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ACC-I

**Previous Year Paper
Feb 2017
(ACT Paper-IV)-2**



Time: 3 Hrs

INDEX No. _____

Max Marks: 300

General Instructions

1. There are 150 questions and all questions are compulsory.
2. Mark your response on OMR sheet provided for this part of the exam.
3. Each question carries two marks.
4. Do not write anything on the question paper except your Index No in the space provided.

SECTION A- MATHEMATICS

1. Find the area of a square whose diagonal is 3.8 m.
(a) 6.22 m^2 (b) 5.22 m^2 (c) 7.22 m^2 (d) None of these
2. The area of a rhombus is 144 cm^2 , one of its diagonal is twice the other. The length of the shortest diagonal is _____.
(a) 12 cm (b) $6\sqrt{2} \text{ cm}$ (c) 6 cm (d) 24 cm
3. Diagonal of a cube of $4\sqrt{3} \text{ cm}$. Find its volume.
(a) 27 cm^3 (b) 64 cm^3 (c) 125 cm^3 (d) None of these
4. Find the area of a triangle whose side measures 13 cm, 14 cm and 15 cm.
(a) 84 cm^2 (b) 74 cm^2 (c) 64 cm^2 (d) None of these
5. In a quadrilateral, the length of one of its diagonal is 23 cm and the perpendiculars drawn on this diagonal from other two vertices measure 17 cm and 7 cm respectively. Find the area of the quadrilateral.
(a) 276 cm^2 (b) 376 cm^2 (c) 176 cm^2 (d) None of these
6. If $\sin \theta = \frac{1}{\sqrt{2}}$ and $\cos \theta = \frac{1}{\sqrt{2}}$, then $\cot \theta = ?$
(a) $\frac{1}{\sqrt{2}}$ (b) 0 (c) $\frac{\sqrt{3}}{2}$ (d) 1
7. If $\tan \theta = \frac{1}{\sqrt{7}}$, then $\frac{\cosec^2 \theta - \sec^2 \theta}{\cosec^2 \theta + \sec^2 \theta} = ?$
(a) $-\frac{3}{4}$ (b) $-\frac{2}{3}$ (c) $\frac{2}{3}$ (d) $\frac{3}{4}$
8. If $\sin 42^\circ = x$, then $\cos 48^\circ = ?$
(a) $-x$ (b) x (c) $x + 1$ (d) $\frac{1}{x}$
9. At an instant, the length of the shadow of a pole is $\sqrt{3}$ times the height of the pole. The angle of elevation of the sun is _____.
(a) 30° (b) 45° (c) 60° (d) 75°
10. $\left(\frac{3\pi}{5}\right) \text{ radians} = ?$
(a) 30° (b) 108° (c) 90° (d) 180°

11. If $\sin(A - B) = \frac{1}{2}$, $\cos(A + B) = \frac{1}{2}$, $0^\circ < A + B \leq 90^\circ$, $A > B$, find A and B.

(a) $30^\circ, 45^\circ$ (b) $45^\circ, 15^\circ$ (c) $30^\circ, 75^\circ$ (d) $60^\circ, 45^\circ$

12. If $x \tan 45^\circ \cos 60^\circ = \sin 60^\circ \cot 60^\circ$, then $x = ?$

(a) $\frac{1}{\sqrt{2}}$ (b) $\frac{1}{2}$ (c) $\sqrt{3}$ (d) 1

13. $\frac{1}{(1 + \tan^2 \theta)} + \frac{1}{(1 + \cot^2 \theta)} = ?$

(a) $\frac{1}{4}$ (b) $\frac{1}{2}$ (c) 2 (d) 1

14. Two men are on opposite sides of a tower. They measure the angles of elevation of the top of the tower as 30° and 45° respectively. If the height of the tower is 50 m, find the distance between the two men. (Take $\sqrt{3} = 1.73$)

(a) 136.5 m (b) 135.5 m (c) 137.5 m (d) 138.5 m

15. $\sqrt{\frac{1-\cos A}{1+\cos A}} = ?$

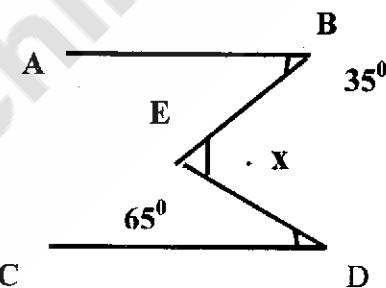
(a) $\operatorname{cosec} A - \cot A$ (b) 0 (c) $\sec A - \cot A$ (d) 1

