG ; L:2 ; Medical-UG ; AIPMT / NEET Exam - 2016

Q.26 Inside the wire:-

By ampere's law



$$\int \vec{B}.\vec{dl} = \mu_0\left(i_{\text{enclosed}}\right)$$

$$\int B.dl\cos 0 = \mu_0\left(\frac{I}{\pi a^2}.\pi\left(a/2\right)^2\right)$$

$$B\int dl = \mu_0\frac{I}{4}$$

$$B\left(2\pi\left(a/2\right)\right) = \frac{\mu_0 I}{4}$$

$$\boxed{B = \frac{\mu_0 I}{4\pi a}}$$

Outside the wire,

$$B' = \frac{\mu_0 I}{2\pi r} = \frac{\mu_0 I}{2\pi(2a)} = \frac{\mu_0 I}{4\pi a}$$

So, $B/B' = 1$.

Topic:Magnetism ; Sub Topic:Magnetic field ; L:1 ; Medical-UG ; AIPMT / NEET Exam - 2016

Q.27 Position vector is $\vec{r} = \cos\omega + \hat{x} + \sin\omega + \hat{y}$

Velocity of particle is $\vec{v} = \frac{d\vec{r}}{dt}$

$\vec{v} = \sin\omega t.\omega\hat{x} + \cos\omega t.\omega\hat{y}$

$\vec{v} = \omega\left(-\sin\omega t\hat{x} + \cos\omega t\hat{y}\right)$

acceleration of the particle is

$\vec{a} = \frac{d\vec{v}}{dt}$

$\vec{a} = -\omega^2\left(\cos\omega t\hat{x} + \sin\omega t\hat{y}\right)$

$\vec{a} = -\omega^2\ \vec{r}$, So direction of $\vec{r}$ and $\vec{a}$ are opposite.

$\vec{v}.\vec{a} = 0 \Rightarrow \vec{v} \perp \vec{a}$

$\vec{v}.\vec{r} = 0 \Rightarrow \vec{v} \perp \vec{r}$

So, Ans. is (3)

Topic:Mechanics ; Sub Topic:Circular motion ; L:2 ; Medical-UG ; AIPMT / NEET Exam - 2016

Q.28 Minimum velocity required is $v = \sqrt{5gR}$

Topic:Mechanics ; Sub Topic:Circular motion ; L:1 ; Medical-UG ; AIPMT / NEET Exam - 2016

Q.29 In photo electric effects

$eV_0 = 48 - W$

$eV_0 = \frac{hc}{\lambda} - W$

$eV = \frac{hc}{\lambda} - W$ .... (1)

$e\frac{V}{4} = \frac{hc}{2\lambda} - W$ .... (2)

From (1) and (2)

$\frac{hc}{\lambda} - W = 4\left(\frac{hc}{2\lambda} - W\right)$

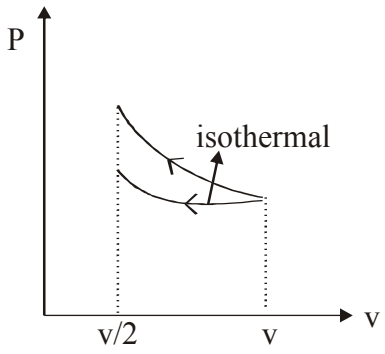
$\frac{hc}{\lambda} - W = \frac{2hc}{\lambda} - 4W$

$3W = \frac{hc}{\lambda} \Rightarrow W = \frac{hc}{3\lambda}$

$$\frac{hc}{\lambda_{max}} = \frac{hc}{3\lambda} \Rightarrow \boxed{\lambda_{max} = \text{threshold wavlength } 3\lambda}$$

Topic:Modern physics ; Sub Topic:Photo electric effect ; L:1 ; Medical-UG ; AIPMT / NEET Exam - 2016

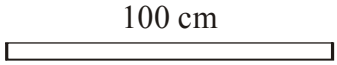
Q.30



Isothermal curve lie below the adiabatic curve, So in adiabatic process more work to be done.

Topic:Heat and thermodynamics ; Sub Topic:Laws of thermo ; L:2 ; Medical-UG ; AIPMT / NEET Exam - 2016

Q.31



$$\frac{E_1 + E_2 = \lambda 50}{E_1 - E_2 = \lambda 10}$$

$$E_1 + E_2 = 5E_1 - 5E_2$$

$$6E_2 = 4E_1$$

$$\frac{3}{2} = \frac{E_1}{E_2}$$

Topic:Current ; Sub Topic:Potential meter ; L:2 ; Medical-UG ; AIPMT / NEET Exam - 2016

Q.32

$$\frac{1}{V} - \frac{1}{-200} = \frac{1}{40}$$

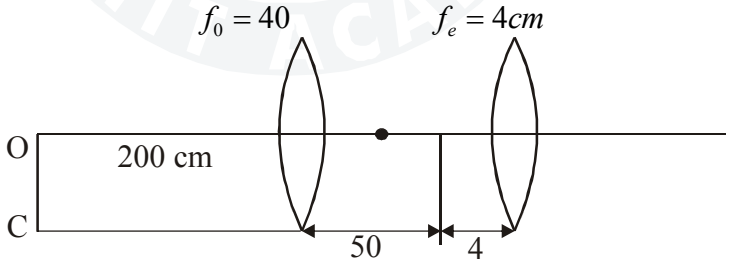
$$\frac{1}{V} = \frac{5}{5}\frac{1}{40} - \frac{1}{200}$$

$$= \frac{5}{200} - \frac{1}{200}$$

$$\frac{1}{V} = \frac{4}{200} = \frac{1}{50}$$

$$V = 50$$

$$\therefore d = 50 + 4 = 54\,cm$$



Topic:Optics ; Sub Topic:Optical instrument ; L:2 ; Medical-UG ; AIPMT / NEET Exam - 2016

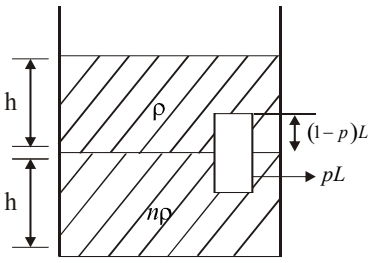
Q.33 $f_0 = mg$

$$PA(1-p)Lg + n\rho ApLg = dALg$$

$$\rho(1-p) + n\rho p = d$$

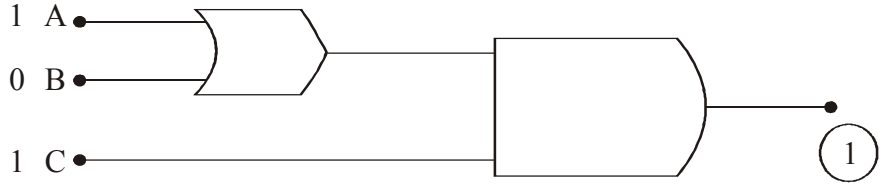
$$[1 - p + np]\rho = d$$

$$[1 + (n-1)p]\rho = d$$



Topic:Fluids ; Sub Topic:Arthmetic principle ; L:2 ; Medical-UG ; AIPMT / NEET Exam - 2016

Q.34



Topic:Semi conductor ; Sub Topic:Logic gate ; L:1 ; Medical-UG ; AIPMT / NEET Exam - 2016

Q.35 $\frac{1}{4}mgh = mL$

$$h = \frac{4L}{g} = \frac{4\times 3.4\times 10^5}{10} = 13.6\times 10^4$$

$$= 136\times 10^3\, km$$

$$= 136\, km$$

Topic:Energy ; Sub Topic:Mechanical energy ; L:1_ ; Medical-UG ; AIPMT / NEET Exam - 2016

