PART - III
QUANTITATIVE APTITUDE

101. In a triangle, distances from centroid to vertices are respectively 4 cm, 6 cm and 8 cm. Find medians.

(A) 6 cm, 9 cm, 12 cm

(B) 20 cm, 21 cm, 25 cm

(C) 16 cm, 4 cm, 18 cm

(D) 4 cm, 6 cm, 8 cm

102. The numerical values of

$$\frac{9}{\text{cosec}^2\theta} + 4\cos^2\theta + \frac{5}{1+\tan^2\theta} \text{ is :}$$

(A) 9 (B) 1 (C) 4 (D) 5

103. If $x + \frac{1}{x} = 5$, then the value of $\frac{2x}{3x^2 - 5x + 3}$ is :

(A) $\frac{1}{5}$ (B) $\frac{3}{5}$ (C) 2 (D) $1\frac{1}{5}$

104. Three medians $\overline{AD}$, $\overline{BE}$ and $\overline{CF}$ of ΔABC intersect at G. Area of ΔABC is 108 sq.cm. The area of ΔAGB is :

(A) 48 cm^2 (B) 24 cm^2

(C) 54 cm^2 (D) 36 cm^2

105. A train 150 metres long passes a tree in 12 seconds. It will pass a tunnel of 250 metres long in :

(A) 32 seconds (B) 26 seconds

(C) 20 seconds (D) 25 seconds

106. ABCD is a rectangle with $AB = h^2$ and $AD = 3p$. If h is doubled and p is halved, then the :

(A) area is halved

(B) area remains the same

(C) area is multiplied by 4

(D) area is doubled

107. A refrigerator is listed at ₹ 4000. Due to the festival season a shopkeeper announces a discount of 5%. Then the selling price of refrigerator (in ₹) is :

(A) 3600 (B) 3500 (C) 3800 (D) 3900

108. The circumference of a circle is equal to the perimeter of a square of side 22 cm. The area of the circle is :

(A) 28 π cm^2 (B) 196 π cm^2

(C) 49 π cm^2 (D) $\frac{49}{4}\pi$ cm^2

109. When $a = \frac{4}{3}$, the value of $27a^3 - 108a^2 + 144a - 317$ is :

(A) -245 (B) 0

(C) 261 (D) -253

110. If A, B and C denote respectively the number of vertices, edges and faces of a cube, then A + B + C is :

(A) 24 (B) 26 (C) 20 (D) 22

111. If $a = 1, b = 2$ and $c = -3$, then the value of

$$\frac{a^3 + b^3 + c^3 - 3abc}{ab + bc + ca - (a^2 + b^2 + c^2)} \text{ is :}$$

(A) 0 (B) 1 (C) 3 (D) 2

112. D and E be two points on the sides $\overline{AB}$ and $\overline{AC}$ of the ΔABC such that $\overline{DE} \parallel \overline{BC}$ and $\frac{\overline{AD}}{\overline{BD}} = \frac{2}{3}$. Find the $\frac{\text{area of trapezium DECB}}{\Delta ABC}$.

(A) 4 : 9 (B) 21 : 25

(C) 4 : 25 (D) 2 : 5

113. The number of bricks required for a wall which is 8 m long, 6 m high and 22.5 cm thick, if each brick measures 25 cm × 11.25 cm × 6 cm, is :

(A) 7000 (B) 6400 (C) 6200 (D) 6550

114. A shopkeeper offered a discount of 9% for an article, but he marked it at 25% higher than the cost price. Find his profit percentage.

(A) 13.75% (B) 16%
(C) 12.50% (D) 13%

115. If $\frac{1}{3}$ of A = 75% of B = 0.6 of C, then A : B : C is :

(A) 9 : 5 : 4 (B) 9 : 4 : 5
(C) 4 : 5 : 9 (D) 5 : 9 : 4

116. Three pipes A, B and C can fill a cistern in 10, 12 and 15 hours respectively, while working alone. If all the three pipes are opened together, then find the time taken to fill the cistern :

(A) 5 hours (B) 6 hours
(C) 3 hours (D) 4 hours

117. A paper is in the form of a rectangle ABCD where AB = 22 cm and BC = 14 cm. A semi-circular portion with BC as diameter is removed. Find the remaining area of the paper, (in cm^2) :

(A) 241 (B) 211 (C) 221 (D) 231

118. A bus can complete a journey in 6 hours if it travels at 60 km/hr. At what speed (km/hr) the bus must travel in order to complete the journey in 9 hours ?