16. An angle is one-fifth of its supplement. The measure of the angle is

(a) 15° (b) 30° (c) 75° (d) 150°

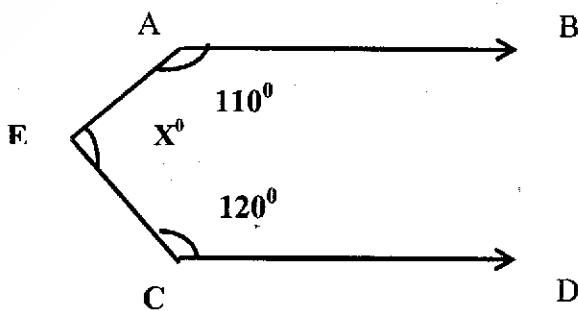
17. In the given figure, $AB \parallel CD$, $\angle ABE = 35^\circ$, $\angle CDE = 65^\circ$ and $\angle BED = x^\circ$. Then, $x = ?$

(a) 30°
(b) 100°
(c) 125°
(d) 145°



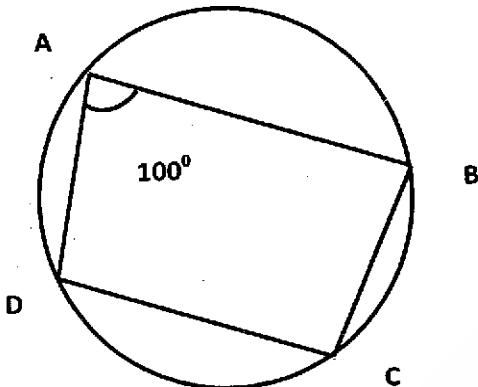
18. In the given figure $AB \parallel CD$ and $\angle BAE = 110^\circ$, $\angle ECD = 120^\circ$ and $\angle AEC = X^\circ$. Then, $X = ?$

(a) 130°
(b) 65°
(c) 75°
(d) 110°



19. In the given figure, ABCD is a cyclic quadrilateral in which $AB \parallel CD$ and $\angle BAD = 100^\circ$. Then, $\angle ABC = ?$

- (a) 80°
- (b) 100°
- (c) 75°
- (d) 150°

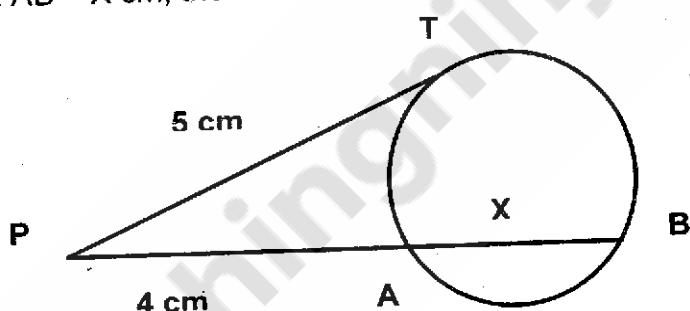


20. If perimeters of two similar triangles ΔABC and ΔPQR are 36 cm and 24 cm respectively. If $PQ = 10$ cm, then $AB = ?$

- (a) $6\frac{2}{3}$ cm
- (b) $\frac{10\sqrt{6}}{3}$ cm
- (c) 15 cm
- (d) $66\frac{2}{3}$ cm

21. In the given figure, PAB is a secant and PT is a tangent to the circle from P. If $PT = 5$ cm, $PA = 4$ cm and $AB = X$ cm, then $X = ?$

- (a) 2.5 cm
- (b) 2.6 cm
- (c) 2.25 cm
- (d) 2.75 cm

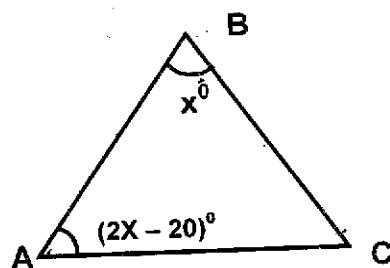


22. In a ΔABC , $\angle A + \angle B = 65^\circ$ and $\angle B + \angle C = 140^\circ$. Then $\angle B = ?$

- (a) 25°
- (b) 35°
- (c) 40°
- (d) 45°

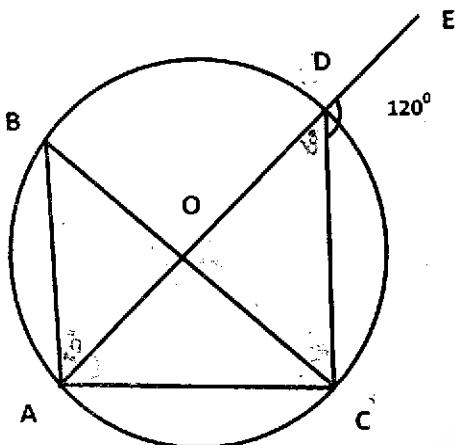
23. In a ΔABC , $AB = BC$, $\angle B = x^\circ$ and $\angle A = (2x - 20)^\circ$. Then, $\angle B = ?$

