1. \( S = \frac{1}{2} a(t_1 + t_2)^2; \quad 4s = \frac{1}{2} a(t_1 + t_2)^2 \)
\[ \Rightarrow t_1 : t_2 = 1 : 1 \]

2. \( t = \frac{d}{\sqrt{v^2 - u^2}} \)

3. \( \text{K.E.} = \frac{1}{2} \left( \frac{3}{2} M R^2 \right) \left( \frac{v_0}{2R} \right)^2 = \frac{3}{16} M v_0^2 \)

4. \( \sigma = 0.5 \Rightarrow V = \text{const.} \Rightarrow 2 \frac{\Delta r}{r} + \frac{\Delta \ell}{\ell} = 0 \)
\[ \Rightarrow \frac{\Delta r}{r} = \frac{1}{2} \Delta \ell \Rightarrow \frac{\Delta d}{d} = -0.025\% \]

6. \( T = \frac{2u \sin \alpha}{g + a} = \frac{2 \times 4 \times 1/2}{12} = \frac{1}{3} \)

8. \( C = 0 \Rightarrow \Delta Q = 0 \Rightarrow a = \gamma = 5/3 \)

9. \( v = 3t^2 + 1; \)
\[ a = \frac{v(5) - v(2)}{5 - 2} = \frac{76 - 13}{3} = 21 \text{ m/s} \]

11. \( \frac{\text{r} \cdot \text{GM}}{2R^2} (3R^2 - r^2) = \frac{5}{4} \frac{\text{GM}}{R} \Rightarrow r = \frac{R}{\sqrt{2}} \)
\[ \Rightarrow H = R(1 - 1/\sqrt{2}) \]

12. \( P \propto T^4 \)

13. \( 4.5 = \frac{3s}{8} \Rightarrow 2V^2 - 13V + 6 = 0 \)
\[ \Rightarrow V = 6 \text{ m/s} \]
14. Acceleration \( \perp \) to velocity is normal acceleration.

\[
u = v \cos \theta \quad \Rightarrow \quad a = \frac{ug}{v}
\]

16. \( 1.4 < 1.5 < 1.66 \)

17. \( h = \frac{1}{2}gt^2; \quad 9h = \frac{1}{2}g(t - 1)^2 \Rightarrow t = 4s \)

18. \( t = \frac{T}{4} + \frac{T}{8} = \frac{3T}{8} \)

21. \( \pm 1 = \frac{100 \times 4/5 - 10t}{100\times 3/5} \Rightarrow t = 2s, 14s \)

23. \( x = -2(3\sin \omega t - \sin^3 \omega t) = -2\sin 3\omega t \)

24. Only odd harmonics are present in closed one

25. \( y = x^2 \Rightarrow \frac{dy}{dt} = 2x \frac{dx}{dt} = 4x \)

\[
\Rightarrow \frac{d^2y}{dt^2} = 4 \frac{dx}{dt} = 8 \text{ m/s}^2
\]

26. Centre of mass of rope is at depth \( h/2 \) and centre of mass of bucket full of water is at depth \( h \).

28. \( 10 \times 540 + 10 \times 1 \times 100 = m \times 80 = m = 80g \Rightarrow 80 \text{ g ice melted.} \)

29. Radius of curvature first decreases then increases.

30. \( mg = mo^2r \) (at highest point)

\[
\Rightarrow \omega = \sqrt{g/r}
\]

\[
\Rightarrow T = \frac{2\pi}{\omega} = 2\pi \sqrt{\frac{r}{g}} = 2\pi \sqrt{\frac{4}{\pi^2}} = 4s
\]

34. \( \Delta K = \int_2^4 Pdt = 4^3 - 2^3 = 56J \)

35. Density of water is maximum at 4°C.

36. \( \frac{\Delta P}{P} + \frac{\Delta V}{V} = 0 \Rightarrow B = -\frac{\Delta P}{\Delta V/V} = \frac{P}{n} \)

37. Least % error \( \Rightarrow \) most accurate.
65. 
\[ \text{–ve delocalised} \quad \text{–ve localised} \quad \text{–ve part of aromatic system} \quad \text{–ve delocalised more than A} \]

So 
\[ \text{stability order} \quad \frac{C}{D} > \frac{A}{B} \]

66. \[ \text{BN} + 3\text{H}_2\text{O} \rightarrow \text{H}_3\text{BO}_3 + \text{NH}_3 \]