Q.36 $\frac{V_e}{V_P} = \frac{\sqrt{2\frac{GM_e}{\mathrm{R_e}}}}{\sqrt{2\frac{GM_P}{R_P}}} = \sqrt{\frac{M_R}{M_P}\frac{R_P}{\mathrm{R_e}}} = \sqrt{\frac{P_e\frac{4}{3}\pi R_e^3 R_P}{P_P\frac{4}{3}\pi R_P^3\,\mathrm{R_e}}}$

$$\frac{V_e}{V_P} = \sqrt{\frac{P_e R_e^2}{P_P R_P^2}} = \sqrt{\frac{1}{2\ \ 2^2}} = \frac{1}{2\sqrt{2}}$$

Topic:Mechanics ; Sub Topic:Gravition ; L:1 ; Medical-UG ; AIPMT / NEET Exam - 2016

Q.37 $\left|\vec{A}+\vec{B}\right| = \left|\vec{A}-\vec{B}\right|$

$$A^2 + B^2 + 2AB\cos\theta = A^2 + B^2 = 2AB\cos\theta$$

$$4AB\cos\theta = 0$$

$$\cos\theta = 0$$

$$\theta = 90^0$$

Topic:Vector ; Sub Topic:Vector addition ; L:1 ; Medical-UG ; AIPMT / NEET Exam - 2016

Q.38 $\frac{1}{\lambda} = R = \left(\frac{1}{h_1^2} - \frac{1}{h_2^2}\right)$

$$\text{Wavelength} = \frac{1}{\lambda} = R\left[\frac{1}{2^2}\right] = \frac{R}{4} = \frac{10^7}{4} = 0.25\times 10^7\, m^{-1}$$

Topic:Modern physics ; Sub Topic:Atomic structure ; L:2 ; Medical-UG ; AIPMT / NEET Exam - 2016

Q.39 $\vec{a} = 2t\hat{i} + 3t^2\hat{j}$

$\vec{V} = t^2\hat{i} + \frac{3}{3}t^3\hat{j}$

$\vec{F} = 2t\hat{i} + 3t^2\hat{j}$

$P = \vec{F}.\vec{V} = 2t^3 + 3t^5$

Topic:Mechanics ; Sub Topic:WPE ; L:2 ; Medical-UG ; AIPMT / NEET Exam - 2016

Q.40 $wL = 340 \times 20 \times 10^{-3} = 68 \times 10^{-1} = 6.8$

$\frac{1}{wC} = \frac{1}{340 \times 50 \times 10^{-6}} = \frac{10^4}{34 \times 5} = \frac{2}{34} \times 10^3$

$= 0.0588 \times 10^3 = 58.82$

$2 = \sqrt{\left(wL - \frac{1}{wc}\right)^2 + R^2}$

$2 = \sqrt{2704 + 1600} \approx 65.6$

$i = \frac{V}{2}, \frac{10}{65 \times \sqrt{2}} = \frac{10}{65.6\sqrt{2}}$

$\text{Power} = \frac{100 \times 40}{(65.6)^2 \times 2} = \frac{2000}{(65.6)^2}$

$= 0.51w$

Topic:Current ; Sub Topic:AC circuit ; L:2 ; Medical-UG ; AIPMT / NEET Exam - 2016

Q.41 $V = At + Bt^2$

$X = \frac{At^2}{2} + \frac{Bt^3}{3}$

$t = 1 \qquad X_1 = \frac{A}{2} + \frac{B}{3}$

$t = 2 \qquad X_2 = 2A + \frac{8B}{3}$

$X_2 - X_1 = \frac{3A}{2} + \frac{7B}{3}$

Topic:Mechanics ; Sub Topic:Kinematics ; L:2 ; Medical-UG ; AIPMT / NEET Exam - 2016

Q.42 $\phi = L \ \ i$

$1000 \times 4 \times 10^{-3} = L\ 4$

$1 = L$

Topic:Current ; Sub Topic:AC circuit ; L:2 ; Medical-UG ; AIPMT / NEET Exam - 2016

Q.43 In capacitor current leads the voltage

Average power dissipated in capacitor is zero

Topic:Current ; Sub Topic:AC circuit ; L:2 ; Medical-UG ; AIPMT / NEET Exam - 2016

Q.44 $m = \dfrac{-V}{u} = \dfrac{f}{f \times u}$

$m = -2$ then "V"and"u" same given

$-2 = \dfrac{f}{f \times u}$ $\qquad -2f + 2u = f$

$= 3f = -2u$

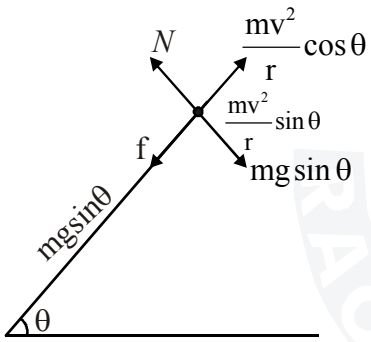
$\dfrac{+3f}{2} = 4$

For mirror so 4 negative

$\therefore V$ has to be negative

Topic:Optics ; Sub Topic:Mirror and lens ; L:2 ; Medical-UG ; AIPMT / NEET Exam - 2016

Q.45



$N = mg\cos\theta + \dfrac{mv^2}{r}\sin\theta$

$f_{max} = \mu mg\cos\theta + \dfrac{\mu mv^2}{r}\sin\theta$

$mg\sin\theta + \mu mg\cos\theta + \dfrac{\mu mv^2}{r}\sin\theta = \dfrac{mv^2}{r}\cos\theta$

$g\sin\theta + g\cos\theta = \dfrac{V^2}{r}(\cos\theta - \mu\sin\theta)$

$gr\left[\dfrac{\tan\theta + \mu}{1 + \mu\tan\theta}\right] = V^2$

Topic:Mechanics ; Sub Topic:Circular motion ; L:2 ; Medical-UG ; AIPMT / NEET Exam - 2016

CHEMISTRY

Q.46

Bond Angle	Molecule
104.5°	H_2O
107°	NH_3
109°28′	CH_4

All the molecules are sp^3 hybridized and Bond angle of H_2O is smaller than NH_3.

Topic: Chemical bonding; Sub Topic:VSEPR; L:1 ; Medical-UG ; AIPMT / NEET Exam - 2016

Q.47

$$H-C\equiv C-H \xrightarrow{NaNH_2/liq.NH_3} H-C\equiv \overline{C}:Na^+$$

$$\downarrow CH_3CH_2Br$$

$$Na^+:C\equiv \overline{C}-CH_2CH_3 \xleftarrow{NaNH_2/liq.NH_3} H-C\equiv C-CH_2CH_3$$

1-Butyne (x)

$$\downarrow CH_3CH_2Br$$

$$CH_3CH_2-C\equiv C-CH_2-CH_3$$

3-Hexyne (y)

Topic: Hydrocarbons; Sub Topic:Alkyne ; L:2 ; Medical-UG ; AIPMT / NEET Exam - 2016

Q.48 Oxidation state of chlorine $\propto$ Acidity of Oxo Acid.

$HClO < HClO_2 < HClO_3 < HClO_4$ is the correct increasing order.

Topic: P-block; Sub Topic:Electronegativity ; L:1; Medical-UG ; AIPMT / NEET Exam - 2016

Q.49

rate	**time**
0.04	10
0.03	20

for first order reaction $r \propto conc.$

$$\frac{r_1}{r_2}=\frac{C_1}{C_2}=\frac{4}{3}$$

$$\therefore k=\frac{2.303}{t_2-t_1}\log\frac{C_1}{C_2}$$

$$\Rightarrow \frac{0.693}{t_{1/2}}=\frac{2.303}{20-10}\log\frac{4}{3}$$

on solving $t_{1/2}=24.1s$

Topic: Chemical kinetics; Sub Topic:Order ; L:2; Medical-UG ; AIPMT / NEET Exam - 2016

Q.50 $\Delta H < O$ Adsorption process is exothermic

$\Delta G < O$ Adsorption process is Feasible

$\Delta S < O$ Adsorption process is accompanied of decrease in entropy.

