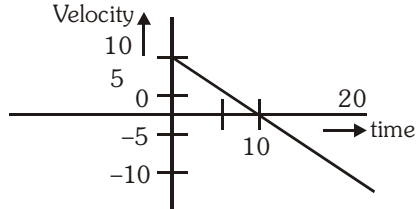
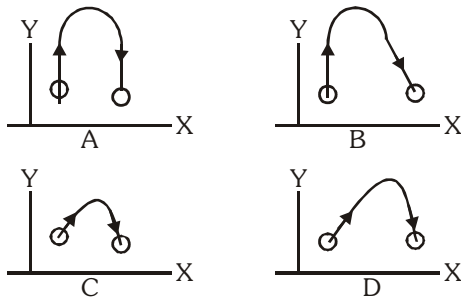


1. The velocity time graph of a body moving on a straight line is shown in the figure below. Choose the correct statement.



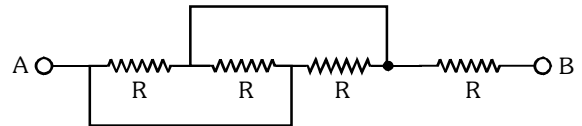
- (1) The acceleration of the body is changing.  
 (2) The body has never turned back.  
 (3) The body has zero displacement.  
 (4) The average speed in the time interval 0 to 10s is the same as in the interval 10s to 20s.
2. A person sitting on a moving train throws up a ball and an observer standing at the platform observes the path of the ball. Choose the correct path as seen by observer from graphs given below.



- (1) A      (2) B      (3) C      (4) D
3. A heavy stone is thrown from a cliff of height  $h$  with speed  $v$ . The stone will hit the ground with maximum speed if it is thrown
- (1) vertically downward.  
 (2) vertically upward.  
 (3) horizontally.  
 (4) speed is independent of initial direction.
4. A body of mass  $m$  is placed on an inclined plane of angle  $60^\circ$  with the horizontal. What will be the force exerted by the plane on the body?
- (1)  $mg$                       (2)  $1/2 mg$   
 (3)  $mg \cos \theta$               (4)  $mg \sin \theta$
5. Ice, water and alcohol have refractive indices  $\mu_I, \mu_W,$  and  $\mu_A$  respectively. Which of the following is true ?

- (1)  $\mu_W < \mu_I < \mu_A$               (2)  $\mu_A < \mu_W < \mu_I$   
 (3)  $\mu_W > \mu_A < \mu_I$               (4)  $\mu_I < \mu_W < \mu_A$

6. Neglecting the rotation of the earth, if suddenly the attractive power of the earth drops to Zero, a man standing on the earth will
- (1) fly up.  
 (2) slide along the surface.  
 (3) move out tangentially.  
 (4) stand unaffected.
7. If sun rays coming from solar disc makes an angle of  $0.63^\circ$  at the pole of a concave mirror of radius 400 cm, then what will be size of the image ?
- (1) 3.2 cm                      (2) 2.2 cm  
 (3) 4.2 cm                      (4) 5 cm
8. A wire of resistance  $R \Omega$  is bent in the shape of a circle. What will be its resistance between two diametrically opposite points ?
- (1)  $2R$       (2)  $R$       (3)  $R/2$       (4)  $R/4$
9. The far point of a myopic person is 80 cm in front of the eye. What will be the nature and power of the lens to correct his eye sight ?
- (1)  $+0.8 D$                       (2)  $-0.8 D$   
 (3)  $-1.25 D$                       (4)  $+1.25 D$
10. What will be the equivalent resistance between points A and B in the following arrangement?



- (1)  $3R$                       (2)  $2R$   
 (3)  $(3/5) R$                       (4)  $(4/3)R$
11. Two conducting wires of same material and of equal length and diameter are first connected in series and then in parallel in a circuit across the same potential difference. The ratio of heat produced in series and parallel combinations would be
- (1) 1 : 2                      (2) 2 : 1  
 (3) 1 : 4                      (4) 4 : 1
12. 36 identical bulbs are connected in series in a room. When one of the bulbs gets fused, then the rest 35 bulbs are connected in series. Which one will give more illumination, now?
- (1) 36 bulbs  
 (2) 35 bulbs  
 (3) same illumination in two cases.  
 (4) none of the above.