(A) 30 (B) 35 (C) 60 (D) 40

119. A chord of length 16 cm is at a distance of 6 cm from the centre of a circle. The radius of the circle is :

(A) 16 cm (B) 22 cm
(C) 8 cm (D) 10 cm

120. If $7n + 9 > 100$ and n is an integer, the smallest possible value of n is :

(A) 14 (B) 15 (C) 13 (D) 12

121. Two men and 3 boys can do a piece of work in 10 days, while 3 men and 2 boys can do the same work in 8 days. In how many days can 2 men and 1 boy do the work ?

(A) 11.5 days (B) 12.5 days
(C) 11 days (D) 10.5 days

122. The average age of 100 workers in a factory is 36.5. The average age of the men is 45 and that of the women is 28. The no. of women working in the factory is :

(A) 40 (B) 60 (C) 50 (D) 45

123. If $p = \frac{3}{5}$, $q = \frac{7}{9}$, $r = \frac{5}{7}$, then which of the following inequality is true ?

(A) $p < r < q$ (B) $r < q < p$
(C) $p < q < r$ (D) $q < r < p$

124. Three-fifth of two-third of three-seventh of a number is 150. What is 60% of that number ?

(A) 750 (B) 525 (C) 52.5 (D) 875

125. The ratio of father's age to his son's age is 7 : 3. The product of their age is 756. The ratio of their ages after 6 years will be :

(A) 11 : 7 (B) 13 : 9 (C) 2 : 1 (D) 5 : 2

126. In how many years shall ₹ 2500, invested at the rate of 8% simple interest per annum, amount to ₹ 3300 ?

(A) 6 (B) $4\frac{1}{2}$
(C) 5 (D) 4

127. If $\bar{x}$ is the mean of n observations $x_1, x_2 \ldots, x_n$, then the mean of $\frac{x_1}{a}, \frac{x_2}{a}, \ldots \frac{x_n}{a}$ is :

(A) $\frac{\bar{x}}{a}$ (B) $\bar{x} + a$
(C) $\bar{x}$ (D) $a\bar{x}$

128. If $\sec\theta + \text{cosec}\,(90^\circ - \theta) = 4$, $(0 < \theta < 90^\circ)$, then the value of $\tan\theta$ is :

(A) $\frac{1}{\sqrt{3}}$ (B) 1 (C) $\sqrt{3}$ (D) $\frac{1}{\sqrt{2}}$

129. Ram sold a cow for ₹ 136 and thus lost 15%. At what price he should have sold it to gain 15% ?

(A) ₹ 180 (B) ₹ 184

(C) ₹ 204 (D) ₹ 150

130. Given that the mean of five numbers is 27 ; if one of them is excluded, the mean gets reduced by 2. Determine the excluded number.

(A) 25 (B) 35 (C) 45 (D) 55

131. A spherical balloon whose radius is r, subtends an angle α at the eye of an observer on the ground, when the angle of elevation of its centre is β. The height of its centre is :

(A) $r\,\text{cosec}\,\frac{\alpha}{2}\cos\beta$ (B) $r\sin\alpha\sin\beta$

(C) $r\,\text{cosec}\,\alpha\sin\beta$ (D) $r\,\text{cosec}\,\frac{\alpha}{2}\sin\beta$

132. A mixture of milk and water is such that the quantity of milk is $\frac{3}{5}$ that of water. The proportion of milk in the mixture is :

(A) $\frac{3}{8}$ (B) $\frac{5}{8}$ (C) $\frac{1}{8}$ (D) $\frac{1}{2}$

133. A horse is tied with a rope of length 7 m at one corner of a square field having side equal to 10 m. The minimum possible area of the square field that is left ungrazed is : [given $\pi = \frac{22}{7}$]

(A) 56.1 m^2 (B) 51.6 m^2

(C) 65.1 m^2 (D) 61.5 m^2

134. If $p = 99$, then value of $p(p^2 + 3p + 3)$ is :

(A) 100089 (B) 999999

(C) 10000 (D) 99999

135. The compound interest on ₹ 1800 at 10% per annum for a certain period of time is ₹ 378. Find the time in years.

(A) 2 years (B) 3 years

(C) 1.5 years (D) 2.5 years

136. A sells an article to B at a profit of 20%. B sells it to C at a profit of 10%. How much percent will C pay more than what A pays ?

