Path to Success
ALLEN CAREER INSTITUTE
KOTA (RAJASTHAN)

MAJOR TEST # 03

ALLEN NEET-UG | **DATE : 30 - 03 - 2013**

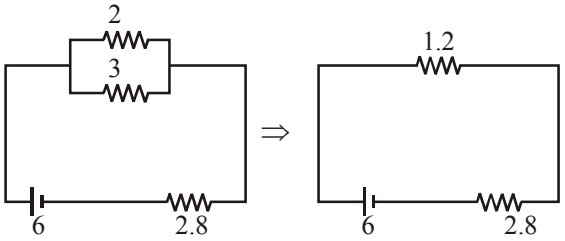
SYLLABUS - 03

ANSWER KEY

Q.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
A.	2	4	4	1	3	1	3	3	1	4	2	2	1	2	2	1	1	3	2	4
Q.	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
A.	2	4	1	2	4	2	3	2	4	1	3	1	1	4	1	2	3	3	4	1
Q.	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
A.	4	2	1	2	3	2	2	3	4	2	1	4	3	1	2	4	3	3	2	2
Q.	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
A.	4	3	3	3	4	3	3	4	1	2	1	3	2	1	4	4	1	1	3	1
Q.	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
A.	2	3	4	4	3	2	3	3	3	3	3	3	3	1	1	3	1	3	1	4
Q.	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120
A.	4	2	1	2	1	4	3	3	2	2	4	2	1	1	2	1	2	2	2	4
Q.	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140
A.	3	3	1	4	1	3	2	4	1	2	3	3	1	1	2	1	1	2	3	1
Q.	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160
A.	3	2	2	2	1	3	4	3	2	1	1	1	2	3	2	4	3	2	3	2
Q.	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180
A.	2	3	1	1	2	3	3	1	2	4	2	4	3	3	3	1	3	1	3	3

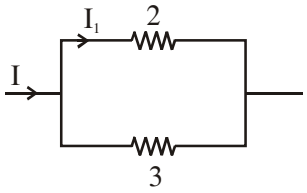
HINT – SHEET

1. An steady condition, the current will be



$$I = \frac{6}{4} = \frac{3}{2}$$

Current in 2Ω resistance



$$I_1 = \frac{3}{2+3} \times \frac{3}{2} = \frac{3}{5} \times \frac{3}{2} = 0.9$$

3. $m_1 : m_2 : m_3 = 1 : 3 : 5$

$\ell_1 : \ell_2 : \ell_3 = 5 : 3 : 1$

$$R = \frac{\rho\ell \times \ell}{A\ell} = \frac{\rho\ell^2}{v} = \frac{\rho\ell^2 d}{m}$$

ρ & d are constant, then

$$\frac{\ell_1^2}{m_1}:\frac{\ell_2^2}{m_2}:\frac{\ell_3^2}{m_3}=\frac{25}{1}:\frac{9}{3}:\frac{1}{5}$$

$= 125 : 15 : 1$

4. $M = i\pi r^2$

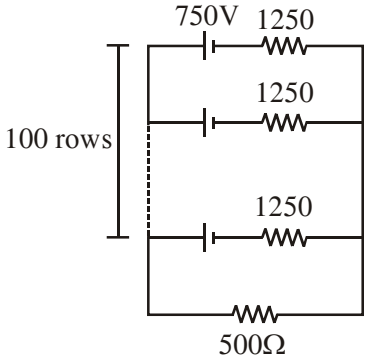
$\tau = MB = I\alpha$

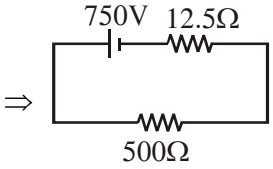
$$\alpha = \frac{MB}{I} = \frac{(i\pi r^2)B}{(mr^2/2)} = 40\ \pi \text{ rad./sec}^2$$

