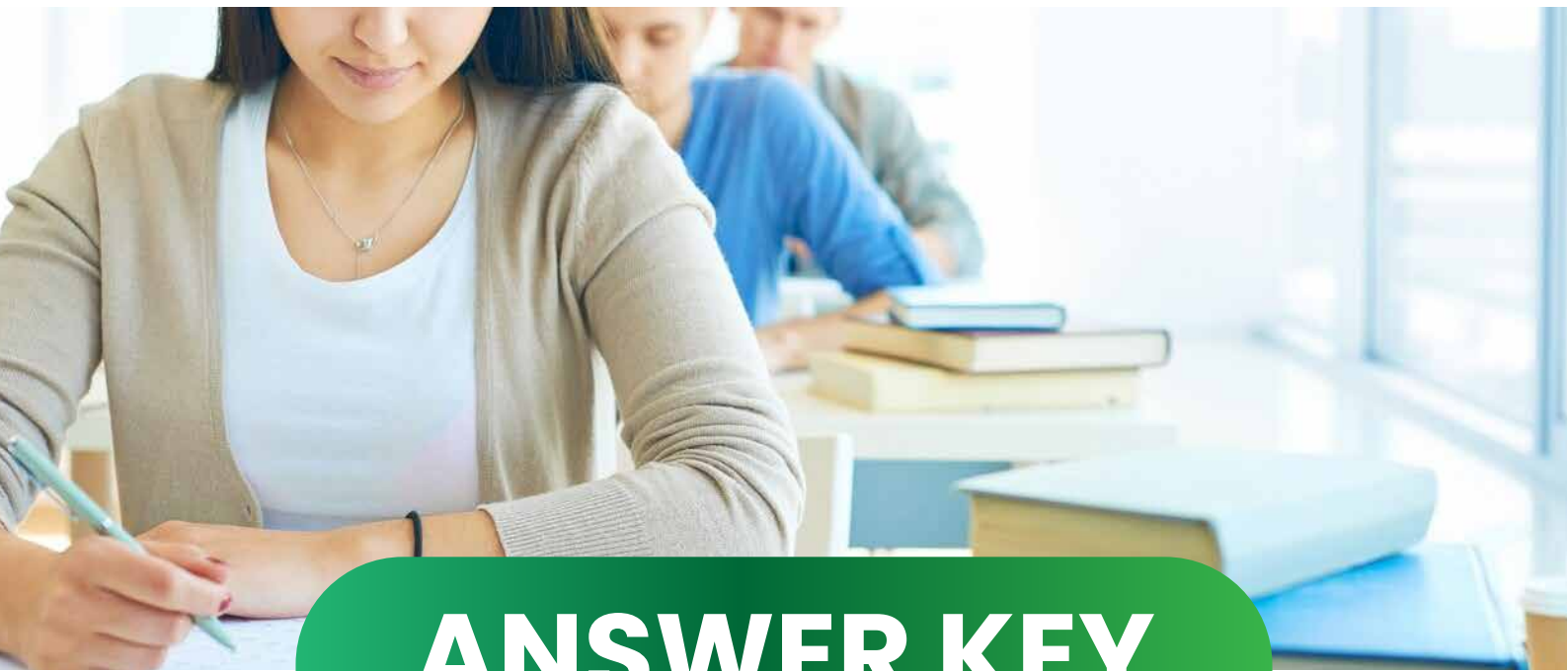


KTET

CATEGORY-3

MATHEMATICS



ANSWER KEY

Question Code : D

Released at : 5:00 pm

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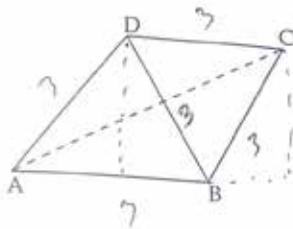
CATEGORY - III

PART - 3

Mathematics

Question Numbers 71 to 150

71. In the figure ABD and BCD are two equilateral triangles. $BD = 3$ centimeters. What is the length of AC?



- (A) $4.5\sqrt{3}$ centimeters
(B) $3 + \sqrt{3}$ centimeters
(C) $4.5 + \sqrt{3}$ centimeters
(D) $3\sqrt{3}$ centimeters

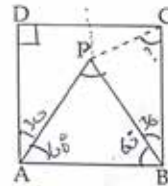
73. The length and the breadth of a rectangle are in the ratio 2 : 1 and the length is 15 centimeter more than the breadth. What is the length of the rectangle?