(A) 32% (B) 35% (C) 28% (D) 30%

137. A trader allows 10% discount on market price and gains 25%. If the market price of the article is ₹ 50, what is its cost price ?

(A) ₹ 25 (B) ₹ 55 (C) ₹ 36 (D) ₹ 45

138. A certain company has 80 engineers. If the engineers constitute 40% of its workers, then the number of people employed in the company is :

(A) 200 (B) 3200 (C) 150 (D) 800

139. A sofa-set is marked at ₹ 20,000. The shopkeeper allows successive discounts of 10%, 5% and 2% on it. What is the net selling price ?

(A) ₹ 17598 (B) ₹ 16758

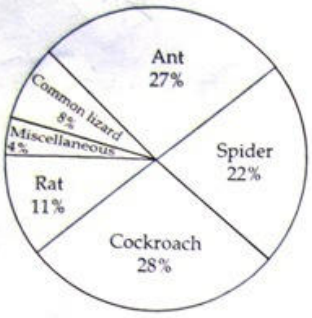
(C) ₹ 17768 (D) ₹ 16648

140. A train running at 36 km/hr crosses a pole in 25 seconds. Length of the train is :

(A) 225 m (B) 275 m

(C) 250 m (D) 300 m

The following pie-chart shows the contents of insects and rodents in an average Indian Household. Examine the chart and answer the question numbers **141** to **145**.



141. If the percentage of rat is y% of the total percentage of ant and cockroach, then y is equal to :

(A) 25 (B) 20 (C) 30 (D) 35

142. If the difference of the percentage of rat and miscellaneous by z% of the percentage of cockroach, then z is equal to :

(A) 20% (B) 15% (C) 25% (D) 35%

143. The total percentage of spider, rat and cockroach is greater than the percentage of ant by :

(A) 28 (B) 24 (C) 34 (D) 32

144. The total percentage of common lizard, spider and cockroach is greater than the percentage of rat by :

(A) 35 (B) 25 (C) 37 (D) 47

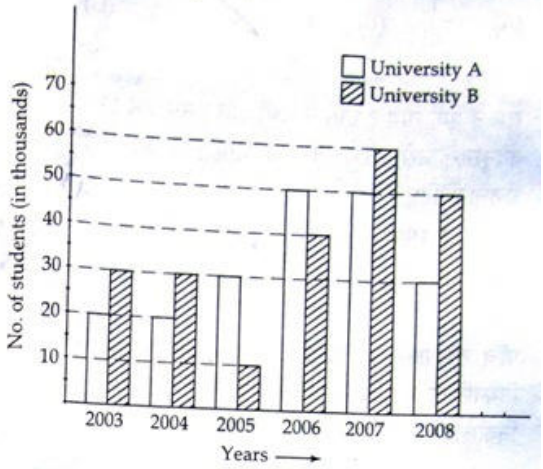
145. If the percentage of spider is x% of the percentage of cockroach, then x is equal to :

(A) $78\frac{4}{7}\%$ (B) $75\frac{4}{7}\%$

(C) $73\frac{4}{7}\%$ (D) $75\frac{2}{7}\%$

Study the following bar-diagram carefully and answ question numbers **146** to **150**.

Number of students passed (in thousands) from t Universities over the years.



146. The ratio between the number of students passe from University 'A' in the year 2007 and that fro University 'B' in 2004 is :

(A) 5 : 6 (B) 3 : 5 (C) 5 : 4 (D) 5 :

147. Number of students passed from University 'B' the year 2008 expressed as a percentage of the tot number of students passed from University 'A' ov the 6 years is :

(A) 25 (B) 35 (C) 30 (D) 20

148. The difference between the total number of studer passed from both the Universities in the year 20 combined together and the total number of studer passed in the year 2004 from both the Universiti taken together is :

(A) 20000 (B) 30000
(C) 35000 (D) 25000

149. The sum of the students passed from University ' in years 2003, 2005 and 2006 combined together i

(A) 50000 (B) 75000
(C) 80000 (D) 60000

150. The respective ratio between the number of studen passed in year 2007, 2008 and 2004 from Universit 'B' is :

(A) 3 : 5 : 6 (B) 6 : 3 : 3
(C) 6 : 5 : 3 (D) 6 : 3 : 5