8. $\frac{d\theta}{di} = 0$ for $\theta = \pi/2$

according to $I = K \tan\theta$

9. Equivalent circuit





$$\Rightarrow I = \frac{E}{(r+R)}$$

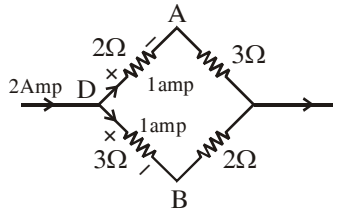
$$\simeq \frac{750}{500+12.5} \simeq 1.5 \text{ A}$$

10. $\frac{\mu_0 NI}{2R} = B_H \tan\theta$

$N \propto \tan\theta$

$$\frac{N_1}{N_2} = \frac{\tan 60^\circ}{\tan 45^\circ} = \frac{\sqrt{3}}{1}$$

11.



Voltage drop across 2Ω, $V = 2 \times 1 = 2$Volt

Voltage drop across 3Ω, $V = 3 \times 1 = 3$Volt

apply KVL in ADB

$V_A + 2 - 3 - V_B = 0$

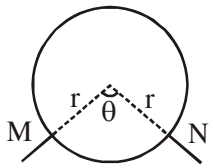
$V_A - V_B = 1$ volt

12. For permanent magnet

OQ → High retentivity

OR → High corecivity:-

13. Length of wire = 20 m = $2\pi r$



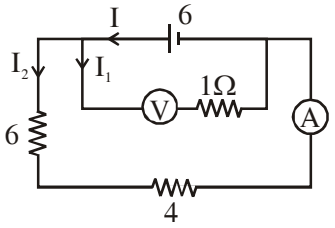
$$R_{MN} = \frac{(r\theta)[r(2\pi-\theta)]}{2\pi r} = 1.8$$

$\Rightarrow \theta^2 - 2\pi\theta + 0.36\ \pi^2 = 0$

$\Rightarrow \theta = 0.2\pi$

Length of shorter section = $r\theta = 0.2\pi r = 2$m

15.



$$R_{eq} = \frac{10}{11}\Omega$$

current in the circuit is $V = IR$

$$I = \frac{V}{R} = \frac{6\times 11}{10} = \frac{66}{10}$$

The value of current measure by the ammeter is I_2.

$$I_2 = \frac{1}{11}\times\frac{66}{10} = \frac{6}{10} = 0.6 \text{ amp.}$$

& the reading of voltmeter is

$V = I_2R = 0.6 \times 10 = 6$ volt.

16. $T = 2\pi\sqrt{\frac{I}{MB_H}} = 2$ ....(1)

$T' = 2\pi\sqrt{\frac{I'}{M'B_H}}$ ....(2)

Where I' = I/3 + I/3 + I/3 = I
M' = M/3 + M/3 + M/3 = M
from (1) & (2)
T' = 2sec.

17. As $I = \sqrt{\frac{P}{R}}$ so

$I_1 = \sqrt{\frac{1}{10^4}} = 10$ mA

$I_2 = \sqrt{\frac{0.25}{10^4}} = 5$mA

$I_3 = \sqrt{\frac{0.25}{250\times10^3}} = 1$mA

Least of these three is 1mA. Therefore , current should not exceed 1mA

19. $E_{net} = \frac{\frac{E_1}{r_1}-\frac{E_2}{r_2}}{\frac{1}{r_1}+\frac{1}{r_2}} = 0 \Rightarrow \frac{E_1}{r_1} = \frac{E_2}{r_2}$

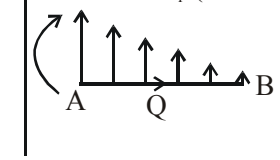
20. $a = \omega^2 r$ & $T = \frac{2\pi m}{qB}$

$a = \left(\frac{qB}{m}\right)^2\sqrt{\frac{2mE_k}{qB}}$ $T \propto \frac{m}{q}$

$a \propto \left(\frac{q}{m}\right)^{3/2}$ $y = \frac{T_\alpha}{T_P} = \frac{4/2}{1/1} = 2$

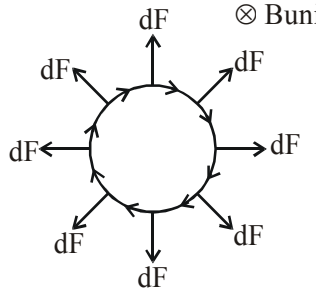
$x = \frac{a_\alpha}{a_p} = \left(\frac{1}{2}\right)^{3/2} = \frac{1}{2\sqrt{2}}$

22. (P) τcw $\otimes B_p$ (non uniform)



$\left[\begin{array}{l} F_{net} \rightarrow \text{upward} \\ \tau \rightarrow \text{CW} \end{array}\right]$

24. $\otimes$ Buniform



$(F_{net})_{loop} = 0$ but its tendency to expand due force on each current element.

