FT - 19 (FR) (NEET - CBSE, GSEB) (16 - 04 - 2026)

ANSWER KEY

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

PHYSICS:

1. Sol.(3)

Given $E_1 = E_2 \Rightarrow \frac{Kq_1}{r_1^2} = \frac{Kq_2}{r_2^2}$

$$\frac{q_1}{q_2} = \frac{r_1^2}{r_2^2}$$

$$\frac{V_1}{V_2} = \frac{kq_1}{r_1} \times \frac{r_2}{kq_2} = \frac{r_1^2}{r_2^2} \times \frac{r_2}{r_1} = \frac{r_1}{r_2}$$

2. Sol.(3)

3. Sol.(3)

Current I through CBD $= \frac{2}{15}$ amp

Current I through CDA $= \frac{2}{15}$ amp

$$V_C - V_B = \frac{2}{15} \times 10 \text{ volt}$$

$$V_C - V_A = \frac{2}{15} \times 5 \text{ volt}$$

$$\therefore\ V_C - V_B = (V_C - V_B) - (V_C - V_A)$$

$$= \frac{2}{15}[10 - 5] = \left(\frac{2}{3}\right) \text{volt}$$

4. Sol.(2)

Current through the wire of 5 ohm

$$= \frac{E}{r + R} = \frac{3}{1 + 5} = 0.5\text{A}$$

Potential difference across the wire of

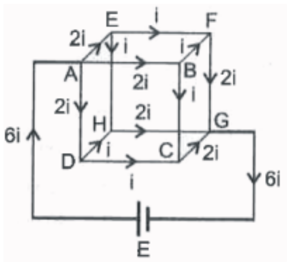
$5\Omega = 0.5 \times 5 = 2.5$ V.

Length of wire = 1 m

$\therefore$ Potential gradient = 2.5 V/m

5. Sol.(4)

Let ABCDEFGH be the skeleton cube formed by joining twelve equal wires each of resistance r. Let the current enters the cube at corner A and after passing through all twelve wires, let the current leaves at G, a corner diagonally opposite to corner A. For the sake of convenience, let us suppose that the total current is 6i. At A, this current is divided into three equal parts each of 2i along AE, AB and AD as the resistance along these paths are equal and their end points are equidistant from exist point G. At the points E, B and D, each part is further divided into two equal parts each part equal to i. The distribution of current in the various arms of skeleton cube is shown according to Kirchhoff's first law. The current leaving the cube at G is again 6i.



Applying Kirchhoff's second law to the closed circuit ADCGA, we get :

$2ir + ir + 2ir = E$

or $\quad 5ir = E \quad$ ....(i)

where, E is the emf of the cell of negligible internal resistance. If R be the resistance of the cube between the diagonally opposite corners A and G, then according to Ohm's law. We have ;

$6i + R = E \quad$ ....(ii)

From eqns. (i) and (ii),

$6iR = 5ir$

or $\quad R = \frac{5}{6}r$

Here, $\quad r = 6\Omega$

$\therefore \quad R = \frac{5}{6} \times 6$

or $\quad R = 5\Omega$

6. Sol.(1)

$$C = 4\pi\varepsilon_0\left(\frac{ab}{b-a}\right)$$

7. Sol.(2)

8. Sol.(1)

$B \propto nI$

9. Sol.(4)

$F_e \neq 0, F_m = 0$

Particle moves along the direction of electric field.

10. Sol.(2)

When the loops are brought nearer, magnetic flux linked with each loop increases. Thus, the current will be induced in each loop in a direction opposite to its own current in order to oppose increase in magnetic flux. This is in accordance with Lanz's law. So, the current will decrease in each loop.

11. Sol.(1)

For battery $f = 0$

$X_L = 0$

$I = \frac{E}{R}$

12. Sol.(1)

13. Sol.(1)

Here, $f_1 = 20$ cm, $f_2 = 25$ cm

The effective power of the combination is,

$$P = P_1 + P_2 = \frac{1}{f_1} + \frac{1}{f_2}$$

$$= \frac{100}{20} + \frac{100}{25} \quad \left(\because P(\text{in dioptre}) = \frac{100}{f(\text{in cm})}\right)$$

$$= 5D + 4D$$

$$= 9D$$

14. Sol.(4)

15. Sol.(4)

For NAND gate, $\overline{0.1} = \overline{0} = 1$

16. Sol.(2)

Here, $\vec{A} + \vec{B} = -\vec{C}$

Hence, $|\vec{A} + \vec{B}| = |-\vec{C}| = |\vec{C}|$

17. Sol.(2)

$X = M^a L^b T^{-c}$

$\frac{\Delta M}{M} \times 100 = \alpha\%$; $\frac{\Delta L}{L} \times 100 = \beta\%$ and $\frac{\Delta T}{T} \times 100 = \gamma\%$