- (a) 30°
- (b) 40°
- (c) 44°
- (d) 64°



24. In the given figure, measure of $\angle ABC$ is _____

- (a) 65°
- (b) 55°
- (c) 60°
- (d) 45°



25. The lengths of the diagonals of a rhombus are 24 cm and 18 cm respectively. The length of each side of the rhombus is _____

- (a) 12 cm
- (b) 9 cm
- (c) 15 cm
- (d) 8 cm

26. If the arithmetic mean of 6, 8, 5, 7, p and 4 is 7. Find the value of p.

- (a) 15
- (b) 12
- (c) 10
- (d) 15

27. If the mean of five observations $x, x + 2, x + 4, x + 6, x + 8$ is 11, then the mean of first three observation is _____

- (a) 9
- (b) 11
- (c) 13
- (d) None of these

28. A bag contains 4 white, 5 red and 6 green balls. These balls are drawn at random. What is the chance that a white, a red and a green ball is drawn?

- (a) $\frac{91}{24}$
- (b) $\frac{24}{91}$
- (c) $\frac{-24}{91}$
- (d) None of these

29. The letters of the word 'ARTICLE' is arranged in different ways randomly. What is the chance that the vowels occupy the even places?

- (a) $\frac{4}{35}$
- (b) $\frac{3}{35}$
- (c) $\frac{2}{35}$
- (d) $\frac{1}{35}$

30. For the scores 8, 6, 10, 12, 1, 5, 6 and 6, the arithmetic mean is _____

- (a) 6.85
- (b) 6.75
- (c) 6.95
- (d) 7

31. A deposited Rs 6000 in a bank at 5% per annum simple interest. B deposited Rs 5000 at 8% p.a. compound interest. After 2 years, the difference between their interest will be:-

- (a) Rs 230
- (b) Rs 232
- (c) Rs 600
- (d) Rs 832

32. Rs 355 were divided among A, B, C in such a way that A had Rs 20 more than B and C had Rs 15 more than A. How much was C's share?

- (a) Rs 100
- (b) Rs 120
- (c) Rs 135
- (d) Rs 150

33. The ratio between two numbers is 3:4. If each number is increased by 6, the ratio becomes 4:5. The difference between the numbers is:-
 (a) 1 (b) 3 (c) 6 (d) 8

34. In 1 minute $\frac{3}{7}$ of a bucket is filled. The rest of the bucket can be filled in _____.
 (a) 2 minutes (b) $\frac{4}{3}$ minutes (c) $\frac{7}{3}$ minutes (d) None of these

35. A trader marked the selling price of an article at 10% above the cost price. At the time of selling, he allows certain discount and suffers a loss of 1%. The discount allowed is:-
 (a) 9% (b) 10% (c) 10.5% (d) 11%

36. Arun purchased a T.V. set at 20% discount. If he gets a discount of 25%, he saves Rs 1800. For how much does he purchase the T.V. set?
 (a) Rs 33000 (b) Rs 31200 (c) Rs 28800 (d) Rs 27000

37. 6 men, 7 women and 5 children complete a job for Rs 4400. If their individual wages be in the ratio 4:3:2, the total money earned by 5 children is:-
 (a) Rs 880 (b) Rs 800 (c) Rs 900 (d) Rs 960

38. A and B invest in a business in the ratio 3:2. If 5% of the total profit goes to charity and A's share is Rs 8550, then total profit is:-
 (a) Rs 15760 (b) Rs 15735 (c) Rs 15000 (d) Rs 14250

39. 8 men working for 9 hours a day complete a piece of work in 20 days. In how many days can 7 men working for 10 hours a day complete the same piece of work?
 (a) $41\frac{2}{7}$ days (b) $10\frac{3}{5}$ days (c) $150\frac{7}{7}$ days (d) $20\frac{4}{7}$ days.