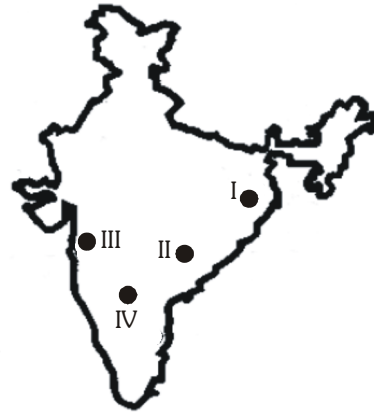
- 13.** Electromagnetic radiation of frequency  $\nu$ , wavelength  $\lambda$ , travelling with velocity  $v$  in air, enters a glass slab of refractive index  $n$ . The frequency, wavelength and velocity of light in the glass slab will be respectively
- (1)  $\frac{\nu}{n}, \frac{\lambda}{n}, \frac{v}{n}$                       (2)  $\nu, \frac{\lambda}{n}, \frac{v}{n}$
- (3)  $\nu, \lambda, \frac{v}{n}$                       (4)  $\frac{\nu}{n}, \frac{\lambda}{n}, v$
- 14.** A fuse wires has essentially
- (1) high resistance & high melting point.  
 (2) low resistance & high melting point.  
 (3) low resistance & low melting point.  
 (4) high resistance & low melting point.
- 15.** In the equation  $\text{NaOH} + \text{H}_3\text{PO}_4 \rightarrow \text{NaH}_2\text{PO}_4 + \text{H}_2\text{O}$ , the equivalent weight of  $\text{H}_3\text{PO}_4$  is
- (1) 59            (2) 98            (3) 49            (4) 40
- 16.** The order of increasing value of  $e/m$  ratio of particles electron ( $e$ ), proton ( $p$ ), neutron ( $n$ ) and alpha ( $\alpha$ ) is
- (1)  $e < p < n < \alpha$                       (2)  $n < p < e < \alpha$   
 (3)  $n < \alpha < p < e$                       (4)  $e < n < \alpha < p$
- 17.** The general electronic configuration of transition metal is
- (1)  $ns^2np^2nd^{1-10}$                       (2)  $ns^2np^1(n-1)^{1-10}$   
 (3)  $ns^2np^6(n-1)^{1-10}$                       (4)  $ns^{0-2}(n-1)d^{1-10}$
- 18.** Which of the following is paramagnetic ?
- (1)  $\text{Cl}_2\text{O}_6$                       (2)  $\text{Cl}_2\text{O}_7$   
 (3)  $\text{Cl}_2\text{O}$                       (4)  $\text{ClO}_2$
- 19.** At high temperature and low pressure the vander waal's equation become
- (1)  $PV_m = RT$   
 (2)  $P(V_m - s) = RT$
- (3)  $\left(P + \frac{a}{V_m^2}\right) \cdot V_m = RT$
- (4)  $\left(P + \frac{a}{V_m^2}\right) (V_m - b) = RT$
- 20.** The heat of formation of  $\text{CS}_2$  is  $-22.06$  k.cal, the internal energy value of  $\text{CS}_2$  is
- (1)  $-22.06$  k.cal                      (2)  $+22.06$  k.cal  
 (3)  $+11.03$  k.cal                      (4)  $-11.03$  k.cal
- 21.** Which of the following is the strongest acid ?
- (1)  $\text{CH}_3\text{COOH}$  dissolve in  $\text{HClO}_4$   
 (2)  $\text{CH}_3\text{COOH}$  in  $\text{H}_2\text{O}$   
 (3)  $\text{H}_2\text{SO}_4$  in  $\text{H}_2\text{O}$   
 (4)  $\text{HClO}_4$  in  $\text{H}_2\text{O}$
- 22.** What will be the value of  $x$  in the following equation ?  
 $\text{MnO}_4^- + \text{H}^+ + x \rightarrow \text{Mn}^{2+} + \text{H}_2\text{O}$
- (1)  $5e$                       (2)  $2e$   
 (3)  $3e$                       (4)  $4e$
- 23.**  $\text{NaOH}$  and  $\text{CO}$  react to form
- (1) Formaldehyde                      (2) Acetaldehyde  
 (3) Sodium formate                      (4)  $\text{Na}$  and  $\text{CO}_2$
- 24.** Which of the following is a Baeyer's Reagent ?
- (1) Alkaline  $\text{KMnO}_4$                       (2) Acidic  $\text{KMnO}_4$   
 (3) Neutral  $\text{KOH}$                       (4)  $\text{Br}_2$  water
- 25.** A metal carbonate A on treatment with a mineral acid liberates a gas which when passed through aqueous solution of a substance B gives back A. The substance B on reaction with the gas obtained at anode during electrolysis of brine gives a compound C which can decolorize coloured fabrics. The compound A, B and C respectively are
- (1)  $\text{CaCO}_3, \text{Ca}(\text{OH})_2, \text{Ca}(\text{OCl})\text{Cl}$   
 (2)  $\text{Mg}(\text{OH})_2, \text{MgO}, \text{Ca}(\text{OCl})\text{Cl}$   
 (3)  $\text{MgCO}_3, \text{Ca}(\text{OCl})\text{Cl}, \text{Mg}(\text{OH})_2$   
 (4)  $\text{Mg}(\text{OH})_2, \text{MgCO}_3, \text{Ca}(\text{OCl})\text{Cl}$
- 26.** The IUPAC name of  $\text{Ph}-\text{CH}=\text{CH}-\text{COOH}$  is
- (1) 3-phenylpropenoic acid  
 (2) Cinnamic acid  
 (3) 1-carboxy-2-phenylethene  
 (4) 1-phenylpropenoic acid
- 27.** The solubility of  $\text{AgCl}$  in  $0.1$  M  $\text{NaCl}$  will be
- (1) Increase  
 (2) Decrease  
 (3) Remain unchanged  
 (4)  $\text{AgCl}$  will dissolve completely
- 28.** The most intelligent mammal among the following is
- (1) Whale                      (2) Dolphins  
 (3) Kangaroos                      (4) Elephants
- 29.** Our body requires food for energy. Which one of the following is quick source of energy?
- (1) Fat                      (2) Proteins  
 (3) Carbohydrate                      (4) All of these
- 30.** Human blood contains white and red blood cells. Excess of white blood cells in our blood is indicative of
- (1) Anaemia                      (2) Haemophilia  
 (3) Leukemia                      (4) Leukopenia
- 31.** Irrigation is needed for agriculture. Prolonged and liberal irrigation is likely to create the problem of
- (1) Aridity                      (2) Salinity  
 (3) Toxicity                      (4) Acidity