$\therefore \frac{\Delta X}{X} \times 100$

$= a\left(\frac{\Delta M}{M} \times 100\right) + b\left(\frac{\Delta L}{L} \times 100\right) + c\left(\frac{\Delta T}{T} \times 100\right)$

$= (\alpha a + \beta b + \gamma c)\%$

18. Sol.(2)

Least count = 1 S.D – 1 V.D

$= \left(1 - \frac{8}{10}\right) = \frac{2}{10}$ mm $= 0.02$ cm

19. Sol.(1)

$h = \frac{1}{2}(10)(4)^2 = 80$ m

20. Sol.(3)

Tangential acceleration, $a_t = r\alpha = 4\ m/s^2$

Radial acceleration,

$$a_r = \omega^2 r = \frac{v^2}{r} = \frac{60 \times 60}{1200} = 3\ m/s^2$$

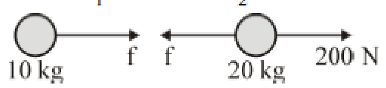
Hence, resultant acceleration of the car

$$a = \sqrt{a_t^2 + a_r^2} = \sqrt{4^2 + 3^2} = 5 m/s^2$$

21. Sol.(2)

It follows from the figure that the equations of motion are :

$200 - f = 20\ a_1$ and $f = 10\ a_2$



where a_1 and a_2 are the accelerations for 20 kg and 10 kg respectively.

But $\quad a_2 = 12\ ms^2$

$\therefore \quad f = 10 \times 10 = 120$ N

$\therefore \quad a_1 = \frac{200 - 120}{20} = \frac{80}{20} = 4 ms^{-2}$

22. Sol.(3)

$$m_1(9 - \Delta r_2) = m_2 \Delta r_2$$

or $100(9 - \Delta r_2) = 500\ \Delta r_2$

$\therefore \quad \Delta r_2 = \dfrac{100 \times 9}{600} = 1.5\ \text{m}$

i.e., Boat moves 1.5 m relative to shore in the direction opposite to the displacement of man.

23. Sol.(2)

$L = mV r_\perp$

$= 5\ (3\sqrt{2}) \left(4 \dfrac{1}{\sqrt{2}}\right) = 60$ unit

24. Sol.(1)

Here, angular momentum is conserved, i.e., $L = I\omega$ = Constant. At A, the moment of inertia I is least, so angular speed and therefore the linear speed of planet at A is maximum.

25. Sol.(4)

26. Sol.(2)

$$v = \sqrt{2gh},\ t = \sqrt{\frac{2h}{g}}$$

and $R = 2\sqrt{h(H-h)}$

At mountain, value of g will be less. Hence, v will decreases, t will increases and R will remain unchanged.

27. Sol.(1)

Since the block of ice at 0°C is large, the whole of ice will not melt, hence final temperature is 0°C.

$\therefore\ Q_1$ = heat given by water in cooling up to 0°C

$= ms\ \Delta\theta = 80 \times 1 \times (30 - 0)$

$= 2400$ cal

If m gm be the mass of ice melted, then

$Q_2 = mL_F = m \times 80$

Now, $Q_2 = Q_1$

$m \times 80 = 2400$ or $m = 30$ gm

28. Sol.(3)

Rate of cooling $\propto \dfrac{A}{m}$ or $\dfrac{Area}{volume}$ & for the same surface area volume of cube is lesser then volume of sphere.

29. Sol.(3)

$$\Delta U = nC_V \Delta T$$

$$\Delta U = \frac{nR}{\gamma - 1}\Delta T = \frac{P(2V - V)}{\gamma - 1}$$

$$\Delta U = \frac{PV}{\gamma - 1}$$

30. Sol.(4)

$$\frac{1}{2}mv^2 = qV$$

$v^2 \propto V$

31. Sol.(4)

32. Sol.(1)

$$F = \frac{q^2 d}{2\varepsilon_0 A} = \frac{q^2}{2d(\varepsilon_0 A/d)}$$

$$= \frac{C^2V^2}{2dC} = \frac{CV^2}{2d}$$

33. Sol.(4)

34. Sol.(4)

35. Sol.(1)

The stopping potential for curves a and b is same

Hence, $f_a = f_b$

Also saturation current is proportional to intensity

$\therefore I_a < I_b$

Hence, the correct answer is (1)

36. Sol.(3)

37. Sol.(3)

On frictionless surface : $a = g \sin 45° = \dfrac{g}{\sqrt{2}}$

$\therefore \quad l = \dfrac{1}{2}at_2^2 = \dfrac{1}{2} \times \dfrac{g}{\sqrt{2}}t_2^2$ ......(1)