Topic: Surface chemistry; Sub Topic:Adsorb ; L:1; Medical-UG ; AIPMT / NEET Exam - 2016

Q.51 N is having $ns^2\ np^3$ (Half filled configuration). Hence has high IP than O which is having ns^2np^4 electronic configuration.

Topic: Periodic table; Sub Topic:Ionisation enthalpy ; L:1; Medical-UG ; AIPMT / NEET Exam - 2016

Q.52 Monovalent sodium and pottasium ions and and divalent magnesium and calcium ions are are found in large properties in biological fluids. There ions perform important biologycal functions such as maintainance of heart and nerve impulse.

Topic: S-block; Sub Topic:s-block ; L:1; Medical-UG ; AIPMT / NEET Exam - 2016

Q.53 Hydrogen is having three isotopes protium, Dentenium and tritium in which tritium is Radioactive and very rare.

Topic: Hydrogen and its compounds; Sub Topic:Hydrogen ; L:1; Medical-UG ; AIPMT / NEET Exam - 2016

Q.54 $R-CH_2-\underset{\underset{O}{\|}}{C}-CH_2-R \qquad R-CH=\underset{\underset{OH}{|}}{C}-CH_2-R$ enol form

Ketoenol tautomerism

Topic: Aldehydes, Ketons; Sub Topic:Isomerism ; L:1; Medical-UG ; AIPMT / NEET Exam - 2016

Q.55 MY insoluble salt $K_{sp} = s^2$ $\qquad MY_{(s)} \rightleftharpoons M^{+}_{(aq)} + Y^{-}_{(aq)}$

NY_3 insoluble salt $K_{sp} = 4s^3$ $\qquad NY_{3(s)} \rightleftharpoons N^{+3}_{(aq)} + 3Y^{-}_{(aq)}$

$$\therefore \quad S_{(MY)} = \sqrt{6.2 \times 10^{-13}} = 7.8 \times 10^{-7}$$

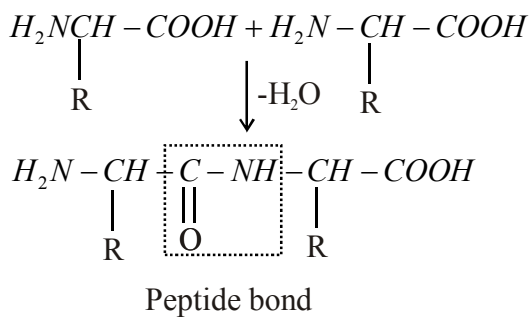
Solubility values

$$\therefore \quad S_{(NY_3)} = \left(\frac{6.2 \times 10^{-13}}{4}\right)^{1/3} = 5.2 \times 10^{-5}$$

$$\therefore S_{(MY)} < S_{(NY_3)}$$

Topic: Ionic equilibrium; Sub Topic:Solubility ; L:1; Medical-UG ; AIPMT / NEET Exam - 2016

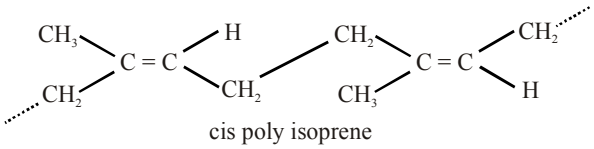
Q.56



Peptide bond

Topic: Biomolecule; Sub Topic:Biomolecules ; L:1; Medical-UG ; AIPMT / NEET Exam - 2016

Q.57



cis poly isoprene

Topic: Polymers; Sub Topic:Polymer ; L: 2; Medical-UG ; AIPMT / NEET Exam - 2016

Q.58 (a) Cyanide process is used to extract and *Au* in hydrometallurgy.

(b) Froth foundation process is used for dressing of sulfide ores.

(c) Electrolytic reduction is used to extract *Al*.

(d) Zone refinining process is used for obtaining ultrapure *Ge*.

Topic: Metallurgy; Sub Topic:General ; L:1; Medical-UG ; AIPMT / NEET Exam - 2016

Q.59 $K_2Cr_2O_7 + SO_2 + H_2SO_4 \longrightarrow K_2SO_4 + \underset{Green}{Cr_2(SO_4)_3} + H_2O$

Topic: P-block; Sub Topic:VI A group ; L:1; Medical-UG ; AIPMT / NEET Exam - 2016

Q.60 $Eu - [Xe]\,4f^7, 6s^2$

$Gd - [Xe]\,4f^7, 5d^1, 6s^2$

$T_6 - [Xe]\,4f^9, 6s^2$

Topic: D & F block; Sub Topic:f-block ; L:1; Medical-UG ; AIPMT / NEET Exam - 2016

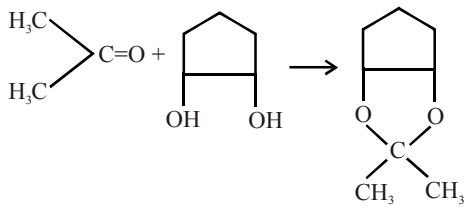
Q.61 Electron occupying same orbital have different spin quantum number.

Topic: Atomic structure; Sub Topic:Pauli's exclusion principle ; L:1; Medical-UG ; AIPMT / NEET Exam - 2016

Q.62 $Cu + 4HNO_3 \longrightarrow Cu(NO_3)_2 + 2NO_2 + O_2$

Topic: P-block; Sub Topic:V A ; L:1; Medical-UG ; AIPMT / NEET Exam - 2016

Q.63



Ketal formation

Topic:Aldehydes and ketons; Sub Topic:Reaction with alcohol ; L:2; Medical-UG ; AIPMT / NEET Exam - 2016

Q.64 $\Delta G = \Delta H - T\Delta S$

Spontaneous at all temperature $\Delta H < O,\ \Delta S > O$

Topic: Thermodynamics; Sub Topic:Free energy ; L: 1; Medical-UG ; AIPMT / NEET Exam - 2016

Q.65 $d = \dfrac{Z\,M}{N_A\,a3}$

$$a3 = \frac{6.94 \times 2}{6.022 \times 10^{23} \times 530 \times 10^{-3}} = \frac{6.94 \times 200 \times 10^{-24}}{5.30 \times 6.022}$$

$$= 3.52 \times 10^{-8}\ cm$$

$$= 352\ pm$$

Topic: Solid state; Sub Topic:Density ; L:2; Medical-UG ; AIPMT / NEET Exam - 2016

Q.66 Decreasing order of Bond energy, $Cl_2 > Br_2 > F_2 > I_2$

The reason is anomalous behavior due to large electron – electron republsion among the lone pairs in F_2 molecule other than Cl_2 and Br_2.

Topic: p-block; Sub Topic:Bond energy ; L:2; Medical-UG ; AIPMT / NEET Exam - 2016

Q.67 (1) Novalgin – It is analgesic. Used for treatment of pain.
(2) Pencilin – Antibiotic
(3) Streptomycin – Antibiotic
(4) Chloromycetic – Used for treat infection.

Topic: Chemistry in every day life; Sub Topic:Medicines ; L:1; Medical-UG ; AIPMT / NEET Exam - 2016

Q.68

$$\frac{n_1/t_1}{n_2/t_2} = \sqrt{\frac{M_2}{M_1}} \qquad \Rightarrow n_2 = \frac{1}{2},\ n_1 = n'$$

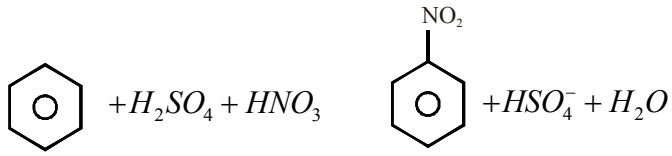
$$\Rightarrow \quad \frac{2t_2 n'}{t_1 x_1} = \sqrt{\frac{M_2}{M_1}} = \sqrt{\frac{2}{32}} = \sqrt{\frac{1}{16}} = \frac{1}{4}$$

Assuming $t_2 = t_1$

$$\frac{2n' t_2}{t_1} = \frac{1}{4} \qquad \therefore n' = \frac{1}{8}$$

Topic:Gaseous state ; Sub Topic:Grahms law ; L:1; Medical-UG ; AIPMT / NEET Exam - 2016

Q.69



If we add $KHSO_4^-$, $conc.HSO_4^-$ increases, equilibrium shifts backward.