- 32.** If there is deficiency of growth hormone in a child, the child becomes  
 (1) Mentally retarded (2) Externally abnormal  
 (3) Dwarf (4) Physically weak
- 33.** There is certain relationship between the forelimbs of frog, lizard, bird and man. This is known as  
 (1) Genetical (2) Phylogenetic  
 (3) Analogous (4) Homologous
- 34.** There are number of organelles in a eukaryotic cell. Which one of the following does not contain DNA.  
 (1) Chloroplast (2) Mitochondria  
 (3) Ribosome (4) Both (1) and (2)
- 35.** The cell cycle includes mitosis. Which of the following features is the outcome of mitosis ?  
 (1) It forms cells of equal size.  
 (2) It shows semi conservative replication of DNA.  
 (3) It forms genetically identical cells.  
 (4) It produces variation.
- 36.** All cells and cell organelles are surrounded by a thin membrane - the plasma membrane. It is mainly composed of  
 (1) Proteins only  
 (2) Proteins & Carbohydrates  
 (3) Carbohydrates and Lipids  
 (4) Protein and Lipids
- 37.** There are huge number of plant and animal species on this planet. More than 50% of all the species belongs to  
 (1) Plants (2) Bacteria  
 (3) Insects (4) Fungi
- 38.** The branch of biology that explains both diversity and unity of life is known as  
 (1) Taxonomy (2) Ecosystem  
 (3) Darwinism (4) Evolution
- 39.** There are many components of an Ecosystem. What are the two main processes on which ecosystem depends?  
 (1) Speciation and Evolution  
 (2) Nutrient recycling and energy flow  
 (3) Energy flow and decomposition  
 (4) Photosynthesis and decomposition
- 40.** Which of the options given below would not work in the following sentence?  
 In order for the body to absorb and use \_\_\_\_\_ these must be broken down by hydrolysis into \_\_\_\_\_.  
 (1) polysaccharides, monosaccharides  
 (2) amino acids, proteins  
 (3) fats, glycerol and fatty acids  
 (4) disaccharides, monosaccharides
- 41.** If  $\sin x + \sin^2 x = 1$ , then  $\cos^2 x + \cos^4 x =$   
 (1) 1 (2) 2  
 (3) 1.5 (4) None of these
- 42.** If  $\sin \theta + \operatorname{cosec} \theta = 2$  then  $\sin^5 \theta + \operatorname{cosec}^5 \theta =$   
 (1) 1 (2) 2  
 (3) 4 (4) None of these
- 43.** Given the points A(1, 1), B(-2, 7) and C(3, -3) then  
 (1)  $AB + BC = AC$  (2)  $AB + AC = BC$   
 (3)  $BC + CA = AB$  (4)  $AB^2 + AC^2 = BC^2$
- 44.** The line segment joining the points A(6, 3) and B(-2, -5) is divided by the x-axis in the ratio  
 (1) 3 : 5 (2) 4 : 5  
 (3) 2 : 5 (4) 5 : 1
- 45.** The second term of an A.P is  $x - y$  and the fifth term is  $x + y$ , then the first term is  
 (1)  $x - \frac{1}{3}y$  (2)  $x - \frac{2}{3}y$   
 (3)  $x - \frac{4}{3}y$  (4)  $x - \frac{5}{3}y$
- 46.** The sum of the first n odd positive integers is  
 (1)  $\frac{n(n+1)}{2}$  (2)  $n(n+1)$   
 (3)  $n^2$  (4)  $2n - 1$
- 47.** If  $\alpha, \beta$  are the roots of the equation  $9x^2 + 6x + 1 = 0$  then the equation with roots  $\frac{1}{\alpha}$  and  $\frac{1}{\beta}$  is  
 (1)  $2x^2 + 3x + 18 = 0$  (2)  $x^2 + 6x - 9 = 0$   
 (3)  $x^2 + 6x + 9 = 0$  (4)  $x^2 - 6x + 9 = 0$
- 48.** If  $x = 2 + 2^{1/3} + 2^{2/3}$  then,  $x^3 - 6x^2 + 6x = \dots$   
 (1) 3 (2) 2 (3) 1 (4) 0
- 49.** 37 pens and 53 pencils together cost Rs. 394, while 53 pens and 37 pencils together cost Rs. 506. The cost of a pen is  
 (1) Rs.9 (2) Rs.8.50  
 (3) Rs.8 (4) Rs.9.50
- 50.**  $\frac{1}{2} + \frac{1}{6} + \frac{1}{12} + \frac{1}{20} + \frac{1}{30} + \dots + \frac{1}{156} = \dots$   
 (1)  $\frac{12}{13}$  (2)  $\frac{13}{12}$  (3)  $\frac{1}{13}$  (4) 1
- 51.** If  $x^2 - 1$  is a factor of  $x^4 + ax^3 + 3x - b$  then  
 (1)  $a = 3, b = -1$  (2)  $a = -3, b = 1$   
 (3)  $a = 3, b = 1$  (4) None of these