- (A) 15 centimeter
(B) 22.5 centimeter
(C) 45 centimeter
(D) 30 centimeter

74. Which of the following is a point on the line joining the points P(4, 2) and Q(9, 7)?

- (A) (7, 5)
(B) (5, 4)
(C) (6, 5)
(D) (7, 8)

75. ABCD is a square. PAB is an equilateral triangle. Measure of $\angle PCB$ is :



- (A) 60
(B) 45
(C) 75
(D) 65

72. There were 101 participants in an examination. For a participant Priya, the number of participants who scored above her was 1.5 times the number who scored below her. Her rank is :

- (A) 41
(B) 61
(C) 40
(D) 60

716

3

1.5

x

1

D

76. In an examination 60% students passed in English, 50% passed in Mathematics, while 30% failed in both. If 220 candidates passed in both, then the total number of participants was :

(A) 360
(B) 720
(C) 440
(D) 550

77. If $a^b = 125$, then what is $\frac{2b}{a^3}$?

(A) 25
(B) 125
(C) $\sqrt{125}$
(D) 5

78. If $\left(a + \frac{1}{a}\right)^2 = 3$ then what is $a^3 + \frac{1}{a^3}$?

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

79. Number of integers between $\sqrt{10}$ and $\sqrt{624}$ is :

(A) 20
(B) 21
(C) 22
(D) 23

80. In triangle PQR PQ = 13 centimeters QR = 14 centimeters. Area of the triangle PQR is 84 square centimeters. Then PR = _____ centimeters.

(A) 12
(B) 13
(C) 15
(D) 16

81. The sum of the interior angles of a regular polygon is equal to the sum of its exterior angles. What is the sum of its interior angles ?

(A) 180
(B) 360
(C) 540
(D) 720

82. 10% of x is same as 20% of y. Then x : y is :

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

83. ABC is an isosceles triangle. AB = 6 centimeter, BC = 3 centimeter. What is the perimeter of the triangle ?

(A) 12 centimeters
(B) 9 centimeters
(C) 18 centimeters
(D) 15 centimeters

84. $x^2 - 1$ is a factor of the polynomial $ax^3 + bx^2 + cx + d$. Then which of the following statements is not correct?

(A) $a + b + c + d = 0$
 (B) $a - b + c - d = 0$
 (C) $-a + b - c + d = 0$
 (D) $a - b - c + d = 0$ ✓

85. $1 - 2 + 3 - 4 + 5 - 6 + \dots + 99 - 100 + 101 =$

(A) 51 ✓
 (B) -51
 (C) 50
 (D) -50

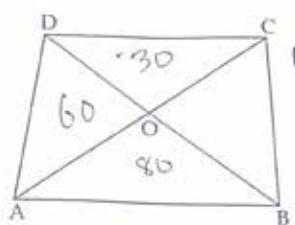
86. A is 20% less than C and B is 40% less than C. What percentage of A is B?

(A) 75 ✓
 (B) 80
 (C) 60
 (D) 20

87. a and b are two consecutive positive integers. $a^2 - b^2 = 2025$. What is $a + b$?

(A) 1012
 (B) 1013
 (C) 2025 ✓
 (D) None of the above

88. ABCD is a quadrilateral. Area of triangle AOB is 80 square centimeters. Area of triangle DOC is 30 square centimeters. Area of triangle AOD is 60 square centimeters. What is the area of triangle BOC?



(A) 40 square centimeters ✓
 (B) 25 square centimeters
 (C) 60 square centimeters
 (D) 100 square centimeters

89. The median of 10 scores 101, 103, 107, 111, 117, 124, 121, 119, 120 and a is 115. Then What is a?

(A) 115 ✓
 (B) 113
 (C) 114
 (D) 117

90. The surface area of a sphere is 80 square centimeters. It is divided into two hemispheres. What is the total surface area of the two hemispheres?