68. \[ [\text{H}^+] = \sqrt{K_x \times C} = \sqrt{1.8 \times 10^{-3} \times 0.5} = 3 \times 10^{-3} \]

Now \[ [\text{H}^+] = \frac{3 \times 10^{-3}}{2} = 1.5 \times 10^{-3} \]

\[ 1.5 \times 10^{-3} = \sqrt{K_x \times C_2} \]

\[ C_2 = 0.125 \]

milli-moles of acid remain constant 
\[ C_1V_1 = C_2V_2 \]
\[ 10 \times 0.5 = 0.125 \times V_2 \]
\[ V_2 = 40 \text{ L} \]

69. Pure Single OH
Bond length
\[ \text{bond length} \quad \frac{\text{OH}}{\text{pure double}} \]

\[ : \quad \text{order is :} \quad \frac{b}{a} > \frac{c}{a} \]

73. trans
\[ \text{cis} \]

They are geometrical isomers \( \rightarrow \) structural formula is same : \( \therefore \) not structural isomers.

81. NCERT-XI, Page No. # 7
82. NCERT Pg. # 88
86. NCERT Pg. # 86
87. NCERT (E) & Module, Pg. # 115, Fig. no. 7.18(a)
88. NCERT XI Pg. # 271, (H)
89. NCERT XIth Page no. # 23, 24
90. NCERT (XI) Pg. # 67
91. NCERT (H & E), Pg. # 109, para no. 7
92. NCERT XI Pg.# 262, (H), 3rd para
94. NCERT (XI) Pg. # 70, 71, 72
181. The term Suvarnabhumi (land of gold) is commonly thought to refer to the south east Asian peninsula, including lower Burma and Malay peninsula. This corresponds to the gold producing areas traditionally known in Minangkabau highlands in Barisan mountains and Sumitra.

182. The Gotthard Base tunnel (GBT) is a railway tunnel in the heart of the swiss Alps expected to open in 2016. With a route length of 57 km and total of 151.84 km of tunnels, shaft and passages, it is the world's longest rail tunnel, surpassing the Seikan tunnel in Japan.

183. The major atmospheric constituents Nitrogen (N₂) Oxygen [O₂] and Argon (Ar) are not greenhouse gas.

184. The India Gate, originally called All India war memorial, is a war memorial located astride the Rajpath. This was architect by Edwin Lutyens. A flame known as the Amar Jawan Jyoti (the flame of immortal soldier) is kept perpetually alive since 1971 as a tribute to the dead Indian soldiers of Indo-pak war.

185. The Kollur mine in Guntur district of the Indian state of Andhra Pradesh. It was one of the most productive diamond mines in world. It operated between 16th to mid 19th century.

186. United Nations General Assembly has declared international yoga day on 11th June. The National Institution Ranking Framework (NIRF) has been approved by the ministry of Human and Resource development. In the Universities category Indian Institute of Science Bangalore was ranked 1st with a score of 91.81. Under pharmacy (Research and teaching) Category Manipal College of Pharmaceutical Science - Manipal, Karnataka was ranked 1st.

187. P.V. Narimsha Rao was the only PM who was multilingual and knew and speak 14 languages - Marathi, Hindi, Oriya, Bengali, Gujarati, Tamil, Urdu, English, French, Arabic, Spanish, German and Persian apart from mother tongue Telugu.

188. The National Institute of Technology Nirma (NIT) is an Institute of technology in Ahmedabad, Gujarat, India. It is located in the city of Ahmedabad, Gujarat, India. The institute was established in 1994.

189. Thirty First Olympics (2016) will be held in Rio de Janeiro, the proposed venue for thirty second Olympic Games (2020) is tokyo (Japan).
Narmada and Tapti rivers flow through rift valleys.

191. Neel Sethi plays as Mowgli. Jon Favreau is the director of the film - 'The Jungle book'.

192. According to Air Quality Guidelines (AQG) of WHO covering the period from 2008 to 2013. Delhi is the most polluted city in the world.

193. The dugong is a medium sized marine mammal. It is one of Vulnerable species. It is also known as sea cow.

194. Dadabhai Naoroji known as the Grand Old Man of India was a parsi intellectual, educator, cotton trader and an early Indian political and social leader.


196. Member of Rajya Sabha are elected for 6 years by MLA's (Member of legislative Assembly). We elect MLA's and MLA's elect members of Rajya Sabha.

197. The National Policy for Children recognises that a child is any person below the age of 18 yrs. Childhood is an integral part of life with value of its own.