26. $r > (b - a)$; $\frac{mv}{qB} > (b - a)$;

$v > \frac{q(b-a)B}{m}$

29. By COME

$-\frac{GMm}{r} + 0 = -\frac{GMm}{R} + \frac{1}{2}mv^2$

where $r = \frac{GM}{v_0^2}$ and $R = \frac{2GM}{v_e^2}$

$\Rightarrow v = \sqrt{v_e^2 - 2v_0^2}$

30. $M = \frac{(2q)L}{2(2m)}$; $\frac{M}{L} = \frac{q}{2m}$

32. Point (0, 0, –a) lies on z axis. so field due to one wire on z-axis is zero and due to rest of two wires is $\frac{\mu_0 i}{2\pi a}$ & mutually perpendicular along +y direction & – x direction.

$\vec{B} = \frac{\mu_0 i}{2\pi a}(\hat{j} - \hat{i})$

34. $W = U_f - U_i$

$= (-M_fB\cos 0°) - (-M_iB\cos 0°)$

$= iB(A_i - A_f) = iBa^2\left(1-\frac{4}{\pi}\right)$

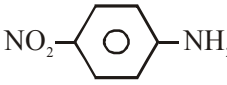
$\{A_i = a^2,\ A_f = \pi R^2 = \frac{4a^2}{\pi};\ 2\pi R = 4a\}$

39. NCERT Page # 10

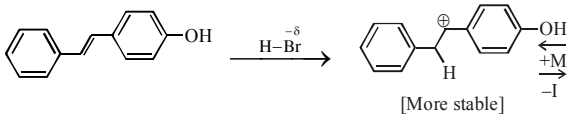
42. NCERT Page # 69

45. NCERT Page # 60

51. $CH_3CH_2CH=\boxed{O + H_2}N–NHCONH_2 \longrightarrow CH_3CH_2CH=N–NHCONH_2$

52.  is Weakest base so conjugate acid is strongest.

53. Reactivity towards conc. HCl $\propto$ stability of carbocation.

54. 

[More stable]

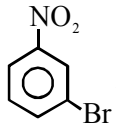
55. * S_N2 – Reaction is favoured by polar aprotic solvent

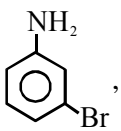
* Reactivity $\propto \xrightarrow[\text{Steric hinderence}]{1}$

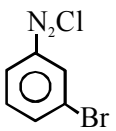
56. $R–C\equiv C–R \xrightarrow[\text{dil.}H_2SO_4]{HgSO_4} R–\underset{\underset{O}{\|}}{C}–CH_2–R$

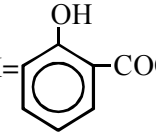
57. BDE $\propto \xrightarrow[\text{stability of CFR}]{1}$

58. $R–Cl + AlCl_3 \longrightarrow R^{\oplus} + AlCl_4^{\ominus}$

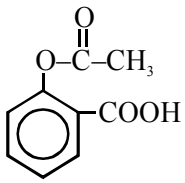
59. P = 

, Q = 

, R = 

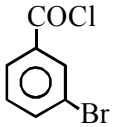
61. X= 

(By Kolbe-Schmidt reaction)

Y = 

(Aspirin)

62. $\underline{C_nH_{2n+2}}$
-2
-4
-1
$\underline{C_nH_{2n-5}}$

66. B = 

C = 

68. $C_6H_5–\overset{\overset{CH_3}{|}}{\underset{\underset{C_6H_5}{|}}{C^{\oplus}}}$ more stable carbocation than others.