(A) 80
 (B) 100 ✓
 (C) 120
 (D) 90

716

101 103 107 111 115 117 119 120 121 124

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101 103 107 111 115 117 119 120 121 124

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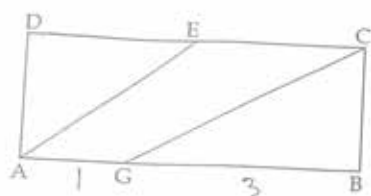
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ASSISTANT SALESMAN STUDY PLAN

Day	Subject	Topic
Day 1	Biology	ജീവശാസ്ത്രവും പൊതുജന ആരോഗ്യവും സാങ്കേതിക രോഗങ്ങളും രോഗകാരികളും ജീവിതരീതി രോഗങ്ങൾ
	Economics	പഞ്ചവത്സര പദ്ധതികൾ, പുനർനിർമ്മാണം
	English	Articles - definite and indefinite articles Singular and plural
Day 2	SCERT	CLASS 8 (CHAPTER 8) - രക്തഗ്ലൂക്കോസ് രോഗങ്ങളും
	Biology	CLASS 10 (CHAPTER 4) - അക്ടിനീഡിൻ രോഗങ്ങളും CLASS 10 (CHAPTER 10) - പ്രതിരോധശേഷി കാരണങ്ങളും
	SCERT	CLASS 7 (CHAPTER 7) - സമ്പദ് ശാസ്ത്ര ചിന്തകൾ
	Economics	CLASS 11 (CHAPTER 10) - ഊർജ്ജം സാമ്പത്തിക ആവശ്യങ്ങളും
Day 3	Maths	സംഖ്യകളും അടിസ്ഥാന ക്രിയകളും
	Biology	കേരളത്തിലെ ജൈവവ്യവസ്ഥ പ്രവർത്തനങ്ങൾ പരിസ്ഥിതിയും പരിസ്ഥിതി പ്രശ്നങ്ങളും
	Physics	പ്രവർത്തി - ഊർജ്ജം - പാർ - ഗതിക പ്രശ്നങ്ങൾ ഉത്തരവാകങ്ങൾ, വിവിധതരം ഉത്തരവാകങ്ങൾ
Day 4	Maths	സംഖ്യകളും അടിസ്ഥാന ക്രിയകളും
	SCERT	CLASS 8 (CHAPTER 8) - ജൈവവ്യവസ്ഥയും
Day 5	Physics	CLASS 9 (CHAPTER 9) - പ്രവർത്തി ഊർജ്ജം പാർ CLASS 9 (CHAPTER 10) - ഊർജ്ജത്തിന്റെ ഉറവിടങ്ങൾ CLASS 10 (CHAPTER 10) - ഊർജ്ജത്തിന്റെ ഉറവിടങ്ങൾ
	Maths	CLASS 10 (CHAPTER 10) - ഊർജ്ജത്തിന്റെ ഉറവിടങ്ങൾ

91. ABCD is a rectangle. E is the mid point of DC and AG : GB = 1 : 3. Area of AGCE is 30 square centimeters. Then the area of the rectangle ABCD is _____ square centimeters.



- (A) 60
(B) 90
(C) 45
(D) 80

92. m^{th} term of an arithmetic sequence is n and the n^{th} term is m . Then the $(m+n+p)^{\text{th}}$ term is :

- (A) p
(B) $-p$
(C) $m+n+p$
(D) $m+n-p$

93. If a is an integer, what is the remainder when a^2 is divided by 4?

- (A) 0
(B) 1
(C) 0 or 1
(D) None of the above

94. a, b, c are the sides of a right triangle. $a+b+c=28$ and $a^2+b^2+c^2=288$. What is the area of the triangle?

- (A) 56
(B) 16
(C) 28
(D) 32

95. If $x = 2 + \sqrt{5}$ and $xy = 1$. Then what is $x+y$?

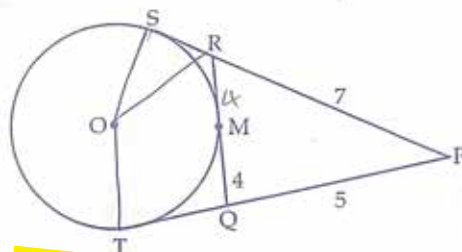
- (A) $2\sqrt{5}$
(B) 4
(C) $2 + \sqrt{5}$
(D) $4 + 2\sqrt{5}$

$$(2+\sqrt{5})y=1$$

$$y=\frac{1}{2+\sqrt{5}}$$

$$(2+\sqrt{5})+\frac{1}{2+\sqrt{5}}$$

96. PT, PS and QR are tangents to the circle. PQ=5 centimeter, QR=4 centimeter, PR=7 centimeter. Length of PS is _____ centimeters.



