PART – III

QUANTITATIVE APTITUDE

101. From each of the two given unequal numbers, half the smaller number is subtracted. Then, of the resulting numbers, the larger one is five times than the smaller one. Then the ratio of the larger to smaller one is

(A) 2 : 1 (B) 3 : 2
(C) 3 : 1 (D) 1 : 4

102. The largest number among

$\sqrt{2}, \sqrt[3]{3}, \sqrt[4]{4}$ is

(A) $\sqrt{2}$ (B) $\sqrt[3]{3}$
(C) $\sqrt[4]{4}$ (D) All are equal

103. A got married 8 years ago. A's present age is $1\frac{1}{4}$ times his age at the time of marriage. A's son's age is $\frac{1}{10}$ times his present age. His son's age in years, is

(A) 2 (B) 3
(C) 4 (D) 5

104. When an integer K is divided by 3, the remainder is 1, and when $K + 1$ is divided by 5, the remainder is 0. Of the following, a possible value of K is

(A) 62 (B) 63
(C) 64 (D) 65

105. A farmer has 945 cows and 2475 sheep. He farms them into flocks, keeping cows and sheep separate and having the same number of animals in each flock. If these flocks are as large as possible, then the maximum number of animals in each flock and total number of flocks required for the purpose are respectively

(A) 15 and 228 (B) 9 and 380
(C) 45 and 76 (D) 46 and 75

भाग – III

मात्रात्मक अभिक्षमता

101. दी गई दो असमान संख्याओं में से प्रत्येक से छोटी संख्या का आधा घटाया गया है। फिर परिणामी संख्याओं में बड़ी वाली छोटी वाली से पाँच गुणा है। तो बड़ी संख्या का छोटी संख्या से अनुपात है

(A) 2 : 1 (B) 3 : 2
(C) 3 : 1 (D) 1 : 4

102. निम्न में सबसे बड़ी संख्या है

$\sqrt{2}, \sqrt[3]{3}, \sqrt[4]{4}$

(A) $\sqrt{2}$ (B) $\sqrt[3]{3}$
(C) $\sqrt[4]{4}$ (D) सभी समान हैं

103. A की शादी 8 वर्ष पहले हुई थी। A की वर्तमान आयु शादी के समय उसकी आयु से $1\frac{1}{4}$ गुणा है। A के पुत्र की आयु उसकी वर्तमान आयु का $\frac{1}{10}$ गुणा है। वर्षों में उसके पुत्र की आयु है

(A) 2 (B) 3
(C) 4 (D) 5

104. जब किसी पूर्णांक K को 3 से भाग दिया जाता है तो शेषफल 1 है और $K + 1$ को 5 से भाग देने पर शेषफल 0 है। निम्न में से K का एक संभव मान है

(A) 62 (B) 63
(C) 64 (D) 65

105. एक किसान के पास 945 गाएँ और 2475 भेड़ें हैं। वह उनके रेवड़ बनाता है, गायों और भैंसों को अलग अलग रख कर और हर रेवड़ में पशुओं की बराबर संख्या रख कर। यदि ये रेवड़ यथा संभव बड़े हैं तो हर रेवड़ में पशुओं की अधिकतम संख्या और इस उद्देश्य के लिए अपेक्षित रेवड़ों की कुल संख्या क्रमशः है

(A) 15 और 228 (B) 9 और 380
(C) 45 और 76 (D) 46 और 75

106. The number of sides in two regular polygons are in the ratio 5 : 4 and the difference between each interior angle of the polygons is 6°. Then the number of sides are
(A) 15, 12   (B) 5, 4
(C) 10, 8   (D) 20, 16

107. If the length of each side of a regular tetra-hedron is 12 cm, then the volume of the tetrahedron is
(A) $144\sqrt{2}$ cu. cm.   (B) $72\sqrt{2}$ cu. cm.
(C) $8\sqrt{2}$ cu. cm.   (D) $12\sqrt{2}$ cu. cm.