40. A is twice as fast as B and B is thrice as fast as C. The journey covered by C in 42 minutes will be covered by A in _____.
 (a) 7 minutes (b) 14 minutes (c) 28 minutes (d) 63 minutes

41. $1 - 8p^3$ in the factor form is _____.
 (a) $(1 + 2p)(1 + 2p - 4p^2)$ (b) $(1 - 2p)(1 + 2p + 4p^2)$
 (c) $(1 + 2p)(1 + 2p + 4p^2)$ (d) None of these

42. What will be the value of x for which $2^{x+4} - 2^{x+2} = 3$.
 (a) -2 (b) -3 (c) -4 (d) 0

43. $(x^2 + \frac{1}{x^2}) = 79$, then find the value of $(x^3 + \frac{1}{x^3})$.
 (a) ± 702 (b) ± 703 (c) ± 704 (d) None of these

44. Find the sum of series 3, 1, -1, -3,upto 10 terms.
 (a) -50 (b) -62 (c) -48 (d) -60

45. The value of 'a' for which the equation $ax^2 - 2\sqrt{5}x + 4 = 0$ has equal roots is _____.
 (a) $\frac{4}{5}$ (b) $\frac{5}{4}$ (c) $\frac{3}{4}$ (d) $\frac{4}{3}$

46. If $m : n = 2 : 3$, the value of $\frac{3m+5n}{6m-n} = ?$
 (a) $\frac{7}{3}$ (b) $\frac{7}{4}$ (c) $\frac{7}{5}$ (d) $\frac{7}{2}$

47. The value of $\log_5 \frac{1}{125}$ is —
 (a) - 2 (b) 3 (c) - 3 (d) None of these

48. If $(x + 1)(x^2 - ? + 1) = x^3 + 1$, then ? will be replaced by —
 (a) - x (b) x (c) \sqrt{x} (d) None of these

49. If $p + q = 4$ and $p^2 + q^2 = 7$, then the value of pq is —
 (a) $\frac{-9}{2}$ (b) $\frac{9}{2}$ (c) $\frac{9}{4}$ (d) $\frac{7}{4}$

50. Solve : $x^2 - 5x + 6 = 0$.
 (a) 1, 3 (b) 3, 2 (c) 6, 5 (d) 0, 2

SECTION - B (GENERAL SCIENCE)

51. An echo is heard when minimum distance of the reflecting surface is
 (a) 10 cm (b) 17 m (c) 34 m (d) 340 m

52. Which of the following is a longitudinal wave?
 (a) Sound wave (b) radio wave (c) water wave (d) Light wave

53. If a concave mirror of focal length 10 cm is immersed in water its focal length will be
 (a) be reduced (b) be increased (c) remain unchanged (d) Change Sign

54. The index of refraction of diamond is 2.0, velocity of light in diamond in cm/sec is approximately
 (a) 1.5×10^{10} (b) 6×10^{10} (c) 3.0×10^{10} (d) 2×10^{10}

55. Decibel is
 (a) musical instrument (b) musical note
 (c) measure of sound level (d) wavelength of noise

56. The ability of eye to focus the near as well as distant object is called
 (a) Flexibility (b) Power of accommodation
 (c) Myopia (d) Distinct vision

57. Magnetic field is a
 (a) Vector quantity (b) Scalar quantity
 (c) Vector as well as scalar quantity (d) None

58. The Soft Iron has
 (a) High malleability (b) Low malleability
 (c) High retentivity (d) Low retentivity

59. The specific resistance of all metal is mostly affected by
(a) Temperature (b) Pressure
(c) Degree of illumination (d) Applied magnetic field

60. Electrolyte used in voltaic cell is
(a) Sulphuric acid (b) Acetic acid
(c) Nitric acid (d) Hydrochloric acid

61. One that is a non-conservative force is
(a) Frictional Force (b) Gravitational Force
(c) Air Resistance (d) Normal Force

62. Total Energy of a body is the sum of
(a) Kinetic Energy (b) Potential Energy
(c) Sum of Kinetic and Potential Energy (d) None of the above

63. If brick having mass 2 kg is dropped from a position of 5 meter, then its velocity at height 3 meter will be
(a) 5 m/s (b) 5.6 m/s (c) 6.3 m/s (d) 8.4 m/s

64. Energy from Gravitational Field is energy obtained from
(a) Wind (b) Biomass (c) Coal (d) Tide

65. Product of Force and Velocity is known as
(a) Distance (b) Speed (c) Power (d) Force

66. Work done by a body is said to be a quantity known as
(a) Scalar Quantity (b) Vector Quantity
(c) Physical Quantity (d) All of Above