- (A) 9
(B) 11
(C) 16
(D) 8

$$\frac{1}{4}, r=1$$

$$\frac{9}{4}=0$$

$$\frac{9}{4}=1$$

$$\frac{16}{4}=0$$

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183 rd SADHANA K Bharat Thiruvananthapuram	194 th SADHANA K Bharat Thiruvananthapuram	7 th SADHANA K Bharat Thiruvananthapuram	7 th SADHANA K Bharat Thiruvananthapuram	9 th SADHANA K Bharat Thiruvananthapuram	10 th SADHANA K Bharat Thiruvananthapuram	10 th SADHANA K Bharat Thiruvananthapuram	10 th SADHANA K Bharat Thiruvananthapuram	11 th SADHANA K Bharat Thiruvananthapuram	15 th SADHANA K Bharat Thiruvananthapuram	16 th SADHANA K Bharat Thiruvananthapuram	16 th SADHANA K Bharat Thiruvananthapuram
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252 nd SADHANA K Bharat Thiruvananthapuram	252 nd SADHANA K Bharat Thiruvananthapuram	35 th SADHANA K Bharat Thiruvananthapuram	36 th SADHANA K Bharat Thiruvananthapuram	36 th SADHANA K Bharat Thiruvananthapuram	36 th SADHANA K Bharat Thiruvananthapuram	39 th SADHANA K Bharat Thiruvananthapuram	41 st SADHANA K Bharat Thiruvananthapuram	44 th SADHANA K Bharat Thiruvananthapuram	46 th SADHANA K Bharat Thiruvananthapuram	47 th SADHANA K Bharat Thiruvananthapuram	49 th SADHANA K Bharat Thiruvananthapuram
255 th SADHANA K Bharat Thiruvananthapuram	255 th SADHANA K Bharat Thiruvananthapuram	51 st SADHANA K Bharat Thiruvananthapuram	58 th SADHANA K Bharat Thiruvananthapuram	57 th SADHANA K Bharat Thiruvananthapuram	58 th SADHANA K Bharat Thiruvananthapuram	62 nd SADHANA K Bharat Thiruvananthapuram	62 nd SADHANA K Bharat Thiruvananthapuram	62 nd SADHANA K Bharat Thiruvananthapuram	76 th SADHANA K Bharat Thiruvananthapuram	78 th SADHANA K Bharat Thiruvananthapuram	80 th SADHANA K Bharat Thiruvananthapuram
340 th SADHANA K Bharat Thiruvananthapuram	340 th SADHANA K Bharat Thiruvananthapuram	130 th SADHANA K Bharat Thiruvananthapuram	136 th SADHANA K Bharat Thiruvananthapuram	198 th SADHANA K Bharat Thiruvananthapuram	285 th SADHANA K Bharat Thiruvananthapuram	294 th SADHANA K Bharat Thiruvananthapuram	430 th SADHANA K Bharat Thiruvananthapuram				
391 st SADHANA K Bharat Thiruvananthapuram	394 th SADHANA K Bharat Thiruvananthapuram										

TO BE CONTINUED... >>

97. If $x^2 + ax + b = 0$ has only one solution, then :
 (A) $a^2 = 4b$
 (B) $b^2 = 4a$ ✓
 (C) $a^2 + 4b = 0$
 (D) $b^2 + 4a = 0$

98. The value of $\tan 44^\circ \times \tan 45^\circ \times \tan 46^\circ$ is :
 (A) $\sqrt{2}$
 (B) $\sqrt{3}$
 (C) -1
 (D) 1 ✓