108. If the radii of the circular ends of a truncated conical bucket which is 45 cm high be 28 cm and 7 cm, then the capacity of the bucket in cubic centimetre is $\left(\text{use } \pi = \frac{22}{7}\right)$
(A) 48510   (B) 45810
(C) 48150   (D) 48051

109. A cone, a hemisphere and a cylinder stand on equal base and have the same height. Their volumes are in the ratio
(A) 1 : 3 : 2   (B) 2 : 3 : 1
(C) 1 : 2 : 3   (D) 3 : 1 : 2

110. A metal wire when bent in the form of a square encloses an area 484 cm². If the same wire is bent in the form of a circle, then $\left(\text{taking } \pi = \frac{22}{7}\right)$ its area is
(A) 308 cm²   (B) 506 cm²
(C) 600 cm²   (D) 616 cm²

111. Sides of a parallelogram are in the ratio 5 : 4. Its area is 1000 sq. units. Altitude on the greater side is 20 units. Altitude on the smaller side is
(A) 30 units   (B) 25 units
(C) 10 units   (D) 15 units

112. A circus tent is cylindrical up to a height of 3 m and conical above it. If its diameter is 105 m and the slant height of the conical part is 63 m, then the total area of the canvas required to make the tent is $\left(\text{take } \pi = \frac{22}{7}\right)$
(A) 11385 m²   (B) 10395 m²
(C) 9900 m²   (D) 990 m²

113. B and C can complete a piece of work in 12 days, C and A can do it in 8 days. All the three can do it in 6 days. A and B together can complete it in
(A) 4 days   (B) 6 days
(C) 8 days   (D) 10 days

114. A can do a work in 9 days, if B is 50% more efficient to A, then in how many days can B do the same work ?
(A) 13·5   (B) 4·5
(C) 6   (D) 3

115. The successive discounts of 10% and 20% are equivalent to a single discount of
(A) 30%   (B) 28%
(C) 25%   (D) 27%

116. A dealer marks his goods at 40% above the cost price and allows a discount of 20% on the marked price. The dealer has a
(A) loss of 20%   (B) gain of 25%
(C) loss of 12%   (D) gain of 12%

117. If 120% of a is equal to 80% of b, then $\frac{b+a}{b-a}$ is equal to
(A) 5   (B) 6
(C) 7   (D) 8

118. The ratio of spirit and water in two mixtures of 20 litre and 36 litre is 3 : 7 and 7 : 5 respectively. Both the mixtures are mixed together. Now the ratio of the spirit and water in the new mixture is
(A) 25 : 29
(B) 9 : 10
(C) 27 : 29
(D) 27 : 31

119. The average of n numbers $x_1, x_2, ..., x_n$ is $\bar{x}$ then the value of $\sum\limits_{i=1}^{n}\left(x_i - \bar{x}\right)$ is equal to
(A) n
(B) 0
(C) $n\bar{x}$
(D) $\bar{x}$

120. The average of six numbers is 32. If each of the first three numbers is increased by 2 and each of the remaining three numbers is decreasing by 4, then the new average is
(A) 35
(B) 34
(C) 31
(D) 30

121. The cost price : selling price of an article is $a : b$. If b is 200% of a then the percentage of profit on cost price is
(A) 75%
(B) 125%
(C) 100%
(D) 200%

122. A person sells 400 mangoes at the cost price of 320 mangoes. His percentage of loss is
(A) 10
(B) 15
(C) 20
(D) 25

123. A person ordered 4 shirts of brand A and some shirts of brand B. The price of one shirt of brand A was twice that of brand B. When the order was executed, it was found that the numbers of the two brands has been interchanged. This increased the bill by 40%. The ratio of the number of brand A shirts to that of brand B shirts in the original order was
(A) 1 : 2
(B) 1 : 3
(C) 1 : 4
(D) 1 : 5

124. A litre of pure alcohol is added to 6 litres of 30% alcohol solution. The percentage of water in the solution is
(A) 50%
(B) 65%
(C) 60%
(D) 40%