In the presence of friction :

$a = g \sin 45° - \mu g \cos 45° = \dfrac{g}{\sqrt{2}}(1 - \mu)$

Hence, $l = \dfrac{1}{2} \times \dfrac{g}{\sqrt{2}}(1-\mu)t_1^2$ ......(2)

But, $t_1 = 2t_2$; This gives, $\mu = \dfrac{3}{4}$

38. Sol.(2)

$Mg\ (h + x) - F_{AV}X = 0 - 0$

$F_{AV} = Mg\left(\dfrac{h}{x} + 1\right)$

39. Sol.(2)

We know that when convex lens is made of three different materials, then it has three refractive indices and therefore, three focal lengths. Hence, number of images formed by the lens will be three.

40. Sol.(2)

$I_{POP'}$ = 3[moment of inertia of each rod about an axis passing through CG + mass of each rod $\times h^2$]

(according to theorem of parallel axes)

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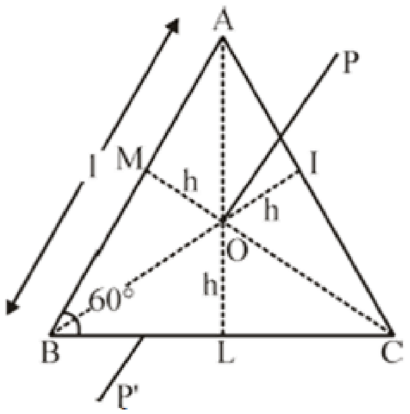


$$\therefore\ I_{POP'} = 3\left[\frac{Ml^2}{12} + Mh^2\right]$$

Now h = perpendicular distance of each rod w.r.t O

$$\frac{AL}{3} = \frac{l}{3}\sin 60^\circ = \frac{l}{2\sqrt{3}}$$

(Median of an equilateral triangle is divided in the ratio of 2 : 1 at the centroid O)

$$\text{Hence, } I_{POP'} = 3\left[\frac{Ml^2}{12} + \frac{Ml^2}{12}\right]$$

$$= 3 \times \frac{Ml^2}{6} = \frac{Ml^2}{2}$$

41. Sol.(2)

Potential energy of mass m when it is midway between masses M_1 and M_2

$$U = -\frac{GM_1m}{d/2} - \frac{GM_2m}{d/2} = -\frac{2Gm}{d}(M_1 + M_2)$$

According to law of conservation of energy

$$\frac{1}{2}mv_e^2 = \frac{2Gm}{d}(M_1 + M_2)$$

$$\therefore\ v_e = \text{escape velocity} = \sqrt{\frac{4G(M_1 + M_2)}{d}}$$

42. Sol.(1)

43. Sol.(3)

Nodes means a point at which medium particles do not displace from its means position and antinode means a point at which particle oscillates with maximum possible amplitude. Nodes and antinodes are obtained for both types of stationary waves, transverse and longitudinal. Hence, option (a) and (b) both are wrong. To obtain a stationary wave, two wave travelling in opposite directions, having same amplitude, same frequency are required. They must have same nature, means either both the waves should be longitudinal or both of them should be transverse and if the waves are transverse then the line of oscillation of medium particles, due to both the waves, must also be the same. Hence option (3) is correct.

44. Sol.(2)

$$V_{min} = \sqrt{\frac{gR(\tan\theta - \mu_s)}{1 + \mu_s \tan\theta}}$$

45. Sol.(4)

A compression is a region of medium in which particles are compressed, i.e., particles come closer, i.e., distance between the particles becomes less than the normal distance between them. Thus, there is a temporary decrease in volume and a consequent increase in density of medium. Similarly, in rarefaction, particle get farther apart and a consequent decrease in density.

CHEMISTRY:

46. **Sol.(4)**

47. **Sol.(1)**

$$E_{RP} = -0.0591 \times pH = -0.0591 \times 2$$

$$E_{RP} = -0.118\ V$$

48. **Sol.(3)**

Ag electrode is an active electrode for $AgNO_3$(aq)

So, concentration remains same.