99. A line with slope 3 is passing through (3, 4) and (2, a). Then what is a ?
 (A) 3
 (B) 1 ✓
 (C) -3
 (D) -1

100. If $\sin x = \frac{a}{b}$, what is $\tan x$?
 (A) $\frac{\sqrt{b^2 - a^2}}{a}$
 (B) $\frac{a}{\sqrt{b^2 - a^2}}$ ✓
 (C) $\frac{a}{\sqrt{a^2 - b^2}}$
 (D) $\frac{\sqrt{a^2 - b^2}}{a}$

101. In triangle ABC, AB = 4 centimeters, AC = 6 centimeters and AD is the bisector of $\angle A$. Which of the following statements is correct ?
 (A) BD will be equal to 4 or greater than 4.
 (B) BD will be less than 4. ✓
 (C) BD will be greater than 4.
 (D) BD will be less than or equal to 4.

102. The angles of a pentagon are in arithmetic sequence. Then which of the following statements is correct ?
 (A) Its smallest angle will be greater than 36. ✓
 (B) Its smallest angle will be equal to 36.
 (C) Its smallest angle will be less than 36.
 (D) Its smallest angle will be greater than or equal to 36.

103. In triangle PQR, $\angle Q = 90^\circ$, PR = 18 centimeter and its inradius is 2 centimeter. What is the area of the triangle ?
 (A) 40 square centimeters ✓
 (B) 36 square centimeters
 (C) 18 square centimeters
 (D) 20 square centimeters

716

$\frac{2(2+\sqrt{5})+1}{2+\sqrt{5}} = \frac{4+2\sqrt{5}+1}{2+\sqrt{5}}$

$\frac{5+2\sqrt{5}}{2+\sqrt{5}}$

$\frac{18}{\sqrt{2}}$

Ans. 1145 9-2 9-1 9-1 9-1 9-2 9-3

104. The sum of 11 consecutive natural numbers is 2024. The sum of the smallest and the largest among them is :

(A) 368
(B) 184
(C) 1012
(D) 179

105. A candidate is ranked 100th from the top and 99th from the bottom in an examination. The number of candidate who participated in the examination is :

(A) 197
(B) 198
(C) 199
(D) 200

106. What is the probability of having 5 Mondays in December in a year ?

(A) $\frac{1}{7}$
(B) $\frac{2}{7}$
(C) $\frac{3}{7}$
(D) $\frac{4}{7}$

107. In triangle PQR $\angle Q = 90^\circ$, $\angle R = 67\frac{1}{2}^\circ$ QR = 5 centimeters. $\angle RSQ = 45^\circ$. What is the length of PQ ?

(A) $5\sqrt{2}$ centimeters
(B) $5\sqrt{2} + 10$ centimeters
(C) $5\sqrt{2} + 5$ centimeters
(D) $5 + \sqrt{2}$ centimeters

108. a, b, c are the sides of a triangle and $b^2 > a^2 + c^2$. Then it is a :

(A) a right triangle.
(B) an acute angled triangle.
(C) an obtuse angled triangle.
(D) an equilateral triangle.

109. The number of isosceles triangles in which one angle is 4 times another angle is :

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

716

8

180
6
30
120
30 30



KTET 1,2,3,4

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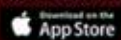


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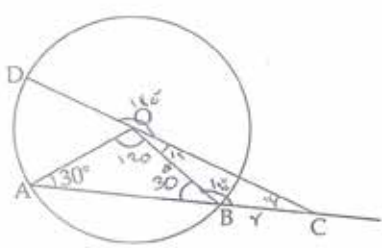
110. $\left(\frac{3}{10} + \frac{3}{50}\right)^{\frac{1}{4}}$ is equal to :

(A) $\frac{3}{5}$
(B) $\frac{\sqrt{3}}{5}$
(C) $\frac{\sqrt{3}}{\sqrt{5}}$ ✓
(D) $\frac{3}{\sqrt{5}}$

111. Four numbers are given below. Which among them is a perfect square ?

(A) $2^3 \times 3^4 \times 4^2$
(B) $2^4 \times 3^2 \times 4^3$ ✓
(C) $2^4 \times 3^3 \times 4^2$
(D) $2^2 \times 3^3 \times 4^4$

112. O is the centre of the circle. Chord AB is produced to C. O is a point on CD. $\angle A = 30^\circ$ and $OA = BC$. What is the measure of $\angle AOD$?



