CLASSROOM CONTACT PROGRAMME
(Academic Session : 2023 - 2024)

Leader COURSE
PHASE : (I) NEET MT-8
TARGET : PRE-MEDICAL 2023

Test Type :**MINOR** Test Pattern :**NEET (UG)**

TEST DATE : 08-01-2023

ANSWER KEY

Q.	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	26	27	28	29	30
A.	4	1	2	3	4	4	3	3	2	3	4	1	3	1	4	3	1	3	1	2	3	2	3	1	1	1	3	1	1	3
Q.	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
A.	3	3	4	2	2	2	2	4	4	2	3	2	2	1	1	2	3	1	3	1	4	2	3	4	2	3	3	3	2	3
Q.	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90
A.	3	2	3	2	1	1	2	4	2	3	1	4	1	2	3	4	4	3	1	2	3	3	2	3	3	3	3	3	4	2
Q.	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120
A.	2	4	4	2	4	1	4	4	1	2	3	1	2	3	2	1	2	3	3	2	2	4	2	1	3	1	3	1	2	2
Q.	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150
A.	4	4	4	4	2	3	3	1	4	2	3	2	1	2	3	2	3	3	4	4	2	3	3	4	3	2	4	4	3	4
Q.	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180
A.	3	1	4	2	1	3	4	2	3	2	3	3	3	1	3	3	4	2	1	1	3	1	3	4	3	3	2	4	3	1
Q.	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200										
A.	3	4	3	2	2	4	1	4	4	4	3	4	3	4	2	4	2	1	4	1										

HINT – SHEET

SUBJECT : PHYSICS

SECTION-A

1. Ans (4)

$R = \sqrt{2^2 + 10^2 + 11^2}$

$=15$

2. Ans (1)

$[E] = [ML^2T^{-2}]$, $[J] = [ML^2T^{-1}]$,

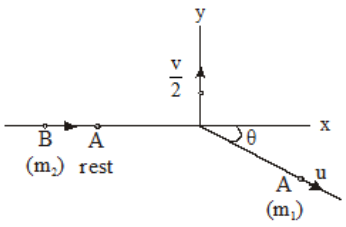
And $[G] = [M^{-1}L^3T^{-2}]$

$$\left[\frac{EJ^2}{m^5G^2}\right] = \frac{[ML^2T^{-2}][ML^2T^{-1}]^2}{[M^5][M^{-1}L^3T^{-2}]^2}$$

$= [M^0L^0T^0] = [\text{Angle}]$

3. Ans (2)

Applying the law of conservation of momentum we have



in y-direction, $m_1 u \sin\theta = m_2 \frac{v}{2}$

In x-direction, $m_1 u \cos\theta = m_2 v$

$\therefore \tan\theta = \frac{1}{2}$

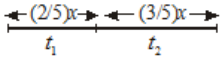
4. Ans (3)

Potential energy of spring $U = \frac{F^2}{2k}$

$$\Rightarrow \frac{U_1}{U_2} = \frac{k_2}{k_1} = \frac{3000}{1500} = 2:1$$

[If F = constant]

5. Ans (4)



$$\text{Average speed} = \frac{\text{Total distance travelled}}{\text{Total time taken}}$$

$$\frac{x}{t_1+t_2} = \frac{x}{\frac{(2/5)x}{v_1}+\frac{(3/5)x}{v_2}} = \frac{5v_1v_2}{2v_2+3v_1}$$

6. Ans (4)

$$MK_1^2 = \frac{1}{2}MR^2 \Rightarrow K_1 = \frac{R}{\sqrt{2}}$$

$$MK_2^2 = MR^2 \Rightarrow K_2 = R \Rightarrow \frac{K_1}{K_2} = \frac{1}{\sqrt{2}}$$

7. Ans (3)

$s_n = \frac{a}{2}(2n-1)$ and $s(n) = \frac{a}{2}n^2$

Hence, $\frac{s_n}{s(n)} = \frac{\frac{a}{2}(2n-1)}{\frac{a}{2}n^2} = \left[\frac{2}{n} - \frac{1}{n^2}\right]$

8. **Ans (3)**

By Wien's displacement law, $\lambda_m T = \text{constant}$

$\therefore \quad \lambda_m T = \lambda'_m T \text{ or } 500 \times 6000 = 400 \times T'$

or $T' = \dfrac{500 \times 6000}{400} = 7500\,K$

9. **Ans (2)**

Distance travelled in n sec

$= \dfrac{1}{2} g n^2 = h \qquad \text{.....(i)}$

Distance travelled in n^{th} sec

$= \dfrac{g}{2}(2n-1) = \dfrac{9h}{25} \qquad \text{.....(ii)}$

Solving (i) and (ii) we get. $h = 122.5\,m$.