125. A man can row 30 km downstream and return in a total of 8 hours. If the speed of the boat in still water is four times the speed of the current, then the speed of the current is
(A) 1 km/hour
(B) 2 km/hour
(C) 4 km/hour
(D) 3 km/hour

126. The difference between the simple and compound interest on a certain sum of money for 2 years at 4% per annum, is ₹ 1. Find the sum.
(A) ₹ 630
(B) ₹ 620
(C) ₹ 625
(D) ₹ 635

127. If $x^2 + 2 = 2x$, then the value of $x^4 - x^3 + x^2 + 2$ is
(A) 0
(B) 1
(C) -1
(D) $\sqrt{2}$

128. If $2^x = 3^y = 6^{-z}$, then $\left(\frac{1}{x} + \frac{1}{y} + \frac{1}{z}\right)$ is equal to
(A) 0
(B) 1
(C) $\frac{3}{2}$
(D) $-\frac{1}{2}$

129. If $\dfrac{1}{x+y} = \dfrac{1}{x} + \dfrac{1}{y}$ $(x \neq 0, y \neq 0, x \neq y)$ then the value of $x^3 - y^3$ is
(A) 0
(B) 1
(C) -1
(D) 2

130. For real a, b, c if $a^2 + b^2 + c^2 = ab + bc + ca$, then the value of $\dfrac{a+c}{b}$ is
(A) 1
(B) 2
(C) 3
(D) 0

131. If $x = a(b-c), y = b(c-a)$ and

$z = c(a-b)$, then $\left(\dfrac{x}{a}\right)^3 + \left(\dfrac{y}{b}\right)^3 + \left(\dfrac{z}{c}\right)^3 =$

(A) $\dfrac{xyz}{3abc}$

(B) $3xyzabc$

(C) $\dfrac{3xyz}{abc}$

(D) $\dfrac{xyz}{abc}$

132. In a quadrilateral $ABCD$, with unequal sides if the diagonals AC and BD intersect at right angles, then

(A) $AB^2 + BC^2 = CD^2 + DA^2$

(B) $AB^2 + CD^2 = BC^2 + DA^2$

(C) $AB^2 + AD^2 = BC^2 + CD^2$

(D) $AB^2 + BC^2 = 2\left(CD^2 + DA^2\right)$

133. The tangents are drawn at the extremities of a diameter AB of a circle with centre P. If a tangent to the circle at the point C intersects the other two tangents at Q and R, then the measure of the $\angle QPR$ is

(A) $45°$

(B) $60°$

(C) $90°$

(D) $180°$

134. Let O be the in-centre of a triangle ABC and D be a point on the side BC of $\triangle ABC$, such that $OD \perp BC$. If $\angle BOD = 15°$, then $\angle ABC =$

(A) $75°$

(B) $45°$

(C) $150°$

(D) $90°$

135. AB is a chord to a circle and PAT is the tangent to the circle at A. If $\angle BAT = 75°$ and $\angle BAC = 45°$, C being a point on the circle, then $\angle ABC$ is equal to

(A) $40°$

(B) $45°$

(C) $60°$

(D) $70°$

136. D is any point on side AC of $\triangle ABC$. If P, Q, X, Y are the mid-points of AB, BC, AD and DC respectively, then the ratio of PX and QY is

