AVIRAL CLASSES
CREATING SCHOLARS

JEE (ADVANCED), PMT & FOUNDATIONS

UTS- NEET -2020
MOCK TEST-08 SOLUTION

ANSWER KEY

PHYSICS

Ques.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Ans.	1	3	3	1	1	4	3	1	3	2	4	4	3	3	3	1	2	2	2	1	2	4	2	4	1
Ques.	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45					
Ans.	2	1	3	4	2	3	1	1	1	1	3	3	4	2	3	2	3	1	1	1					

CHEMISTRY

Ques.	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70
Ans.	3	3	2	2	1	1	2	4	4	1	3	3	2	1	2	4	2	3	2	1	2	3	1	4	1
Ques.	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90					
Ans.	2	1	1	1	4	1	2	2	2	1	2	4	3	1	3	3	1	1	2	2					

BIOLOGY

Ques.	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110
Ans.	3	4	3	1	4	2	4	1	2	1	2	4	4	3	4	4	4	1	3	1
Ques.	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130
Ans.	1	3	1	2	2	1	2	4	1	2	4	1	3	2	4	3	1	3	1	1
Ques.	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150
Ans.	1	3	4	4	4	3	4	2	2	2	2	4	1	2	4	4	2	4	1	4
Ques.	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170
Ans.	3	4	4	2	2	2	2	3	4	2	3	3	4	4	4	2	4	1	3	1
Ques.	171	172	173	174	175	176	177	178	179	180										
Ans.	4	4	2	4	4	2	3	3	3	4										

PHYSICS

2.[3] $F = 600 - 2 \times 10^5\, t = 0$

$$t = \frac{600}{2\times10^5}$$

$$= 3 \times 10^{-3}\ s$$

$$\text{Impulse} = \int_0^t F\,dt$$

3.[3] Let m be the mass of the disc. Then translational kinetic energy of the disc is :

$$K_T = \frac{1}{2} mv^2 \qquad \text{... (1)}$$

When it ascends on a smooth track its rotational kinetic energy will remain same while translational kinetic energy will go on decreasing. At highest point.

KT = mgh

or $\frac{1}{2}mv^2 = mgh$

or $h = \frac{v^2}{2g} = \frac{(6)^2}{2\times10} = 1.8$ m

4.[1] $P = \frac{\text{Energy}}{\text{time}} = \frac{dm}{dt}gh = 100 \times 10 \times 100$

$= 100$ kW

5.[1] (i) $W = \Delta U = \left\{\frac{m}{6}g\left(\frac{\ell}{12}\right)\right\} = \frac{mg\ell}{72}$

6.[4] From conservation of linear momentum

$8 \times 6 = 4 \times v \Rightarrow v = 12\ ms^{-1}$

As kinetic energy $= \frac{1}{2}mv^2$

7.[3]

Initial momentum = mv

final momentum = 3mV

mv = 3mV

$\Rightarrow V = v/3$

8.[1] $y_{cm} = \frac{m_1y_1 + m_2y_2}{m_1 + m_2}$

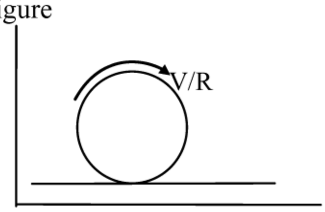
$0 = \frac{\left(\frac{m}{4}\right)(15) + \left(\frac{3m}{4}\right)y}{\frac{m}{4} + \frac{3m}{4}}$

$y = -5$ cm

9.[3] $\frac{2}{5}MR^2$

10.[2] $k = \frac{I}{2}\omega^2$

12.[4] From figure



V=Rω

V_{net} (for lowest point) $= v - R\omega = v - v = 0$

and Acceleration $= \frac{v^2}{R} + O = \frac{v^2}{R}$

(Since linear speed is constant) Hence (D)

13.[3] $U = -\frac{GMm}{r}$; $K = \frac{GMm}{2r}$; $E = \frac{-GMm}{2r}$

14.[3] $Y = \frac{F/A}{\frac{\Delta x}{L}} \Rightarrow F = \frac{YA}{L}\Delta x \propto \frac{A}{L}$

$V = AL \Rightarrow L \propto \frac{1}{A}$

$F \propto A^2$

15.[3] $\theta = mS\,\Delta T$

$\frac{\Delta\theta}{\Delta t} = P$

(P) (1) $= 50 \times 0.6 \times 50$ Cal

16.[1] $B_\phi = \gamma P$; $B_\theta = P$

17.[2]