10. **Ans (3)**

$\tau = I\alpha = \dfrac{I(\omega_i - \omega_f)}{t}$

$= \dfrac{2 \times \left(2\pi \times \dfrac{60}{60} - 0\right)}{60} = \dfrac{4\pi}{60} = \dfrac{\pi}{15}\,\text{N-m}$

11. **Ans (4)**

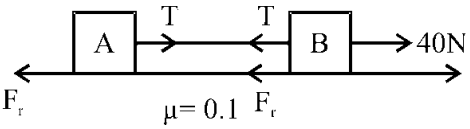
$T_2 = (m_1 + m_2) \times \dfrac{T_3}{m_1 + m_2 + m_3}$

$= \dfrac{(10+6) \times 40}{20} = 32\text{N}$

12. **Ans (1)**

$\vec{v}_{res} = \sqrt{v_P^2 + v_r^2} = \sqrt{117}$ km/hr

13. Ans (3)



For block 'A' $\longrightarrow$ $T - F_r = 10 \times 1.2$

$T - 10 = 12$

$T = 22$ N

For Block 'B' $\longrightarrow$ $40 - T - F_r = 10 \times a$

$40 - 22 - 10 = 10\ a$

$a = 0.8\ ms^{-2}$

14. Ans (1)

Since the time of flight depends upon the vertical component of projection velocity, rotation of earth doesn't affect the time of flight.

15. Ans (4)

time $\propto x_f^2 - x_i^2$

$$\frac{12}{t_2} = \frac{1^2 - 0^2}{2^2 - 1^2} \Rightarrow \frac{1}{3}$$

$t_2 = 36$ minute

16. Ans (3)

$$x_{cm} = R = \frac{u^2 \sin 2\theta}{g}$$

$$\therefore \quad x_{cm} = \frac{m_1 x_1 + m_2 x_2}{m_1 + m_2}$$

$\therefore\ x_2 = 1120$ m

17. Ans (1)

Area of rectangular frame

$= 6\text{ cm} \times 5\text{ cm} = 30 \times 10^{-4}\text{ m}^2$

Perimeter of rectangular frame

$= 2(6+5) \times 10^{-2} = 22 \times 10^{-2}$

Now for circular frame,

$2\pi r = 22 \times 10^{-2}$

$2 \times \frac{22}{7} r = 22 \times 10^{-2}$

$r = \frac{7}{2} \times 10^{-2} m$

Area of circular frame,

$A_2 = \pi r^2 = \frac{22}{7} \times \left(\frac{7}{2} \times 10^{-2}\right)^2 = \frac{77}{2} \times 10^{-4}$

$\therefore \quad W = 2T\Delta A = 2T(A_2 - A_1)$

$= 2 \times 36 \times 10^{-3} \left[\frac{77}{2} \times 10^{-4} - 30 \times 10^{-4}\right]$

$= 612 \times 10^{-7} = 6.12 \times 10^{-5}\text{ J}$

18. Ans (3)

Gravitational force remains constant on the falling spherical ball. It is represented by straight line P.

The viscous force $F=6\pi\eta rv$ increases as the velocity increases with time. Hence, it is represented by curve Q.

Net force = gravitational force — viscous force

As viscous force increases, net force decreases and finally becomes zero. Then the body falls with a constant terminal velocity. It is thus represented by curve R.