52. Two dice are thrown simultaneously. The probability of getting a sum of 8 as the sum of two numbers that turn up is
- (1)  $\frac{1}{6}$       (2)  $\frac{4}{9}$       (3)  $\frac{5}{36}$       (4)  $\frac{1}{18}$
53. The probability, that an ordinary year has 53 Sundays, is
- (1)  $\frac{1}{7}$       (2)  $\frac{2}{7}$       (3)  $\frac{1}{365}$       (4)  $\frac{2}{365}$
54. The length of a chord of a circle of radius 10 cm, is  $10\sqrt{3}$  cm. Its distance from the centre is
- (1) 10 cm      (2)  $5\sqrt{3}$  cm
- (3) 5 cm      (4)  $5\sqrt{2}$  cm
55. The number of terms in the series 201, 208, ....., 369 is
- (1) 23      (2) 24      (3) 25      (4) 26
56. The radius of a cylinder is same as that of a sphere. Their volumes are equal. The height of cylinder is n times its radius, then n = .....
- (1) 1      (2) 2      (3)  $\frac{2}{3}$       (4)  $\frac{4}{3}$
57. A cylindrical piece of metal of radius 2 cm and height 6 cm is shaped into a cone of same radius. The height of the cone is
- (1) 8 cm      (2) 12 cm      (3) 14 cm      (4) 18 cm
58. The median of a series is 10. Two additional observations 7 and 20 are added to the series. The median of the new series is
- (1) 7      (2) 9      (3) 10      (4) 20
59. The arithmetic mean of 10 observations is 12.45. If each reading is increased by 5 then the resulting mean is increased by
- (1) 5      (2) 29      (3) 0.5      (4) 50
60. The mode of observations 7, 12, 8, 5, 6, 4, 9, 10, 8, 9, 7, 9, 6, 5, 9 is
- (1) 7      (2) 8      (3) 9      (4) 12
61. The prophet of Italian nationalism was
- (1) Napoleon Bonaparte      (2) Joseph Mazzini
- (3) Mount Cavour      (4) G. Garibaldi
62. Which of the following statements about Russia is/are correct ?
- (a) Russia emerged as the first socialist state in the world.
- (b) Socialist State in Russia was established by Bolsheviks in 1917
- Select the correct answer using the code given below :
- (1) a only      (2) b only
- (3) Both a and b      (4) Neither a nor b
63. Who did not lead the revolutionary movement in Indo-China ?
- (1) Ho-Chi-Minh      (2) FanBoiChau
- (3) Nego Dinh Diem      (4) Bao Dai
64. **Assertion (A)** : Gandhiji's idea of Satyagraha emphasized on the power of truth and the need to search for truth.
- Reasoning (R)** : Gandhiji believed that a Satyagraha could win the battle by appealing to the conscience of the oppressor.
- Select the correct option from the given alternatives.
- (1) (A) is true and R is false
- (2) Both (A) and (R) are true but (R) is not the correct explanation of (A)
- (3) Both (A) and (R) are true and (R) is the correct explanation of (A)
- (4) Both (A) and (R) is false
65. Consider the following statements about Salt Satyagraha
- (a) It was a form of civil disobedience
- (b) It was the first nationalist activity in which woman participated in large numbers.
- (c) Gandhiji first experimented with Salt Satyagraha in South Africa.
- Which of the statements given above is/are correct ?
- (1) a only      (2) b only
- (3) a and b only      (4) a, b and c
66. In 1936 the All India Kisan Sabha was founded at
- (1) Patna      (2) Lucknow
- (3) Delhi      (4) Varanasi
67. The Tana Bhagat Movement was led by
- (1) BirsaMunda      (2) Bhagirath Manjhi
- (3) Jaira Bhagat      (4) SidoBhagati
68. Jamshedji Tata established Tata Iron and Steel Company in
- (1) 1907      (2) 1910
- (3) 1917      (4) 1920