Topic: Hydrocarbons; Sub Topic:Benzene ; L:2; Medical-UG ; AIPMT / NEET Exam - 2016

Q.70 As per VSEPR theory, overall order of Repulsion is

$$\underset{\text{(Repulsion)}}{BP-BP} < \underset{\text{(Repulsion)}}{BP-LP} < \underset{\text{(Repulsion)}}{LP-LP}$$

Topic: Chemical bonding; Sub Topic:V.S.E.P.R ; L:1; Medical-UG ; AIPMT / NEET Exam - 2016

Q.71 $\underset{\text{Calcium Carbide}}{CaC_2} + \underset{\text{Nitrogen Gas}}{N_2} \longrightarrow \underset{\text{Calcium Cyanamide}}{CaCN_2} + C$

$CaCN_2$ is not given in the option so it should be bonus.

Topic: S-block; Sub Topic:II A ; L:2; Medical-UG ; AIPMT / NEET Exam - 2016

Q.72 $P = Ke^{-\Delta H/RT}$

$$\ln P = \ln K - \frac{\Delta H}{RT}$$

$$\frac{d}{dT}\ln P = \frac{\Delta H_V}{RT^2}$$

$$\therefore \frac{d\ln P}{dT} = \frac{\Delta H_V}{RT^2}$$

Topic: Chemical eqilibrium; Sub Topic:V.P. ; L:3; Medical-UG ; AIPMT / NEET Exam - 2016

Q.73

	Molecule	Hybridization	Shape as per VSEPR Theory
1	XeF_6	sp^3d^3	Distored octahedron
2	XeO_3	sp^3	Pyramidal
3	$XeOF_4$	sp^3d^2	Square Pyramidal
4	XeF_4	sp^3d^2	Square planar

Topic:P-block; Sub Topic:Zerogroup ; L:1; Medical-UG ; AIPMT / NEET Exam - 2016

Q.74 Metal carbon bond in metal carbonyls possess both σ and π character. M – C π bond is formed by donation of a pair of electrons from filled orbital of metal into vacant antibonding π orbital of CO. CO bond length increases if M has more tendency to donate lone pair by metal more CO bond length.

Topic: Co-ordination compound; Sub Topic:Metal carbonyls ; L:3; Medical-UG ; AIPMT / NEET Exam - 2016

Q.75 $Pt, H_{2(g)} / H^+$ Hydrogen electrode $E^o_{H_2/H^+} = 0.0 Volt$

$H_{2(g)} \longrightarrow 2H^+_{(aq)} + 2e^-$ $[H^+] = 10^{-7} M$ at $25°C$ (for Pure water)

$$E = \frac{-0.0591}{2} \log\left(\frac{[H^+]^2}{P_{H_2}}\right)$$

$$E = 0 = \log\frac{[H^+]^2}{P_{H_2}} = 0 \qquad \therefore [H^+]^2 = P_{H_2}$$

$$\therefore P_{H_2} = 10^{-14}\ atm$$

Topic: Electrochemistry; Sub Topic:Hydrogen electrode ; L: 2; Medical-UG ; AIPMT / NEET Exam - 2016

Q.76 Catalyst is going to affect the activation energy of a chemical reaction. Activation energy is the minimum energy required to from activated complex or Transiton state.

Topic: Chemical Kinetics; Sub Topic:Catylst ; L:1; Medical-UG ; AIPMT / NEET Exam - 2016

Q.77 Radius ratio of $\left(\frac{A^+}{B^-}\right) = \frac{0.98 \times 10^{-10}\ m}{1.81 \times 10^{-10}\ m} = \frac{0.98}{1.81} = 0.541$

If the radius ratio is between 0.414 and 0.732 then Co-ordination number is 6.

Topic: Solid state; Sub Topic:Co-ordination number ; L:2; Medical-UG ; AIPMT / NEET Exam - 2016

Q.78 Phosphinic acid is Hypophosphorous acid H_3PO_2 which is Monobasic acid.

Phosphonic acid is phosphorous acid H_3PO_3 which is Dibasic acid.

Topic: P-block; Sub Topic:V A group ; L:2; Medical-UG ; AIPMT / NEET Exam - 2016

Q.79 Fog is a colliodal solution in which liquid droplets are dispersed in gas .

Topic:Surface chemistry; Sub Topic:Colloids ; L:1; Medical-UG ; AIPMT / NEET Exam - 2016

Q.80 By RAOULT'S law

A – benzene, B - Toluene

$$P_T = P^o_A X_A + P^o_B X_B$$

$$= 12.8 \times 0.5 + 3.85 \times 0.5$$

$$= 6.2 + 1.925$$

$$= 8.125$$

also, mole fraction of benzene in vapour form

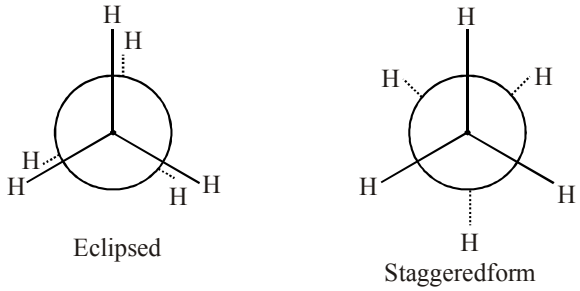
$$Y_A = \frac{P_A^o X_A}{P_T} = \frac{6.2}{8.121} = 0.75$$

and mole fraction of Toluene in vapour form

$$Y_B = 1 - 0.75 = 0.25$$

Topic: Solution and colligative properties; Sub Topic:Raoult's law ; L:2; Medical-UG ; AIPMT / NEET Exam - 2016

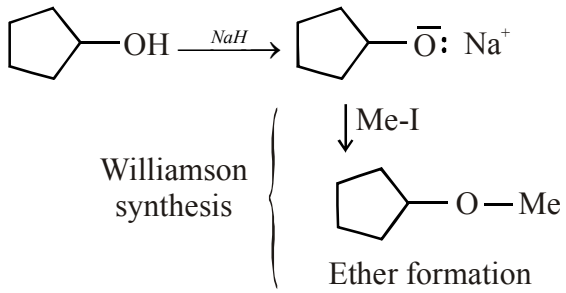
Q.81 $CH_3 - CH_3$



(Morestable)

Topic: GOC; Sub Topic:Conformational isomerism ; L:1; Medical-UG ; AIPMT / NEET Exam - 2016

Q.82

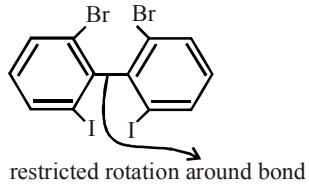


Topic: Ethers; Sub Topic:Williamson synthesis ; L:1; Medical-UG ; AIPMT / NEET Exam - 2016

Q.83 $> C = O + R - NH_2 \rightarrow > \underset{\text{Schiff base}}{C = N - R}$

Topic: Aldehydes and ketons; Sub Topic:Reaction with amines ; L:1; Medical-UG ; AIPMT / NEET Exam - 2016

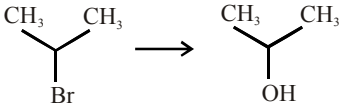
Q.84



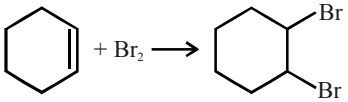
is optically active (Non super imposable on its mirror image)

Topic: GOC; Sub Topic:Optical isomerism ; L:2; Medical-UG ; AIPMT / NEET Exam - 2016

Q.85 (a) $\underset{\text{(Elimination)}}{CH_3CH_2CH_2Br + KOH} \rightarrow CH_3CH = CH_2 + KBr + H_2O$