(A) 30°
(B) 45° ✓
(C) 38°
(D) 15°

113. The sum of the digits of the number $10^n - 10$ is 963. Then n is _____

(A) 18
(B) 109
(C) 108 ✓
(D) 19

114. The sum of first 15 terms and the sum of first 7 terms of an arithmetic sequence are in the ratio 5 : 1. Then its 8th term and the 4th term are in the ratio :

(A) 5 : 1
(B) 15 : 7
(C) 2 : 1
(D) 7 : 3 ✓

115. A circle is cut into 12 equal sectors. From this one sector is rolled up to form a cone. What is ratio of the base radius and slant height of the cone ?

(A) 1 : 12 ✓
(B) 1 : 30
(C) 1 : 6
(D) 1 : $\sqrt{12}$

716

116. In triangle PQR, $\angle P = 135^\circ$ and $QR = 6$ centimeter. What is the radius of its circumcircle ?

(A) $3\sqrt{2}$ centimeter
(B) 3 centimeter
(C) $3\sqrt{3}$ centimeter
(D) 1.5 centimeter

117. Hari needs 24 days to complete a work. Beena needs 40 days to complete the same work. How many days are needed for them to complete work together ?

(A) 32
(B) 20
(C) 15
(D) 16

118. What is half of 4^{40} ?

(A) 4^{39}
(B) 2^{40}
(C) 2^{79}
(D) 4^{20}

119. In the figure AB is a diameter, Q is a point on the circle. If $\angle P = x^\circ$, $\angle Q = y^\circ$, $\angle R = z^\circ$ and x, y, z are in arithmetic sequence. Which of the following statement is correct ?

(A) $x < y$ and $x + y = 180$
(B) $x < z$ and $x + z = 180$
(C) $y < z$ and $y + z = 180$
(D) $x < y < z$ and $x + y + z = 180$

120. Which of the following is not the ratio of the sides of a right triangle ?

(A) $1 : 1 : \sqrt{2}$
(B) $1 : \sqrt{3} : 2$
(C) $3 : 4 : 5$
(D) $5 : 9 : 12$

Handwritten calculations and diagrams are present on the page. For question 116, a diagram of triangle PQR is shown with angle P marked as 135° . For question 119, a diagram shows a circle with diameter AB and center O. Point Q is on the circle, and point R is on the segment AB. Angles P, Q, and R are labeled with x, y, and z respectively. For question 118, the calculation $\frac{4^{40}}{2}$ is shown, leading to 2^{79} . For question 120, several ratios are checked, and $5 : 9 : 12$ is identified as not being a valid ratio for a right triangle.