73. The function of sodamide ($NaNH_2$) is dehydrohalogenation (–HX)

75. $CH_2–CH_2 \xrightarrow{RMgX} R–CH_2–CH_2–O\overset{H}{\underset{OH}{\backslash\!/}}MgX \longrightarrow R–CH_2–CH_2–OH$
[Primary alcohol]

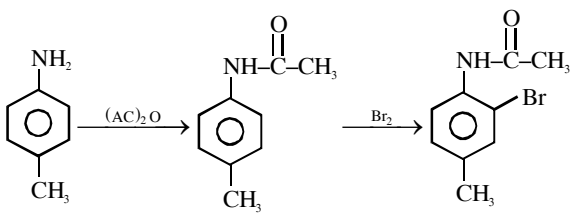
78. $CH_3–CH_2–C\equiv CH \xrightarrow{HCl} CH_3–CH_2–\overset{Cl}{\underset{|}{C}}=CH_2$
$\xrightarrow{HI} CH_3–CH_2–\overset{Cl}{\underset{I}{C}}–CH_3$

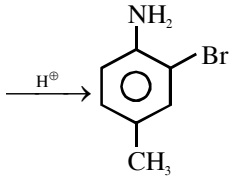
79. $CH_3–CH_2–\underset{Br}{CH}–CH_2–CH_3$ No chiral centre is present

80. $CH_3–\underset{\underset{O}{\|}}{C}–H \xrightarrow{HCN} CH_3–\overset{CN}{\underset{OH}{C}}–H \xrightarrow{H_3O^{\oplus}} CH_3–\overset{COOH}{\underset{OH}{C^*}}–H$

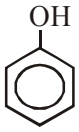
Acetaldehyde (±)–α–Hydroxy acid

81. $CH_3–\underset{\underset{O}{\|}}{C}–$ and $CH_3–\underset{OH}{\underset{|}{CH}}–$ Group show iodoform test

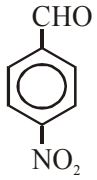
82. 



84. $NaBH_4$ does not reduce ester functional group.

86. X =  Y = C_2H_5Br

Reaction between X & Y in presence of $AlBr_3$ is friedel craft reaction.

87. X =  It shows cannizzaro's reaction

88. X = $CH_3–CH=CH–CH_3$
Y = $CH_3–CH=O$

96. NCERT XIIth Page # 131 (E), 141 (H)
105. NCERT (XII) Page # 37
108. NCERT XIIth Page # 127 (E), 137 (H)
120. NCERT XIIth Page # 137 (E), 146 (H)
121. NCERT (XII) Page # 50
124. NCERT XIIth Page # 132 (E), 143 (H)
125. NCERT (XII) Page # 49
126. NCERT XIIth Page # 142 (E), 153 (H)
128. NCERT XIIth Page # 137 (E), 147 (H)
130. NCERT XIIth Page # 139 (E), 150 (H)
132. NCERT XIIth Page # 137 (E), 147 (H)
134. NCERT XIIth Page # 140 (E), 151 (H)
135. NCERT (XII) Page # 49
136. NCERT XIIth Page # 136 (E), 147 (H)
137. NCERT (XII) Page # 52
138. NCERT XIIth Page # 133 (E), 144 (H)
139. NCERT Page # 227
It is a urm shape & pyramid
141. NCERT Page # 60
It is IUCD which causes pelvic inflammatory disease.
142. NCERT XIIth Page # 137 (E), 146 (H)
146. NCERT XIIth Page # 133 (E), 143 (H)
151. NCERT (XII) Page # 76
152. NCERT (XII) Page # 78
153. NCERT (XII) Page # 72
154. NCERT (XII) Page # 82
155. NCERT (XII) Page # 70
156. NCERT (XII) Page # 88
157. NCERT (XII) Page # 87
158. NCERT (XII) Page # 88
160. NCERT (XII) Page # 70

SPECIAL NOTE

Correction NCERT Based Objective Questions (Biology)
On Page # 83 ; Q. No. 42 → Ans. will be (1)
(only English Medium)