(b) 

(substitution)

(c) 

(addition)

Topic: Reaction mechanism; Sub Topic:General ; L:1; Medical-UG ; AIPMT / NEET Exam - 2016

Q.86 at 100° C (boiling point)

vapour pressure of water $P^o = P_{atm} = 760\ ml$

$$\therefore \quad \frac{P^o - P_s}{P^o} = X_{solute}$$

$$\Rightarrow \quad \frac{760 - 732}{760} = \frac{n_{solute}}{n_{solvent}}$$

$$\Rightarrow \quad \frac{28}{760} = \frac{6.5/m}{100/18}$$

$$\Rightarrow \quad m = \frac{6.5 \times 18 \times 760}{28 \times 100} \approx 32$$

Now,

$\Delta T_b = K_b$ molality

$$= 0.52 \times \frac{6.5/32}{0.1}$$

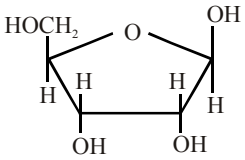
$$= \frac{0.52 \times 6.5}{32 \times 0.1}$$

$$= 1.05 \approx 1$$

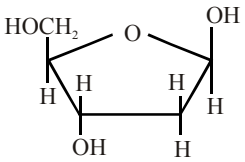
$\therefore$ boiling point of solution $= 100 + 1 = 101°C$

Topic: Solution & colligative properties; Sub Topic:Colligative ; L:2; Medical-UG ; AIPMT / NEET Exam - 2016

Q.87



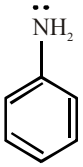
β -D-ribose
Sugar component of RNA



β -D-2deoxyribose
Sugar component of DNA

Topic: Biomolecules; Sub Topic:RNA - DNA ; L: 1; Medical-UG ; AIPMT / NEET Exam - 2016

Q.88

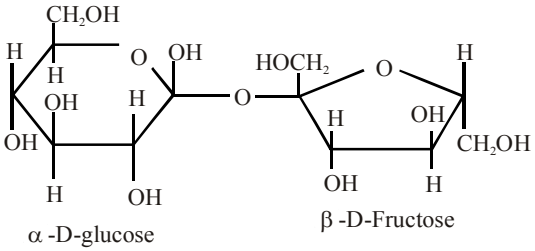


Here lone pair is in conjugation with double bond so basic strength decreased.

$R-\ddot{N}H_2$ (No conjugation)

Topic: GOC; Sub Topic:Basicity ; L:1; Medical-UG ; AIPMT / NEET Exam - 2016

Q.89



α -D-glucose

β -D-Fructose

Glycosidic bond involves reduceing groups.

Sucrose (No reducing sugar)

Topic: Biomolecules; Sub Topic:Carbohydrates ; L:2; Medical-UG ; AIPMT / NEET Exam - 2016

Q.90 $CH_3-C\equiv C^{\ominus}:$ In the carbanian the carbon is having 1 sigma bond, 2π bonds and 1 lone pair therefore C is sp hybridized.

Topic: GOC; Sub Topic:Carbanion ; L:1; Medical-UG ; AIPMT / NEET Exam - 2016

BIOLOGY

Q.91 Gause's principle of competitive exclusion explains competition between individual.

Topic:Organisms and Populations ; Sub Topic:Population interactions ; L:2_ ; Medical-UG ; AIPMT / NEET Exam - 2016

Q.92 Human insulin has peptide chains A and B linked together by Disulphide bridges.

Topic:Biotechnology and It's applications ; Sub Topic:Application in Human Health ; L:2 ; Medical-UG ; AIPMT / NEET Exam - 2016

Q.93 The free nuclear endosperm is formed by free nuclear divisions in which cytokinesis is not followed by wall formation.

Topic:Sexual Reproduction in Flowering Plants ; Sub Topic:Post Fertilization Changes ; L:2_ ; Medical-UG ; AIPMT / NEET Exam - 2016

Q.94 RNA of viroids has low molecular weight.

Topic:Biological Classification ; Sub Topic:Viroids ; L:2 ; Medical-UG ; AIPMT / NEET Exam - 2016

Q.95 Arthropods have chitinous exoskeleton, show metameric segmentation and jointed appendages. Parapodia is a characteristics of annelida helping them in locomotion.

Topic: Animal Kingdom ; Sub Topic: Non Chordate ; L: 1 ; Medical-UG ; AIPMT / NEET Exam - 2016

Q.96 Heamophilia is X-linked recessive disorder which causes defect in the clotting factor formation, thus a simple cut can bleed continuously leading to even death. Thus, it is also known as 'Bleeders' disease or 'Royal Disease' as Queen Victoria is a carrier for this disease.

Topic: Principle of Inheritance & Variation ; Sub Topic: Mendelian Disorders ; L: 1 ; Medical-UG ; AIPMT / NEET Exam - 2016

Q.97 Red drop effect and enhancement effect have been instrumental in the discovery of PS-1 and PS-2 on the Thylakoid membranes of chloroplast.

Topic:Photosynthesis ; Sub Topic:Light reactions ; L:3_ ; Medical-UG ; AIPMT / NEET Exam - 2016

Q.98 Macronutrients are required in greater amount which is 1 mg/gram of plant dry weight.

Topic:Mineral Nutrition ; Sub Topic:Essential Nutrients ; L:2 ; Medical-UG ; AIPMT / NEET Exam - 2016

Q.99 Emphysema is a chronic respiratory disorder caused due chronic cigarette smoking in which alveolar walls are damaged due to which respiratory surface is decreased.

Topic: Breathing and Exchange of Gases ; Sub Topic: Disorders ; L: 1 ; Medical-UG ; AIPMT / NEET Exam - 2016

Q.100 Ley agriculture helps to increase soil fertility and improve physical texture of the soil.

Topic:Bio-diversity and Conservation ; Sub Topic:Soil Conservation ; L:2 ; Medical-UG ; AIPMT / NEET Exam - 2016

Q.101 Mitochondria and chloroplast contain protein synthesizing machinery.

Topic:Cell: The Basic Unit of Life ; Sub Topic:Eukaryotic Cell; L:2_ ; Medical-UG ; AIPMT / NEET Exam - 2016

Q.102 Amniocentesis is a medical procedure used in prenatal diagnosis of chromosomal and genetic abnormalities such as Down's syndrome. Turner's syndrome, etc. It also helps in prenatal sex determination, hence there is a statutory ban on it to prevent female foeticide. It is done when woman is between 14-16 weeks pregnant.

It does not help in detection of cleft palate.

Topic: Reproductive Health ; Sub Topic :Amniocentesis ; L: 1 ; Medical-UG ; AIPMT / NEET Exam - 2016

Q.103 Photolysis of water occurs in Lumen of thylakoids.

Topic:Photosynthesis ; Sub Topic:Light Reactions ; L:3 ; Medical-UG ; AIPMT / NEET Exam - 2016

Q.104 Photosensitive compounds in human eye i.e. in Rods & Cones is opsin & Retinal.

Topic: Neural Control & Coordination ; Sub Topic: Eye ; L: 2 ; Medical-UG ; AIPMT / NEET Exam - 2016

Q.105 Spindle fibres attach on to Kinetochore proteins in the Centromere of the chromosome.

Topic:Cell Division; Sub Topic:Mitosis ; L:2 ; Medical-UG ; AIPMT / NEET Exam - 2016

Q.106 River Dolphin represents the purity of the holy Ganga as it can only survive in pure and fresh water.

Topic:Biodiversity and Conservation ; Sub Topic:In Situ Conservation; L:3 ; Medical-UG ; AIPMT / NEET Exam - 2016

Q.107 Lactose binds to repressor protein and prevents it from binding to operator gene.

Topic:Molecular basis of Inheritance ; Sub Topic:Lac Operon ; L:2_ ; Medical-UG ; AIPMT / NEET Exam - 2016

Q.108 Parathormone increases blood calcium level and Calcitonin decreases blood calcium levels.