18.[2] $C_{V_{min}} = \frac{n\frac{3R}{2} + n\frac{5R}{2}}{n+n} = 2R$

$C_p = nC_pdT$

$Q = n(p\lambda)$

$= n3R(2T - T)$

$Q = 3nRT$

19.[2] $T_1 = 2$ sec

$T_2 = 2\pi\sqrt{\frac{16}{g}}$

$= 4\left(2\pi\sqrt{\frac{1}{g}}\right) = 8$ sec

$t = \frac{T_1T_2}{T_2 - T_1} = \frac{(8)(2)}{8-2}$

$t = \frac{8}{3}$

Number of oscillation of shorter pendulum

$n = \frac{t}{T_1} = \frac{4}{3}$

20.[1] $K = \frac{\pi}{20} \Rightarrow \frac{2\pi}{\lambda} = \frac{\pi}{20}$

$\lambda = 40$ cm

Ans. $\Rightarrow \lambda/2 = 20$ cm

21.[2] $v = \sqrt{\frac{T}{\mu}} \Rightarrow v = \sqrt{\frac{1.6\times0.4}{10^{-2}}} = 8$ m/s

$\Delta t = \frac{2L}{v} \Rightarrow \Delta t = \frac{2\times0.4}{8} = 0.1$ sec.

22.[4] By theory.

23.[2] $W_{A\to B} = q\,(V_B - V_A)$

$$= q\int_B^A E.dr$$

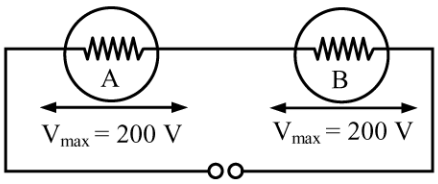
$$= q_0\int_{2a}^{3a}\frac{\lambda}{2\pi\varepsilon_0 r}.dr$$

$$= \frac{\lambda q_0}{2\pi\varepsilon_0}\ \ell n\ \frac{3}{2}$$

24.[4] $(n \times 1\ \mu F)\ 500 = 10^6\ \mu C$

$$n = \frac{10^6}{500} = 2000$$

25.[1] $R_A = \frac{200\times200}{40} = 1000\Omega,\ R_B = \frac{200\times200}{100} = 400\Omega$



$$V_1 = \frac{V\times R_1}{R_1+R_2} = 200$$

[considering that bulb A will not fuse]

$$\frac{V\times1000}{1400} = 200$$

$$V = \frac{200\times1400}{1000} = 280\ V$$

$$V_2 = \frac{V\times R_2}{R_1+R_2} = 200$$

$$V = \frac{200\times1400}{400} = 700\ V$$

If 700 volt is applied Bulb A will fuse.
Hence correct answer is 280 volt

26.[2] By symmetry $R_{AB} = \frac{3R}{2}$.

27.[1] $\frac{3R}{R} = \frac{\ell}{100-\ell} \Rightarrow 300 - 3\ell = \ell$

$\Rightarrow \ell = 75$ cm

28.[3] There will be no force on the loop due to horizontal current carrying wires because forces acting on these wires will be equal and opposite. Further, $F_{AD} > F_{BC}$. F_{AD} is directed towards left hand side and F_{BC} towards right hand side (according right hand rule). Therefore, the net force acting on the loop will be towards wire.

29.[4] $\varepsilon = VB\ell$

$= 4 \times 1.25 \times 10^{-4} \times 2 = 10^{-3}V$

35.[1] $I_{min} \propto (a - a)^2$

$I_{min} \propto (2a - a)^2$

Clearly, the intensity of minima increases. Again

$I_{max} \propto (a + a)^2$

$I_{max} \propto (2a + a)^2$

Clearly, the intensity of maxima increases

36.[3] $p' = 1.25\,p \;\&\; \lambda = \frac{h}{p}$

$$\frac{\lambda' - \lambda}{\lambda} \times 100 = \left(\frac{\lambda'}{\lambda} - 1\right) \times 100$$

$$= \left(\frac{p}{p'} - 1\right) \times 100$$

$$= \left(\frac{1}{1.25} - 1\right) \times 100$$

$$= -20\ \%$$

37.[3] use, $\lambda = \frac{h}{\sqrt{2mqV_0}}$

38.[4] $F = 2hp$

39.[2] $F = -\frac{dU}{dr} = -m\omega^2 r$

$m\omega^2 r = \frac{mv^2}{r}$

Also, $v = \omega r$ $\quad mvr = \frac{nh}{2\pi}$

$r = \sqrt{\frac{nh}{2\pi m\omega}}$

40.[3] $A = \frac{A_0}{2^{\frac{t}{T_{1/2}}}}$

$2000 = \frac{16000}{2^{12/T_{1/2}}}$

41.[2] $\alpha = 0.9$

$\frac{\Delta I_C}{\Delta I_E} = 0.9$

42.[3] $\overline{A} + \overline{B} = 4$

43.[1] Virtual, Inverted

44.[1] $g_d = g\left(1 - \frac{d}{R}\right) = g\left(1 - \frac{R}{2R}\right) = \frac{g}{2}$