69. The term 'Globalization' was first used by  
 (1) Theodore Levitt (2) John Williamson  
 (3) Andrew Johnson (4) Manmohan Singh
70. Who considered the printing press as the greatest invention after the art of writing which developed the intellectual awakening ?  
 (1) Martin Luther (2) Gutenberg  
 (3) Will Durant (4) Caxton
71. **Assertion (A)** : Mumbai receives most of its rainfall in summer while Chennai in the winter season.  
**Reason (R)** : North East monsoon gives rainfall in Mumbai while South West monsoon causes rainfall in Chennai.  
 Select the correct option from the given alternatives  
 (1) Both (A) and (R) are true, and (R) explains (A)  
 (2) Both (A) and (R) are true but (R) does not explain (A)  
 (3) (A) is true and (R) is false  
 (4) (A) is false and (R) is true
72. **Assertion (A)** : The Western Coastal plain of the peninsular India is relatively narrow.  
**Reason (R)** : This coastal plain has the deposits of sediments brought down by the rivers.  
 Select the correct option from the given alternatives -  
 (1) Both (A) and (R) are true and (R) explains (A)  
 (2) Both (A) and (R) are true but (R) does not explain (A)  
 (3) (A) is true but (R) is false  
 (4) (A) is false but (R) is true
73. **Assertion (A)** : The latitudinal and longitudinal extent of India is almost the same but actual distance over the earth surface is not.  
**Reason (R)** : The spheroid shape of the earth causes the difference.  
 Select the correct option from the given alternatives -  
 (1) Both (A) and (R) are true and (R) explains (A)  
 (2) Both (A) and (R) are true but (R) does not explain (A)  
 (3) (A) is true but (R) is false  
 (4) (A) is false but (R) is true
74. **Assertion (A)** : Sugar industries are located close to the sugarcane producing areas.  
**Reason (R)** : Sugar industry is a footloose industry, Select the correct option from the given alternatives -  
 (1) Both (A) and (R) are true and (R) explains (A)  
 (2) Both (A) and (R) are true but (R) does not explain (A)  
 (3) (A) is true but (R) is false  
 (4) (A) is false but (R) is true

