Path to Success
ALLEN CAREER INSTITUTE
KOTA (RAJASTHAN)

# MAJOR TEST # 02

**ALLEN NEET-UG** | **DATE : 26 - 03 - 2013**

## SYLLABUS - 02

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

## HINT – SHEET

**1.** $\frac{(F_{ST})_{Circular}}{(F_{ST})_{Plane}} = \frac{\pi rT}{2rT} = \frac{\pi}{2}$

**3.** $K = \frac{F/A}{\left(\frac{\Delta V}{V}\right)} = \frac{Mg/A}{3\left(\frac{\Delta R}{R}\right)} = \frac{Mg}{3A\left(\frac{\Delta R}{R}\right)}$

$\Rightarrow \frac{\Delta R}{R} = \frac{Mg}{3AK}$

**5.** Use $P_1 + \frac{1}{2}\rho v_1^2 = P_2 + \frac{1}{2}\rho v_2^2$

**6.** $e = \frac{\ell_2 - 3\ell_s}{2}$

**7.** $F_v = \eta A\left(\frac{\Delta v}{\Delta y}\right)$

$\Rightarrow 0.002 = \left(\frac{0.01}{10}\right)\left(10^{-2}\right)\left(\frac{0.1}{d}\right)$

$\Rightarrow d = 0.0005$ m.

**11.** $E = \sigma T^4$

**12.** Adiabatic process

**13.** From conservation of angular momentum

$I\omega$ = constant

$\Rightarrow \omega \propto \frac{1}{\ell^2}$

As $T\uparrow$, $\ell\uparrow$ so $\omega\downarrow$

**14.** $\frac{3v}{4\ell_c}=\frac{2v}{2\ell_0}$

$\Rightarrow \frac{3}{4}=\frac{\ell_c}{\ell_0}$

**15.** rate of flow = $\frac{\pi Pr^4}{8\eta L}$

**16.** $n = \frac{v}{2\ell}=\frac{700cm/s}{2\times 2}=\frac{7}{4}$ m/s

**17.** Heat supplied Q

= Area of FBCEF

$= T(S_2 - S_1) + \frac{1}{2}(T_2 - T_1)(S_2 - S_1)$

Work done W

$= \text{Area ABC} = \frac{1}{2}(T_2 - T_1)(S_2 - S_1)$

$\eta = \frac{W}{Q} = \frac{\frac{1}{2}(T_2-T_1)(S_2-S_1)}{T_1(S_2-S_1)+\frac{1}{2}(T_2-T_1)(S_2-S_1)}$

$= \frac{T_2-T_1}{T_2+T_1} = \frac{2T_0-T_0}{2T_0+T_0}=\frac{1}{3}$

**18.** $n = \frac{V}{4\ell}=\frac{320}{4\times 1}$ = 80 Hz

In cop. 80, 240, 400 Hz odd produce resonance.

**19.** For adiabatic process $TV^{\gamma-1}$ = constant .....(1)

and given

or $TV^{2/3}$ = constant ...(2)

By eq. (1) & (2)

$\gamma - 1 = \frac{2}{3}$

$\gamma - 1 = \frac{2}{3} + 1$

$\gamma = \frac{5}{3}$

**20.** In sound at displacement node Pressure antinode exist

**22.** $\boxed{V_t = V_0 + 0.61\, f}$ for air

**23.** Momentum $p = mv_{rms} = m\sqrt{\frac{3KT}{m}}$

$p \propto \sqrt{m}$

so $p \propto \sqrt{m \times N_A} \propto \sqrt{M_w}$

$\frac{p_{H_2}}{PO_2}\sqrt{\frac{m_{w_{H_2}}}{M_{w_{O_2}}}} = \sqrt{\frac{2}{32}} = \sqrt{\frac{1}{16}} = \frac{1}{4}$

**24.** $A = \sqrt{\left(\frac{1}{\sqrt{a}}\right)^2+\left(\frac{1}{\sqrt{b}}\right)^2} = \sqrt{\frac{a+b}{ab}}$

**25.** $[B] = [PV] = \left[\frac{MLT^{-2}}{L^2}\times L^3\right] = ML^2T^{-2}$

**27.** Given $(C_v)_{Tri} = K(C_v)_{more}$

and $Cv = \frac{F}{2}R$

$\left(\frac{6}{2}R\right) = K\left(\frac{3}{2}R\right)$

K = 2

**30.** $\frac{T}{4}$ = 0.17 sec

T = 0.68 sec

$n = \frac{1}{0.68}$ = 1.47 Hz

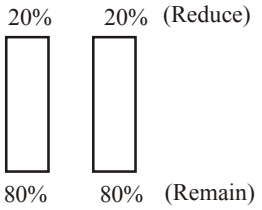
**31.** $v_{rms} = \sqrt{\frac{3P}{\rho}}$

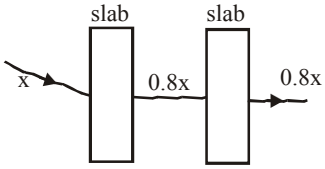
$v_{rms} \propto \sqrt{P}$

$\frac{v_{rms_2}}{v_{rms_1}}=\sqrt{\frac{4P}{P}}$

$\boxed{v_{rms_2} = 2v}$

**32.**




$= 0.64x$

$\therefore$ 64% (Remain)

36% reduced

**34.** Mach No. is $= \frac{V_s}{V}$

**36.** $\Delta n = \frac{2nv}{C}$

$$2.8 \times 10^3 = \frac{2\times840\times10^6 v}{3\times10^8}$$

$$v = \frac{3\times10^8\times2.8\times10^3}{2\times840\times10^6}$$

**38.** $2A = 8$ cm

$\boxed{A = 4}$

**40.** $7^{th}$ harmonic


**41.** $\because$ V = constant

$\therefore T \propto P$

$$\Rightarrow \frac{\Delta T}{T} = \frac{\Delta P}{P}$$

$$\Rightarrow T = \frac{\Delta T}{(\Delta P/P)} = \frac{0.5}{2/100} K = 25 \text{ K}$$

**91.** NCERT Page No. 275
**93.** NCERT Page No. 275
**95.** NCERT Page No. 269
**97.** NCERT Page No. 271,272
**99.** NCERT Page No. 272
**101.** NCERT Page No. 272
**103.** NCERT Page No. 274
**105.** NCERT Page No. 275
**107.** NCERT Page No. 272
**109.** NCERT Page No. 282
**111.** NCERT Page No. 284
**113.** NCERT Page No. 282, 283
**115.** NCERT Page No. 284
**117.** NCERT Page No. 284
**119.** NCERT Page No. 284
**121.** NCERT Page # 220 (XI)
**123.** NCERT Page # 223 (XI)
**125.** NCERT Page # 229 (XI)
**127.** NCERT Page # 232 (XI)
**128.** NCERT Page # 326
**129.** NCERT Page # 218 (XI)
**130.** NCERT Page # 324
**132.** NCERT Page # 326
**136.** NCERT Page # 335
**137.** NCERT Page # 215
**139.** NCERT Page # 201
**141.** NCERT Page # 213 (XI)
**143.** NCERT Page # 212, 213 (XI)
**144.** NCERT Page # 321
**149.** NCERT Page # 32 (Old)
**151.** NCERT Page # (Respiration)
**152.** NCERT Page # 332
**153.** NCERT Page # 197-198
**157.** NCERT Page # 176
**158.** NCERT Page # 317
**160.** NCERT Page # 334
**166.** NCERT Page # 321
**168.** NCERT Page # 321