19. Ans (1)

$\frac{F_1}{A_1} = \frac{F_2}{A_2}$

$\frac{F_1}{100} = \frac{8 \times 10^4}{100 \times 100}$

$F_1 = 800\text{N}$

20. Ans (2)

Bernoulli's theorem for unit mass of liquid is

$$\frac{P}{\rho} + \frac{1}{2}v^2 = \text{constant}$$

As the liquid starts flowing, its pressure energy decreases

$$\frac{1}{2}v^2 = \frac{\Delta P}{\rho}$$

$$\Rightarrow \frac{1}{2}v^2 = \frac{3.5 \times 10^5 - 3 \times 10^5}{10^3}$$

$$\Rightarrow v^2 = \frac{2 \times 0.5 \times 10^5}{10^3}$$

$$\Rightarrow v^2 = 100$$

$$\Rightarrow v = 10 \text{ m/s}$$

21. Ans (3)

Viscous force is given by

$$F = \eta A \frac{v}{d}$$

$$\frac{F_1}{F_2} = \frac{V_1}{V_2}$$

$$\frac{800}{2400} = \frac{2}{V_2}$$

$V_2 = 6$ cm/s

22. Ans (2)

* In adiabatic compression

  $Q = 0$ & $TV^{\gamma-1}$ = constant than $V \downarrow \Rightarrow T$

* $V \Rightarrow dV = \oplus ve \Rightarrow W = PdV = \oplus ve$

* Free expansion of ideal gas is isothermal expansion process but no heat is exchanged between system and surrounding

* Work is a path function, not a state function

23. Ans (3)

$W_1 = +ve$, $W_2 = 0$, $W_3 = -ve$

FLOT $= Q = W + \Delta U$

ΔU same for all processes

So, $Q_1 > Q_2 > Q_3$

24. Ans (1)

$\rho = \frac{PM}{RT}$ and $\rho \propto \frac{1}{V}$

during AB, ρ is constant and hence volume there for work done is zero.

During BC $P \propto r$

i.e. T = constant and hence U is constant

25. Ans (1)

The average power per unit area that is incident perpendicular to the direction of propagation is called the intensity. Intensity of sound

$I = \frac{P}{4\pi r^2} \Rightarrow I \propto \frac{1}{r^2} \Rightarrow \frac{I_1}{I_2} = \left(\frac{r_2}{r_1}\right)^2$

Here $r_1 = 2m$, $r_2 = 3m$

Substituting the values, we have

$\frac{I_1}{I_2} = \left(\frac{3}{2}\right)^2 = \frac{9}{4}$

26. Ans (1)

According to the Doppler's effect, whenever there is relative motion between a source of sound and listener, the apparent frequency of sound heard by the listener is different from the source. Let S be source of sound. Let v be the actual frequency of sound emitted by the source and λ be the actual wavelength of the sound emitted.

If v is velocity of sound in still air, then $\lambda = \frac{v}{V}$

If velocity of listener is v_L and velocity of source is v_S, then apparent frequency of sound waves heard by the listener is

$\nu' = \frac{\nu - v_L}{\nu - v_S} \times V$

Here both source and listener are approaching each other. Then v_s is positive and v_L is negative.

So, $\nu' = \frac{\nu - (-v_L)}{\nu - v_S} \times V = \left\{\frac{\nu + v_L}{\nu - v_S}\right\} V$

$\rightarrow \nu' > \nu$ also, $\lambda' < \lambda$

So, listener listen more frequency and observes less wavelength.

27. Ans (3)

$X_1 = 12\sin(484\pi t - 7\pi x)$

$= 12\sin 2\pi\left(242t - \frac{7x}{2}\right)$

$\therefore$ Frequency $n_1 = 242$ Hz

$X_2 = 12\sin(480\pi t - 7\pi x)$

$= 12\sin 2\pi\left(240t - \frac{7x}{2}\right)$

$\therefore$ Frequency $n_2 = 240$ Hz

Beat frequency $= n_1 - n_2 = 2$

28. Ans (1)

Particle velocity $v_P = \frac{\partial y}{\partial t} = 3 \times 50\pi \cos\pi(50t -$ x)

$v_{Pmax} = 150\pi$ m/s

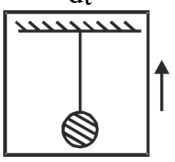
and wave velocity $v = \frac{\omega}{k} = \frac{50\pi}{\pi} = 50$