Hence, antagonistic,

Insulin is hypoglycaemic & Glucagon in hyperglyceamic hormone. Hence Antagonistic.

Aldosterone causes reabsorption of Na^+ ions from renal tubules and Atrial Natriuretic factor causes excretion of Na^+ ions from renal tubules. Hence Antagonistic.

Relaxin secreted by ovary and placenta to relax the pelvic ligaments during parturition and Inhibin is secreted by male reproductive system sertoli cells which inhibit secretion of FSH and ICSH & Ovary to inhibit FSH. Hence, not Antagonistic.

Topic: Chemical Coordination and Integration ; Sub Topic: Human Endocrine System ; L: 1 ; Medical-UG ; AIPMT / NEET Exam - 2016

Q.109 Peroxisomes is a microbody. Chromatin consist of DNA and proteins. It condenses to form chromosomes. Nucleosome is the basic unit of Chromatin.

Topic:Cell: The Basic Unit of Life ; Sub Topic:Cytoskeleton ; L:3_ ; Medical-UG ; AIPMT / NEET Exam - 2016

Q.110 Many ribosomes are attached to a single strand of mRNA during protein synthesis. It is known as Polysome.

Topic:Molecular basis of Inheritance_ ; Sub Topic:Translation; L:2 ; Medical-UG ; AIPMT / NEET Exam - 2016

Q.111 Fertilization is practically only feasible if the ovum and sperms are transported simultaneously into the ampulla isthmus region of fallopian tube.

Topic: Human Reproduction ; Sub Topic: Fertilization ; L: 1 ; Medical-UG ; AIPMT / NEET Exam - 2016

Q.112 Asthma is an allergic response leading to inflammatory disease of the airways with episodes of reversible over reactivity of airways smooth muscles.

Topic: Breathing and Exchange of Gases ; Sub Topic: Disorders ; L: 1 ; Medical-UG ; AIPMT / NEET Exam - 2016

Q.113 Bio assay is an indirect method of estimating a biological compound by studying its physiological activity.

Topic:Plant growth and development ; Sub Topic:PGR ; L:3 ; Medical-UG ; AIPMT / NEET Exam - 2016

Q.114 Papilionaceous corolla has one large posterior standard or Vexillum. In front of standard are two wing like alae and in the anterior region are two fused Carina.

Topic:Morphology of Flowering plants ; Sub Topic:Study of Angiosperm Families ; L:3 ; Medical-UG ; AIPMT / NEET Exam - 2016

Q.115 Liliaceae family is a monocot family characterised by Tricarpellary, Syncarpous Gynoceium with superior, trilocular ovary with two ovules in each loculus and placentation axile.

Topic:Morphology of Flowering plants ; Sub Topic:Study of Angiosperm Families ; L:3 ; Medical-UG ; AIPMT / NEET Exam - 2016

Q.116 Peptidoglycan - Bacterial cell wall. Cellulose and Hemicellulose - plant cell wall.

Topic:Cell: The Basic Unit of Life ; Sub Topic:Cell Wall_ ; L:1 ; Medical-UG ; AIPMT / NEET Exam - 2016

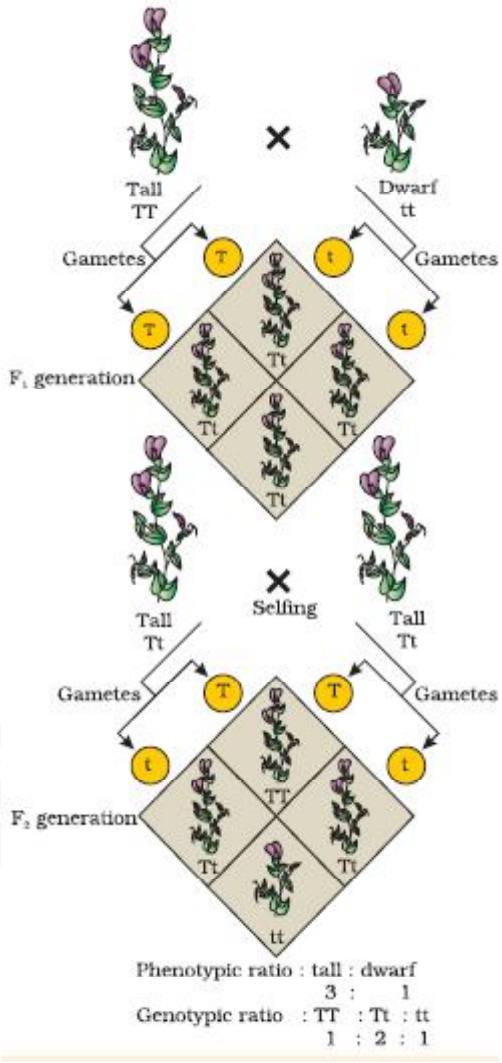
Q.117 During follicular phase, FSH levels increase for maturation of follicles leading to formation of Graafian follicle.

Topic: Human Reproduction ; Sub Topic: Menstrual Cycle ; L: 1 ; Medical-UG ; AIPMT / NEET Exam - 2016

Q.118 Leptotene - Condensation of Chromatin. Zygotene - Synapsis. Diplotene - Terminalisation.

Topic:Cell Division ; Sub Topic:Meiosis ; L:2 ; Medical-UG ; AIPMT / NEET Exam - 2016

Q.119



Topic: Principle of Inheritance & Variation ; Sub Topic: Mendel's Laws of Inheritance ; L: 1 ; Medical-UG ; AIPMT / NEET Exam - 2016

Q.120 From the Evil quartet Habitat loss and fragmentation due to over population, urbanisation and industrialisation is the major cause of extinction.

Topic:Biodiversity and Conservation; Sub Topic:Biodiversity loss ; L:2 ; Medical-UG ; AIPMT / NEET Exam - 2016

Q.121 Cropland ecosystem has same type of crop plants so it least genetic diversity.

Topic:Biodiversity and Conservation; Sub Topic:Biodiversity Conservation ; L:2 ; Medical-UG ; AIPMT / NEET Exam - 2016

Q.122 GnRH pulse frequency in females is controlled by circulating levels of oestrogen & progesterone.

Topic: Human Reproduction / Chemical Co-ordination & Integration ; Sub Topic: Gametogenesis / Human Endocrine System ; L: 2 ; Medical-UG ; AIPMT / NEET Exam - 2016

Q.123 Plasmid is double stranded, circular, self replicating and extra chromosomal DNA in bacterial cells.

Topic:Biotechnology : Principles and Processes ; Sub Topic:Tools of genetic engineering ; L:1 ; Medical-UG ; AIPMT / NEET Exam - 2016

Q.124 Periplanata Americana has:

Schizocoelom as body cavity.

Metameric segmentation.

Exoskeleton of chitin which is made up of N-acetyl glucosamine.

Topic: Structural Organisation in Animals ; Sub Topic: Cockroach ; L: 3 ; Medical-UG ; AIPMT / NEET Exam - 2016

Q.125 Autoimmune disease is a group of disorder in which the cells of the acquired immunity loses the ability to differentiate between self and non self.

Topic: Human Health & Disease ; Sub Topic: Immunity ; L: 1 ; Medical-UG ; AIPMT / NEET Exam - 2016

Q.126 Dominance - In a heterozygous organism only one allele expresses itself.

Codominance - In a heterozygous organism both alleles experess themselves equally.

Pleiotropy - A single gene influences many characters.

Polygenic Inheritance - Many genes govern a single character.

Topic: Principle of Inheritance & Variation ; Sub Topic: Mendel's Laws of Inheritance and Neo-Mendelism ; L: 1 ; Medical-UG ; AIPMT / NEET Exam - 2016

Q.127 Joint Forest Management Concept was introduced to protect forest cover in India.