75. Match the cities indicated on the map of India (I, II, III and IV) with their representative names.



- (A) Mumbai (B) Hyderabad  
 (C) Bhubneswar (D) Kolkata  
 (1) ID IIC IIIA IVB (2) IC IIB IIIA IVD  
 (3) IA IIB IIID IVC (4) IIA IIIB IA IVB
76. The leading state in the production of maize is -  
 (1) Uttar Pradesh (2) Bihar  
 (3) Madhya Pradesh (4) Andhra Pradesh
77. Which crop consumes the largest area under cultivation -  
 (1) Rice (2) Wheat (3) Maize (4) Jowar
78. In South India, the type of soil found in the largest area is -  
 (1) laterite (2) Red soil  
 (3) desert soil (4) Black soil
79. BALCO is related to the production of which mineral -  
 (1) Aluminium (2) Gold  
 (3) Copper (4) Zinc
80. Operation Flood is  
 (1) Flood Control programme  
 (2) Fishery development programme  
 (3) Milk production programme  
 (4) edible oil production programme
81. The first session of the Indian National Congress was presided over by,  
 (1) A. O. Home  
 (2) Womesh Chandra Banerjee  
 (3) Dadabhai Naoroji  
 (4) None of these
82. Mahatma Gandhi for the first time practised his Satyagraha in India at:  
 (1) ChauriChaura (2) Ahmedabad  
 (3) Champaran (4) Navakhali
83. The source of all political power in India lies with  
 (1) Parliament (2) The Lok Sabha  
 (3) The People (4) The Constitution

- 84.** If the President of India is to resign from office, he should address his letter of resignation to  
 (1) The Prime Minister  
 (2) The Vice President  
 (3) The Speaker of Lok Sabha  
 (4) The Chief Justice of India
- 85.** To which of the following categories of rights does the right to property belong ?  
 (1) Legal Right (2) Fundamental Right  
 (3) Human Right (4) Natural Right
- 86.** The Panchayati Raj is based on the principle of  
 (1) Decentralisation  
 (2) Centralisation  
 (3) Democratic Centralism  
 (4) Democratic Decentralisation
- 87.** Judicial Activism is related to  
 (1) Committed Judiciary  
 (2) Public Interest Litigation  
 (3) Judicial Review  
 (4) Judicial Independence
- 88.** Democracy is a system of government in which the final power rests with  
 (1) The mob (2) The people  
 (3) The politicians (4) The civil servants
- 89.** A political party serves as an important link between the legislature and  
 (1) The people (2) The voters  
 (3) Executive (4) Judiciary
- 90.** The World Environment Day is observed on  
 (1) 3rd June (2) 5th June  
 (3) 10th June (4) 15th June
- 91.** In 2011 India's Life Expectancy at birth was :  
 (1) 74.9 years (2) 65.4 years  
 (3) 68.9 years (4) 65.96 years
- 92.** Which one of the following is correct:  
 (1) In India the relative share of the primary sector in the GDP has been rising in the last forty years.  
 (2) In India the relative share of the primary sector in the GDP has been falling in the last forty years.  
 (3) In India the relative share of the primary sector in the GDP has been static (the same) in the last forty years.  
 (4) In India the relative share of the primary sector in the GDP has been rising in the last ten years.

- 93.** In 2010 co-operatives and commercial banks' contribution to total credit to rural households in India was :  
 (1) 85% (2) 18%  
 (3) 52% (4) 5%
- 94.** Which one of the following is correct :  
 (1) Globalisation leads to integration of the world economy.  
 (2) Globalisation leads to disintegration of the world economy.  
 (3) Globalisation leads to self-reliant national economies.  
 (4) Globalisation leads to strengthening of local economy.
- 95.** United Nations adopted the UN Guidelines for Consumer Protection in the year:  
 (1) 2001 (2) 1991  
 (3) 1985 (4) 2011
- 96.** Make the right pairs of the following rivers and their places of origin

Column-I		Column-II	
(A)	Satluj	(p)	Brahmagiri
(B)	Jhelum	(q)	Amarkantak
(C)	Kaveri	(r)	Rakshastal
(D)	Narmada	(s)	Verinag

- | A     | B | C | D |
|-------|---|---|---|
| (1) r | s | p | q |
| (2) r | p | q | s |
| (3) q | s | p | r |
| (4) r | q | p | s |
- 97.** In which currency the per capita incomes of countries are calculated ?  
 (1) Yen (2) Dollar  
 (3) Rupees (4) Pound
- 98.** What is the better measure to compare two countries ?  
 (1) Average income (2) Total income  
 (3) Gross income (4) None of these
- 99.** Organization that publishes Human Development Report is  
 (1) UNESCO (2) WHO  
 (3) UNDP (4) FICCI
- 100.** Which attribute is considered for comparing different countries as per the World Development Report by World Bank ?  
 (1) Health (2) Income  
 (3) Technology (4) Population