49. **Sol.(1)**

50. **Sol.(3)**

51. **Sol.(2)**

$$A(g) + 2B(g) \longrightarrow C(g)$$

$$\Delta n_g = 1 - 3 = -2$$

$$\Delta H = \Delta U + \Delta n_g RT$$

$$= -10 + \frac{(-2) \times 2 \times 500}{1000} = -12\,kcal$$

$$\Delta G = \Delta H - T\Delta S$$

$$\Delta G = -12 - \frac{500 \times (-20)}{1000}$$

$$= -12 + 10 = -2\ kcal/mol$$

52. **Sol.(1)**

53. **Sol.(2)**

Gas has highest molar entropy

54. **Sol.(3)**

55. **Sol.(4)**

56. **Sol.(3)**

57. **Sol.(2)**

58. **Sol.(3)**

59. **Sol.(1)**

60. **Sol.(2)**

$4 \rightarrow 5$, $1 \rightarrow 2$ | Energy required

Energy order : $(1 \longrightarrow 2) < (4 \longrightarrow 5)$

61. **Sol.(3)**

62. **Sol.(4)**

63. **Sol.(3)**

For precipitation to start; $Q = K_{sp}$

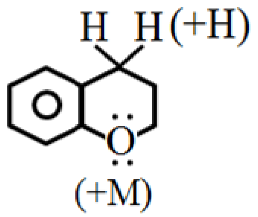
$$[Pb^{+2}] \times [OH^-]^2 = 1.2 \times 10^{-5}$$

$$0.12 \times [OH^-]^2 = 12 \times 10^{-6}$$

$$[OH^-]^2 = 10^{-4}\ ;\ [OH^-] = 10^{-2}$$

$$pOH = 2,\ pH = 12$$

64. **Sol.(1)**

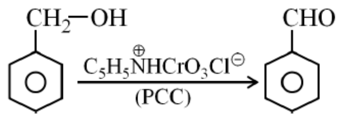


(Activating group)

65. **Sol.(2)**

66. **Sol.(4)**

67. **Sol.(4)**



68. **Sol.(2)**

69. **Sol.(4)**

Zn^{+2} + NaOH or NH_4OH $\longrightarrow$ $Zn(OH)_2$ white ppt $\xrightarrow{Excess}$ $Na_2[Zn(OH)_4]$ or $[Zn(NH_3)_4]^{2+}$ Soluble

70. **Sol.(4)**

71. **Sol.(2)**

72. **Sol.(1)**

$CuSO_4$ + KCN (excess)

↓

$k_3[Cu(CN)_4]$

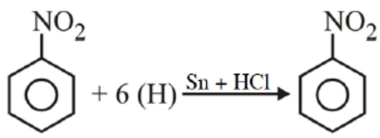
↓

$+1 = 3d^{10}$

sp^3

73. **Sol.(3)**

74. **Sol.(4)**



75. **Sol.(1)**

$$k_1 = \frac{2.303}{t_1} \times \log\left(\frac{100}{100-25}\right)$$

$$t_1 = \frac{2.303}{k_1} \times (\log 4 - \log 3)$$

similarly,

$$k_2 = \frac{2.303}{t_2} \times \log\left(\frac{100}{100-75}\right)$$

$$t_2 = \frac{2.303}{k_2} \times (\log 4)$$

$$\therefore \frac{t_1}{t_2} = \frac{k_2}{k_1} \times \frac{(0.6 - 0.48)}{(0.6)} \left(k \propto \frac{1}{t_{1/2}}\right)$$

$$= \frac{3}{2} \times \left(\frac{1}{5}\right) = 0.3 : 1$$

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76. **Sol.(3)**

Product from according to MKR

77. **Sol.(2)**

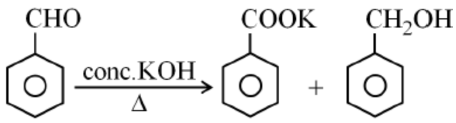
$$\%\eta = \frac{\Delta G}{\Delta H} \times 100$$

$$80 = \frac{-4 \times 96500 \times E_{cell}}{-294 \times 1000} \times 100$$

$$E_{cell} = 0.60V$$

78. **Sol.(3)**

79. **Sol.(1)**



Cannizzaro Reaction

80. **Sol.(4)**

Number of spherical nodes = n – ℓ – 1

1s ⟶ 1 – 0 – 1 = 0

2p ⟶ 2 – 1 – 1 = 0

4f ⟶ 4 – 3 – 1 = 0

81. **Sol.(3)**

Stronger the acid, lower the pK_a.

82. **Sol.(4)**

$$T = \frac{1}{R} \Rightarrow K_P = K_C$$

83. **Sol.(2)**

Bond length of Double Bond ∝ Number of Resonating structure

84. **Sol.(3)**

(A) Alkyne	(C≡C)	C_nH_{2n-2}
(B) Alkanol	(ROH)	$C_nH_{2n+2}O$
(C) Alkanal	(–C(=O)–H)	$C_nH_{2n}O$
(D) Carboxylic acid	(–C(=O)–OH)	$C_nH_{2n}O_2$

85. **Sol.(4)**

86. **Sol.(1)**

87. **Sol.(1)**

(Stabilised by resonance)

88. **Sol.(2)**

89. **Sol.(4)**

90. **Sol.(4)**

Method is used to differentiate 1°, 2 & 3 Amines.

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