$\therefore \quad \frac{v_{P\ max}}{v} = \frac{150\pi}{50} = 3\pi$

29. **Ans (1)**

$y = Kt^2$

$a_y = \frac{d^2y}{dt^2} = 2K = 2\ m/s^2$



So, $g_{eff} = g + a_y = 12\ m/s^2$

$T_1 = 2\pi\sqrt{\frac{\ell}{g}} = 2\pi\sqrt{\frac{\ell}{10}}$

$T_2 = 2\pi\sqrt{\frac{\ell}{g_{eff}}} = 2\pi\sqrt{\frac{\ell}{12}}$ So,

$\frac{T_1^2}{T_2^2} = \frac{12}{10} = \frac{6}{5}$

30. **Ans (3)**

$\frac{5v}{4\ell} = \frac{2v}{2L}$

$\boxed{\ell = \frac{5}{4}L}$

31. **Ans (3)**

Since at highest point of graph , slope of x -t curve changes suddenly which is physically inpossible.

34. **Ans (2)**

∴ Area under

v-t curve = displacement

and area under a-t

curve = change in velocity

35. **Ans (2)**

Instantaneous and average velocity will be same only in uniform motion.

SECTION-B

42. **Ans (2)**

$12.5 \times 10^4 \times v = 25 \times 1000;$

$\therefore v = \frac{1}{5} = 0.2$ ft/sec

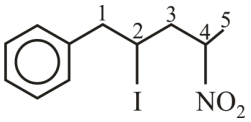
46. **Ans (2)**

$N = 30 + 1(10) = 40\ N$

SUBJECT : CHEMISTRY

SECTION-A

52. **Ans (2)**



54. Ans (4)

Octet complete

75. Ans (3)

$\Delta E = 9 + w$

$= -128 + 462$

$\Delta E = 334$ J

81. Ans (3)

$$\nu = RCZ^2\left(\frac{1}{n_1^2} - \frac{1}{n_2^2}\right)$$

$$\therefore \nu_H = RC \times 1\left(\frac{1}{1} - \frac{1}{16}\right) = RC \times \frac{15}{16}$$

and $\nu_{Li^{+2}} = RC \times 9\left(\frac{1}{4} - \frac{1}{9}\right) = 9RC \times \frac{5}{36} = \frac{5}{4}RC$

$$\therefore \frac{\nu_H}{\nu_{Li^{+2}}} = \frac{15\,RC}{16} \times \frac{4}{5RC} = \frac{3}{4}$$

SUBJECT : BIOLOGY-I

SECTION-A

101. Ans (3)
NCERT XIth Pg# 188

103. Ans (2)
NCERT Pg.# 187, Fig. 11.8

104. Ans (3)
NCERT Pg. # 191

106. Ans (1)
Module No.-3, Pg. # 143

107. Ans (2)
Transpiration causes water to rise in plants by pulling through xylem elements.
Root pressure causes water to rise in plants by pushing water in xylem components. So, the rise of water in plants is done by pulling and pushing *via* transpiration and root pressure, respectively.

111. Ans (2)
NCERT Pg. # 197, 198

114. Ans (1)
NCERT XI Page no. # 197 (Topic = Iron)

122. Ans (4)
NCERT (XIth) Pg.# 219
Fig.#13.9

131. Ans (3)
First two SLP occur in Cytosol
NCERT PAGE: 230

SECTION-B

137. Ans (3)
NCERT Pg. # 236, Fig. 14.6

140. Ans (4)
NCERT-XI Pg. No. # 231

143. Ans (3)
Module No. 3, Pg. # 234, 235, 236

SUBJECT : BIOLOGY-II

SECTION-A

151. Ans (3)
NCERT XI Biology, Page # 263, 264

154. Ans (2)
NCERT-XI, Pg. # 258

162. Ans (3)
NCERT-XI page# 271

166. Ans (3)
NCERT XI Pg # 285

171. Ans (3)
NCERT XII Page # 297, 298

183. Ans (3)
NCERT Page # 309

SECTION-B

197. Ans (2)
NCERT Pg.#339

199. Ans (4)
NCERT (XI) Pg. # 333