45.[1] $\frac{MR^2}{4} + \frac{ML^2}{12}$

CHEMISTRY

46.[3] atom of X = 3×10^{23}

Mole atom of X = 0.5

Atomic wt. of X = $\frac{80}{0.5} = 160$

47.[3] Number of electrons

$= 2 \times 10^{-3} \times 6.02 \times 10^{23} \times 10$

$= 1.2 \times 10^{22}$

48.[2] $T = 1.52 \times 10^{-16} \frac{n^3}{Z^2}$ sec.

$$\frac{T_1}{T_2} = \frac{(2)^3}{(1)^2} \times \frac{(2)^2}{(3)^3} = \frac{32}{27}$$

49.[2] $M_{av.} = \frac{M_1x_1 + M_2X_2 + M_3x_3}{x_1 + x_2 + x_3}$

According to option (2)

$(M + 0.5) = \frac{M \times 4 + (M+1) \times 1 + (M+2) \times 1}{4 + 1 + 1}$

then L.H.S. = R.H.S

50.[1] $\Delta E \propto \frac{1}{n_1^2} - \frac{1}{n_2^2}$

51.[1] Boiling moles the bond strianed

52.[2] $w = -2.303\ nRT \log \frac{V_2}{V_1}$

53.[4]

$\frac{1}{2}N_2(g) + O_2(g) \rightleftharpoons NO_2(g)$ ... (1)

$2NO_2(g) \rightleftharpoons N_2O_4(g)$ ... (2)

$\frac{1}{2}N_2(g) + O_2(g) \rightleftharpoons N_2O(g)$ ... (3)

i.e. (3) = (1) × 2 + (2)

$K_3 = K_1^2 K_2$

$K_3' = \frac{1}{K_3}$

54.[4] $K_{sp} = \text{(}S^2\text{)} + 10^{-4}S$

$S = \frac{K_{sp}}{10^{-4}} = \frac{10^{-16}}{10^{-4}} = 10^{-12}$

55.[1] After mixing

$[Ag^+] = \frac{1}{2} \times 10^{-4} = 5 \times 10^{-5}$ M

$[Cl^-] = \frac{1}{2} \times 10^{-4} = 5 \times 10^{-5}$ M

$K_{ip} = [Ag^+][Cl^-] = (5 \times 10^{-5})^2$

$= 2.5 \times 10^{-9}$

Since ionic product is greater than Ksp hence precipitation will take place.

57.[3] FCC lattice have six face and each face is shared by one other unit cell.

58.[2] ($\pi \propto$ No. of particel)

59.[1] $y_A = \dfrac{P_A^0 X_A}{P_A^0 X_A + P_B^0 X_B}$

$y_A = \dfrac{1}{1 + \dfrac{P_B^0 X_B}{P_A^0 X_A}}$

$y_A = \dfrac{1}{1+(3)(3)} = \dfrac{1}{10} = 0.1$

60.[2] Fact

$\lambda_M NaNO_3 = \lambda_M KNO_3 - \lambda_M KCl$

$= 128 + 111 - 152 = 87\ S\ cm^2\ mol^{-1}$

61.[4] $E_{cell} = E^o_{Cell} - \dfrac{0.0591}{6} \log \dfrac{(Cr^{+3})^2}{(Fe^{+2})^3}$

$= (-0.42 - (-0.72)) - \dfrac{0.0591}{6} \log \dfrac{(0.1)^2}{(0.01)^3}$

$= 0.30 - \dfrac{0.0591}{6} \log 10^{+4}$

$= 0.30 - 0.04$

$= 0.26\ V$

62.[2] $\dfrac{R_A}{4} = \dfrac{R_B}{1} = \dfrac{R_C}{2} = \dfrac{R_D}{2}$

63.[3] $K = \dfrac{R}{[A]} = \dfrac{7.5 \times 10^{-4}}{0.5}$

$= 1.5 \times 10^{-3}\ sec^{-1}$

67.[3] β-keto acid.

68.[1] Include stereo isomers.

69.[4] It has localised *l*.p.

72.[1] Intramolecular Cannizzaro.

74.[1] Nucleophilicity $\propto K_b$.

76.[1] $Ph–NO_2 \rightarrow Ph–NH_2 \rightarrow Ph–N \rightleftarrows C \rightarrow Ph–NH–CH_3$

79.[2] Intramolecular E.S.R.