(A) $1 : 2$

(B) $1 : 1$

(C) $2 : 1$

(D) $2 : 3$

137. If $2\cos\theta - \sin\theta = \dfrac{1}{\sqrt{2}}, (0° < \theta < 90°)$ the value of $2\sin\theta + \cos\theta$ is

(A) $\dfrac{1}{\sqrt{2}}$

(B) $\sqrt{2}$

(C) $\dfrac{3}{\sqrt{2}}$

(D) $\dfrac{\sqrt{2}}{3}$

138. If $\dfrac{\sin\theta + \cos\theta}{\sin\theta - \cos\theta} = 3$, then the value of

$\sin^4\theta - \cos^4\theta$ is

(A) $\dfrac{1}{5}$

(B) $\dfrac{2}{5}$

(C) $\dfrac{3}{5}$

(D) $\dfrac{4}{5}$

139. The value of $\tan1° \cdot \tan2° \cdot \tan3° \cdot \tan4° \ldots \ldots$ $\tan87° \cdot \tan88° \cdot \tan89°$ is

(A) $\dfrac{1}{\sqrt{3}}$

(B) $\sqrt{3}$

(C) 1

(D) undefined

140. Two poles of equal heights are standing opposite to each other on either side of a road which is 100 m wide. From a point between them on road, angles of elevation of their tops are $30°$ and $60°$. The height of each pole in m, is

(A) $25\sqrt{3}$

(B) $20\sqrt{3}$

(C) $28\sqrt{3}$

(D) $30\sqrt{3}$

141. If $\sec^2\theta + \tan^2\theta = 7$, then the value of θ, when $0° \leqslant \theta \leqslant 90°$, is

(A) $60°$

(B) $30°$

(C) $0°$

(D) $90°$

The bar diagram given below shows the productions (in the unit of thousand pieces) of three types of biscuits by a company in the five consecutive years. Study the diagram and answer the questions 142 to 146.
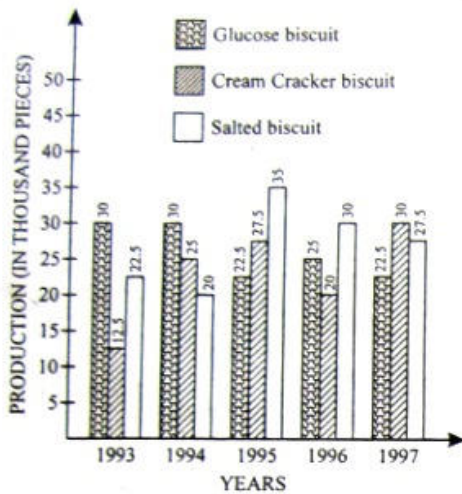
142. The percentage drop in the number of glucose biscuit manufactured from 1994 to 1995 is
(A) 10
(B) 15
(C) 25
(D) 20

143. The difference (in the unit of thousand pieces) between the total number of cream cracker biscuits manufactured in the years 1993, 1995 and 1997 and the total number of the biscuit of same type in the years 1994 and 1996 is
(A) 15
(B) 25
(C) 30
(D) 20

144. Total production of all the three types of biscuits was the least in the year
(A) 1993
(B) 1997
(C) 1996
(D) 1995

145. The production of all the three types of biscuits was maximum in the year
(A) 1995
(B) 1994
(C) 1996
(D) 1993

146. The ratio of production of glucose biscuits and total production of biscuits in that year was maximum in
(A) 1994
(B) 1993
(C) 1996
(D) 1997

Study the following table which shows the number of students appeared and passed in different streams in a University and answer the questions 147 to 150 :

YEAR	Engineering		Medical		Management		Commerce	
	Appeared	Pass	Appeared	Pass	Appeared	Pass	Appeared	Pass
2001	324	289	469	246	96	69	1467	1310
2002	386	312	430	364	74	62	1246	1129
2003	284	212	384	326	124	102	1387	1176
2004	310	246	395	298	106	92	1180	1074
2005	426	382	424	382	92	74	1562	1326
2006	380	286	466	405	78	63	1374	1207

147. Approximately what per cent of students appearing in medical, passed in 2003 ?
(A) 75%
(B) 85%
(C) 78%
(D) 88%

148. Approximately what per cent of total students appearing in 2004, appeared in commerce stream ?
(A) 55·3%
(B) 64·4%
(C) 52·5%
(D) 59·3%

149. The number of students appearing in all streams was minimum in the year
(A) 2002
(B) 2003
(C) 2004
(D) 2006

150. The number of students passing in all streams was maximum in the year
(A) 2001
(B) 2005
(C) 2006
(D) 2004