67. Ascorbic Acid's another name for vitamin
(a) A (b) B (c) C (d) D

68. Mass of one molecule of Sulphuric Acid is
(a) 98 (b) 95 (c) 97 (d) 92

69. Isotopes have same
(a) Atomic Mass (b) Atomic Number (c) Molecules (d) Atoms

70. Species having negative or positive charge are
(a) Radicals (b) Atoms (c) Molecules (d) Ions

71. Plants which have been infused foreign DNA into their cells are
(a) genetic plants (b) unicellular plants
(c) multicellular plants (d) transgenic plants

72. Way of removing pollutants or toxic waste from environment with help of living organisms is called
(a) Degradation (b) Bioremediation
(c) Integrated disease management (d) Disease control

73. Virus which is responsible for AIDS is typically known as
(a) HBV (b) HIV (c) HCV (d) HAV

74. An organic molecule is a type of molecule in which a molecule is composed of
(a) Hydrogen (b) Carbon (c) Hydrogen and Carbon (d) Oxygen

75. Black-foot disease is caused due to
(a) Mercury (b) Fluoride (c) Sulphur (d) Arsenic

76. Process used to separate insoluble particles from liquids is
(a) Drying (b) Filtration (c) Sieving (d) Extraction

77. For crystallization we use solution that should be
(a) Saturated (b) Super Saturated (c) Dilute (d) Binary

78. $K_2O + H_2O \rightarrow$
(a) $K(OH)_3$ (b) KOH (c) $KOH \cdot H_2O$ (d) $KO + H_2 + O_2$

79. Chemical formula for caustic soda is
(a) NaOH (b) KOH (c) MgO (d) $Ca(OH)_2$

80. Ph of 7 is shown through a colour
(a) Red (b) Blue (c) Green (d) Yellow

81. Which of following is absent in plant cells?
(a) Chloroplasts (b) Lysosomes
(c) Plasma membrane (d) Cell Wall

82. In which year did Robert Hooke coined the term cell?
(a) 1955 (b) 1965 (c) 1975 (d) 1985

83. The extent of pollution of water is measured by 'biological oxygen demand' (BOD). It is measure of
(a) Organic matter present in water (b) Inorganic matter present in water
(c) Unwanted substances (d) Oxygen content

84. Pitch of sound is measured in cycles per second (Hz). Human ear is sensitive to sounds in the range of:
(a) 20 – 19,000 Hz (b) 20 – 20,000 Hz
(c) 20 – 21,000 Hz (d) 20 – 22,000 Hz

85. Process by which green plants manufacture their food material from carbon dioxide and water in presence of Sunlight?
(a) Respiration (b) Photosynthesis (c) Digestion (d) Excretion

86. Carbohydrates consist of Carbon, hydrogen and oxygen and are represented by the general formula
(a) $C_n(H_2O)_n$ (b) $C_nH_nO_n$ (c) $C_n(HO)_n$ (d) C_nH_nO

87. The substance on which an enzyme acts is generally known as
(a) Substrate (b) Co-enzyme (c) Product (d) Target

88. Branch of biology which deals with the distribution of different animals:
(a) Zoography (b) Zoogeography (c) Zoology (d) Botany

89. Trypsin breaks down the polypeptides and short peptides into amino acids is present in
(a) Bile (b) Intestinal Juice
(c) Pancreatic Juice (d) Gastric Juice

90. Process whereby within a cyst many nuclear divisions produce cells, which combine in pairs forming zygote
(a) Fission (b) Fragmentation (c) Budding (d) Sporulation

91. The process which occurs between the age of 45-50 years and during which there is physiological cessation of the menstrual flow and end of child bearing period
(a) Menstrual phase (b) Cogenesis (c) Ovulation (d) Female Climacteric

92. Which of the following plant growth hormone is a gaseous hormone and controls fruit ripening
(a) Auxin (b) Abscisic acid (c) Ethylene (d) Gibberellins

93. Scurvy is caused by the deficiency of which Vitamin?
(a) E (tocopherol) (b) Folic acid (c) C (Ascorbic acid) (d) D (Calciferol)

94. What is the name of disease which is characterized by the symptoms like fever, skin eruption and is caused by Varicella Virus?
(a) Small pox (b) Chicken pox (c) Mumps (d) Measles

95. In human beings, normally in which one of the following parts, does the sperm fertilises the ovum?
(a) Cervix (b) Fallopian tube
(c) Lower part of uterus (d) Upper part of uterus