Topic:Biodiversity and Conservation ; Sub Topic:Deforestation ; L:2 ; Medical-UG ; AIPMT / NEET Exam - 2016

Q.128 Haemophilia is a sex-linked recessive disease in which there is a problem in clotting of blood.

Down's syndrome (trisomy 21) is caused due to aneuploidy.

Phenylketonuria is an autosomal recessive gene disorder.

Topic: Principle of Inheritance & Variation ; Sub Topic: Mendelian and Chromosomal Disorders ; L: 1 ; Medical-UG ; AIPMT / NEET Exam - 2016

Q.129 Eubacteria are true bacteria.

Topic:Biological Classification ; Sub Topic:Kingdom Monera ; L:1 ; Medical-UG ; AIPMT / NEET Exam - 2016

Q.130 Proximal end of the filament of stamen is attached to the Thalamus or petal and distal end is attached to anther.

Topic:Sexual Reproduction in Flowering Plants ; Sub Topic: Development of Anther ; L:2_ ; Medical-UG ; AIPMT / NEET Exam - 2016

Q.131 Vasectomy is a permanent contraceptive method in which a small part of the vas deferens is removed or tied up through a small incision on the scrotum. It prevents entry of sperm into semen thus preventing fertilization.

Topic: Reproductive Health ; Sub Topic: Population Explosion and Birth Control ; L: 1 ; Medical-UG ; AIPMT / NEET Exam - 2016

Q.132 The enzyme taq polymerase enzyme is a thermastable enzyme which is obtained from thermus aquaticus.

Topic:Biotechnology : Principles and processes; Sub Topic:PCR ; L:2 ; Medical-UG ; AIPMT / NEET Exam - 2016

Q.133 Inhibin is produced by granulose cells in ovary and inhibits the secretion of FSH - follicle stimulating hormone.

Topic: Human Reproduction ; Sub Topic: Hormonal Control of Gametogenesis ; L: 1 ; Medical-UG ; AIPMT / NEET Exam - 2016

Q.134 Meloidogyne incognita infects the root of tobacco.

Topic: Biotechnology and Its Application ; Sub Topic: Food Production ; L: 1 ; Medical-UG ; AIPMT / NEET Exam - 2016

Q.135 Polio drops - Oral Polio Vaccine also known as Sabin Vaccine is prepared with live attenuated pathogens.

Topic: Human Health & Disease ; Sub Topic: Immunity ; L: 2 ; Medical-UG ; AIPMT / NEET Exam - 2016

Q.136 Lysosomes is enclosed by a single membrane while Mitochondria, Chloroplasts and Nuclei are enclosed by double membrane.

Topic: Cell : The Basic Unit of Life ; Sub Topic: Cell Organels ; L: 1 ; Medical-UG ; AIPMT / NEET Exam - 2016

Q.137 Lack of relaxation between successive stimuli in sustained muscle contraction is known as Tetanus.

Topic: Locomotion and Movement ; Sub Topic: Physiology ; L: 1 ; Medical-UG ; AIPMT / NEET Exam - 2016

Q.138 Pitcher of Nepenthes is the modificaiton of leaf lamina whereas Thorns of citrus, Tendrils of cucumber and flattened structures of opuntea are modifications of stem.

Topic: Morphology of Plants ; Sub Topic: Leaf Modification ; L: 2 ; Medical-UG ; AIPMT / NEET Exam - 2016

Q.139 Anthocyanins are water soluble pigments found in plant cell vacuoles.

Topic: Cell : The Basic Unit of Life ; Sub Topic: Cell Organels ; L: 1 ; Medical-UG ; AIPMT / NEET Exam - 2016

Q.140 Sequoia is tallest tree which is a Gymnosperm. It can be 130-140 metres tall.

Topic: Plant Kingdom ; Sub Topic: Gymnosperm ; L: 1 ; Medical-UG ; AIPMT / NEET Exam - 2016

Q.141 Zinc finger analysis does not contribute to DNA fingerprinting.

Topic: Molecular Basis of Inheritance ; Sub Topic: DNA Fingerprinting ; L: 2 ; Medical-UG ; AIPMT / NEET Exam - 2016

Q.142 Wall of intestine composed of smooth mucle.

Tendon is dense regular white fibrous connective tissue and aerolar tissue is loose connective tissue.

Tip of nose is made up of elastic cartilage.

Lining of Stomach is lined with columnar epithelium.

Topic: Structural Organisation in Animals ; Sub Topic: Animal Tissues ; L: 1 ; Medical-UG ; AIPMT / NEET Exam - 2016

Q.143 C_4 plants like Maize and sugarcane can fix CO_2 at high temperature and high intensity of light. Its productivity is high at higher intensity. Photorespiration is absent in these plants.

Topic:Photosynthesis ; Sub Topic: C_4 Plants ; L: 2 ; Medical-UG ; AIPMT / NEET Exam - 2016

Q.144 Flipper of Whale is homologous to the wing of a bird.

Topic: Evolution ; Sub Topic: Evidences of Evolution ; L: 1 ; Medical-UG ; AIPMT / NEET Exam - 2016

Q.145 Chondrichthyes has endoskeleton made up of cartilage.

All Mammals are Viviparous except platypus which is Oviparous.

All Chordates posses a mouth with an upper and a lower jaw except agnatha which are without jaws.

All reptiles have 3 - chambered heart except crocodile and tortoise in which heart is four chambered.

Topic: Animal Kingdom ; Sub Topic: Chordates & Non - chordates ; L:1 ; Medical-UG ; AIPMT / NEET Exam - 2016

Q.146 In cancer cells telomerase is expressed and its production is not inhibited due to mutations leadings to cancer formation.

Topic: Human Health & Disease ; Sub Topic: Cancer ; L: 4 ; Medical-UG ; AIPMT / NEET Exam - 2016

Q.147 Amino acid Tryptophan is the precursor for the synthesis of Melatonin and Serotonin.

Topic: Chemical Coordination and Integration ; Sub Topic: Human Endocrine System ; L: 3 ; Medical-UG ; AIPMT / NEET Exam - 2016

Q.148 The earliest organism that appeared on earth were non-green and presumably anaerobes.

The first autotrophic organism were the chemoautotrophs that never released oxygen.

Topic: Evolution ; Sub Topic: Evolution of Life ; L: 1 ; Medical-UG ; AIPMT / NEET Exam - 2016

Q.149 Reduction in pH of blood decreases the affinity of haemoglobin with oxygen.

Topic: Breathing & Exchange of Gases ; Sub Topic: Physiology ; L: 1 ; Medical-UG ; AIPMT / NEET Exam - 2016

Q.150 Analogous structures are a result of Convergent evolution.

Topic: Evolution ; Sub Topic: Evidences for Evolutions ; L: 1 ; Medical-UG ; AIPMT / NEET Exam - 2016

Q.151 Hind II is a type of restriction endonuclease.

Topic: Biotechnology : Principles & Process ; Sub Topic: Tools of Genetic Engineering ; L: 1 ; Medical-UG ; AIPMT / NEET Exam - 2016

Q.152 The term ecosystem was coined by A. G. Tansley in 1935

Topic: Ecosystem ; Sub Topic: Ecosystem Structural & Function ; L: 1 ; Medical-UG ; AIPMT / NEET Exam - 2016

Q.153 Glycine is not a sulphur containing amino acid. Methionine and Cysteins are the only amono-acids that contains sulphur.

Topic: Biomolecules ; Sub Topic: Carbohydrates / Amino Acid ; L: 2 ; Medical-UG ; AIPMT / NEET Exam - 2016

Q.154 In Bryophytes and Pteridophytes the male gametes are motile and it requires water for fertilisation.

Topic: Plant Kingdom ; Sub Topic: Bryophytes and Pteridophytes ; L: 3 ; Medical-UG ; AIPMT / NEET Exam - 2016

Q.155 $\boxed{dN/dt = rN\left(1 - N/k\right)}$ is the verhulst - pearl logistic growth equation in which if N / k is exactly 1. $\left(1 - N/k\right)$ becomes zero that means growth is zero.