96. If the distance between two point masses is doubled the gravitational attraction between them
(a) is reduced to half (b) is reduced to quarter
(c) becomes four times (d) doubled

SECTION-C (HUMANITIES)

123. Absolute Poverty means
(a) Poverty in terms of absolute number of people
(b) Poverty in terms of the basic minimum calories requirements
(c) Poverty in terms of the prevailing price level
(d) Poverty in terms of the absolute level of unemployment

124. One rupee notes bear the signature of
(a) President (b) Finance Minister
(c) Secretary, Ministry of Finance (d) Governor, Reserve Bank of India

125. When was the decimal system of currency introduced in India?
(a) 1948 (b) 1950 (c) 1954 (d) 1957

126. The number of Banks Nationalized since 1969 is
(a) 8 (b) 12 (c) 14 (d) 20

127. The largest Public Sector Bank in India is
(a) Central Bank (b) State Bank of India
(c) Punjab National Bank (d) Indian Overseas Bank

128. 'Repo Rate' is the rate at which
(a) The Reserve Bank of India lends to State Government
(b) The international aid agencies lend to Reserve Bank of India
(c) The Reserve Bank of India lends to Banks
(d) The Banks lend to Reserve Bank of India

129. The principal source of revenue to the State Government in India is
(a) Income Tax (b) Sales Tax
(c) State Excise Duties (d) Land Revenue

130. Which one of following countries is not a member of ASEAN?
(a) Vietnam (b) Brunei Darussalam
(c) Bangladesh (d) Myanmar

131. First governor General of Bengal was
(a) Lord Cornwallis (b) Lord Clive
(c) Lord Wellesley (d) Warren Hastings

132. The strategy of divide and rule was adopted by
(a) Lord Curzon (b) Lord Minto
(c) Lord Wellesley (d) Both b & c

133. The system of budget was introduced in India during the viceroyalty of
(a) Dalhousie (b) Canning (c) Elgin (d) Ripon

134. Dhondu Pant is better known as
(a) Tantia Tope (b) Nana Saheb
(c) Gangadhar Rao (d) Kunwar Singh

135. The capital of India is shifted to Delhi during the reign of
(a) Minto (b) Curzon
(c) Chelmesford (d) Hardinge

136. Who Coined the Slogan " Jai Jawan Jai Kisan" ?
(a) Mahatma Gandhi (b) Jawahar Lal Nehru
(c) Lal Bhadur Shastri (d) Sardar Patel

137. The first census was conducted in India at the time of
(a) Lord Dufferin (b) Lord Mayo
(c) Lord Ripon (d) Lord Lytton

138. The leader of 'Young Bengal Movement' was
(a) Dwarkanath Tagore (b) Chandrashekhar Deb
(c) Ishwar Chandra Vidyasagar (d) Henry Vivian Derozio

139. Which of the following laid the foundation of the British Civil Service in India?
(a) Warren Hastings (b) Lord Cornwallis
(c) Lord Wellesley (d) Lord Canning

140. 'India for the Indians' was the political message of
(a) Dayanand Saraswati (b) Swami Vivekananda
(c) A O Hume (d) D Wacha

141. The doctrine of Lapse was introduced by
(a) Lord Wellesley (b) Warren Hastings
(c) Lord Canning (d) Lord Dalhousie

142. Who was the political guru of Gandhiji?
(a) Dadabhai Naroji (b) Bal Gangadhar Tilak
(c) Gopal Krishna Gokhale (d) Lala Lajpat Rai

143. The Delhi Sultanate virtually ended due to the invasion of
(a) Chengiz Khan (b) Babur (c) Nadir Shah (d) Timur

144. The oath to a High Court judge is administered by the
(a) Chief Justice of India (b) Chief Justice of High Court
(c) Governor (d) President

145. Next to Hindi, language spoken by the largest number of people in India
(a) Bengali (b) Tamil (c) Telgu (d) Marathi

146. The outer most layer of the sun is called
(a) Convection zone (b) Photosphere
(c) Chromospheres (d) Corona

147. Which of the following planet takes the same number of days for rotation and revolution?
(a) Mars (b) Venus (c) Mercury (d) Jupiter

148. The time required by moonlight to reach the earth is
(a) 1 Sec (b) 1.3 Sec (c) 2 Sec (d) 2.3 Sec

149. Latitude of place is indicative of its
(a) Time (b) Altitude (c) Amount of rainfall (d) Temperature

150. Which of these is the longest?
(a) 0° Meridian (b) 180° E-W (c) 90° E (d) all are equal