Topic: Organism & Population ; Sub Topic: Population ; L: 3 ; Medical-UG ; AIPMT / NEET Exam - 2016

Q.156 Tapetum provides nutrition ot the pollen grain.

Topic: Reproduction in Flowering Plants ; Sub Topic: Structure of Anther ; L: 2 ; Medical-UG ; AIPMT / NEET Exam - 2016

Q.157 The first biospecies that appears for the first time on bare rock is lichen which is followed by Bryophytes.

Topic: Ecosystem ; Sub Topic: Ecological Succession ; L: 1 ; Medical-UG ; AIPMT / NEET Exam - 2016

Q.158 AUG is start codon that codes for Methionine whereas UGA, UAA and UAG are stop codons.

Topic: Molecular Basis of Inheritance ; Sub Topic: Genetic Code ; L: 1 ; Medical-UG ; AIPMT / NEET Exam - 2016

Q.159 Ossified endoskeleton, Breathing using lungs and Warm blooded nature are characteristic of both birds and mammals except Viviparity, as birds are Oviparous.

Topic: Animal Kingdom ; Sub Topic: Chordates ; L: 1 ; Medical-UG ; AIPMT / NEET Exam - 2016

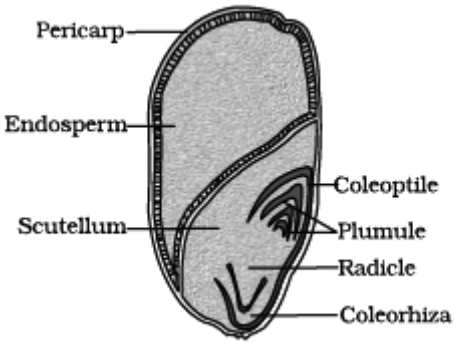
Q.160 According to the rules of IUCN the original names were taken from latin or Greek languages. New names are now derived either from Latin language or are latinised.

Topic: The Living World ; Sub Topic: Diversity in the Living World ; L: 1 ; Medical-UG ; AIPMT / NEET Exam - 2016

Q.161 Blood pressure in the pulmonary artery is more than that in the pulmonary vein.

Topic: Body Fluids & Circulation ; Sub Topic: Blood Pressure ; L: 2 ; Medical-UG ; AIPMT / NEET Exam - 2016

Q.162 Major part of maize grain is occupied by endosperm whereas a single large



Cotyledon is present that is called Scutellum.

Topic: Reproduction in Flowering Plants ; Sub Topic: Post-Fertilisation (Structure and Events) ; L: 1 ; Medical-UG ; AIPMT / NEET Exam - 2016

Q.163 Gastric acid - HCl is secreted by parietal cells of the stomach.

Topic: Digestion & Absorption ; Sub Topic: Human Digestive System ; L: 1 ; Medical-UG ; AIPMT / NEET Exam - 2016

Q.164 Ozone layer protects us from UV rays that can be acarcinogen and cause skin cancer.

Topic: Environmental Issues ; Sub Topic: Ozone Depletion in the Stratosphere ; L: 1 ; Medical-UG ; AIPMT / NEET Exam - 2016

Q.165 Protista is a group created by Haeckel which includes all Eukaryotic unicellular organisations.

Topic: Biological Classification ; Sub Topic: Protista ; L: 1 ; Medical-UG ; AIPMT / NEET Exam - 2016

Q.166 Water vapour comes out and CO_2 diffuses simultaneously through stomatal openings because diffusion coefficient of water and CO_2 is different and it moves along its concentration gradient.

Topic: Photosynthesis ; Sub Topic: Factors Affecting Photosynthesis ; L: 2 ; Medical-UG ; AIPMT / NEET Exam - 2016

Q.167 Urea is produced in the liver, hence Hepatic Vein carries largest amount of urea.

Topic: Excretory Products and Their Elimination ; Sub Topic: Modes of Excretion ; L: 1 ; Medical-UG ; AIPMT / NEET Exam - 2016

Q.168 The process of formation of seed without fertilization is called Apomixis. It is eqivalent to asexual reproduction examples are some species fo Asteraceae and grasses.

Topic: Reproduction in Flowering Plants ; Sub Topic: Apomixis and Polyembryony ; L: 2 ; Medical-UG ; AIPMT / NEET Exam - 2016

Q.169 Clostridium butylicum is the source of acetone. Candida lipolyticum is the source of lepase.

Topic: Microbes in Human Welfare ; Sub Topic: Microbes in Industrial Products ; L: 3 ; Medical-UG ; AIPMT / NEET Exam - 2016

Q.170 When two genes are linked and present on the same chromosome then in a testcross involving F_1 dihybrid flies, more parental-type offspring were produced than the recombinant - type offspring.

Topic: Principle of Inheritance & Variation ; Sub Topic: Linkage ; L: 1 ; Medical-UG ; AIPMT / NEET Exam - 2016

Q.171 Smaller animals have a higher metabolic rate thus it is much easier for a small animal to run uphillthan for a larger animal.

Topic: Breathing & Exchange of Gases ; Sub Topic: Physiology ; L: 1 ; Medical-UG ; AIPMT / NEET Exam - 2016

Q.172 Synapsis is the process of attachment of the homologous chromosomes during zygotene stgage of prophase I of meiosis.

Topic: Cell Cycle and Cell Division ; Sub Topic: Meiosis ; L: 2 ; Medical-UG ; AIPMT / NEET Exam - 2016

Q.173 More the one pollen tube of same species can grow into the style. It is frequently found in nature.

Topic: Reproduction in Flowering Plants ; Sub Topic: Pre-fertilization : Structures and Events ; L: 3 ; Medical-UG ; AIPMT / NEET Exam - 2016

Q.174 Guard cells of stomata are surrounded by subsidiary cells which locks chloroplast and works in co-ordination of guard cells to maintain the turgidity of the cell which regulates the opening and closing of stomata.

Topic: Anatomy of Flowering Plants ; Sub Topic: The Tissues System ; L: 2 ; Medical-UG ; AIPMT / NEET Exam - 2016

Q.175 The opening of hepatopancreatic duct into the duodenum is guarded by Sphincter of Oddi

Topic: Digestion & Absorption ; Sub Topic: Human Digestive System ; L: 1 ; Medical-UG ; AIPMT / NEET Exam - 2016

Q.176 Stems modifies into flat green organs performing the functions of leaves are known as phylloclade whereas phyllode is modification of petiole.

Topic: Morphology of Flowering Plants ; Sub Topic: The Stem ; L: 2 ; Medical-UG ; AIPMT / NEET Exam - 2016

Q.177 Archaebacteria are considered as most primitive prokaryote which appeared on earth for the first time as it could survive through the anaerobic harsh environment present that time.

Halophilus, Thermoacidophiles and Methanogens are Archaebacteria.

Methanogens are present in the rumen of cattle that is present in dung as well. It helps in production of methane gas that is a component of biogas.

Topic: Biological Classification ; Sub Topic: Kingdom Monera ; L: 2 ; Medical-UG ; AIPMT / NEET Exam - 2016

Q.178 Organic wastes from domestic sewage when reaches the river, it increases the rate of reproduction of algae present in river. It causes Algal Bloom or Eutrophication due to which BOD of water increases life present below the algal bed dies due to lack of O_2.

Topic: Environmental Issues ; Sub Topic: Water Pollution in its Control ; L: 2 ; Medical-UG ; AIPMT / NEET Exam - 2016

Q.179 Chromosome duplication without cell division results in polyploridy.

Topic: Cell Cycle and Cell Division ; Sub Topic: Cell Cycle ; L: 2 ; Medical-UG ; AIPMT / NEET Exam - 2016

Q.180 A typical fat molecule is made up of one glycerol and three fatty acid molecule.

Topic: Biomolecules ; Sub Topic: Fat ; L: 2 ; Medical-UG ; AIPMT / NEET Exam - 2016