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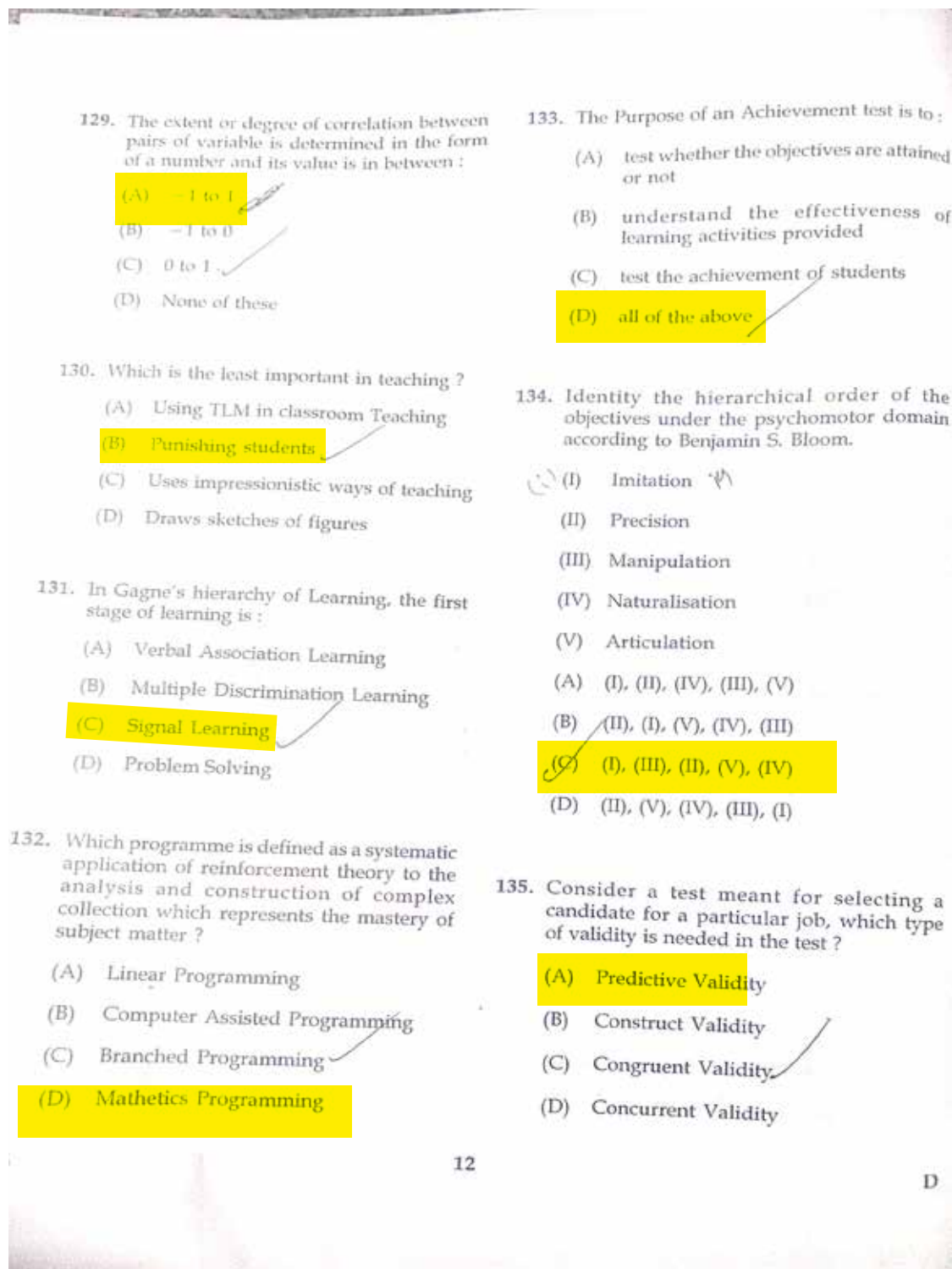
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121. The main goal of Mathematics Education is :
(A) to formulate theorems of geometry and their proofs independently
(B) to help the students to understand Mathematician
(C) to develop useful capabilities
(D) to develop children's abilities for Mathematisation ✓
122. Learning by doing is based on which type of Methods of Teaching ?
(A) Inductive Method
(B) Deductive Method
(C) Heuristic Method ✓
(D) Project Method
123. The new pedagogical and curricular structure according to NEP 2020 is :
(A) $5+3+4+3$
(B) $4+4+3+3$
(C) $5+3+3+4$ ✓
(D) $5+4+3+5$
124. Who wrote the book 'Siddhantha Shiromani' ?
(A) Jyeshthadeva
(B) Bhaskaracharya II ✓
(C) Sangamagrama Madhavan
(D) Neelakanda Somayaji
125. When a learner goes through the activity he has done, he will realise his strength and limitations. This level of assessment is known as :
(A) Assessment through Learning ✓
(B) Assessment for Learning
(C) Assessment of Learning
(D) Assessment as Learning
126. Information processing family of Models of teaching give importance to the development of _____
(A) behaviour modification
(B) social relations
(C) social values
(D) concept formation and hypothesis testing ✓
127. Mention the correct in the context of Giftedness in Mathematics :
(A) Gifted learners are free from disability
(B) Gifted learners have comparatively more pace than others ✓
(C) Gifted learners are always happy
(D) Gifted learners are excel in all areas
128. According to Lev Vygotsky, the Cognitive developments depends upon :
(A) Genetics
(B) Social Interaction ✓
(C) Physical Maturity
(D) Mental Maturity



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Rank
1st



Rank
1st



Rank
2nd



Rank
2nd



Rank
2nd



Rank
3rd



Rank
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Rank
3rd



Rank
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Rank
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4th



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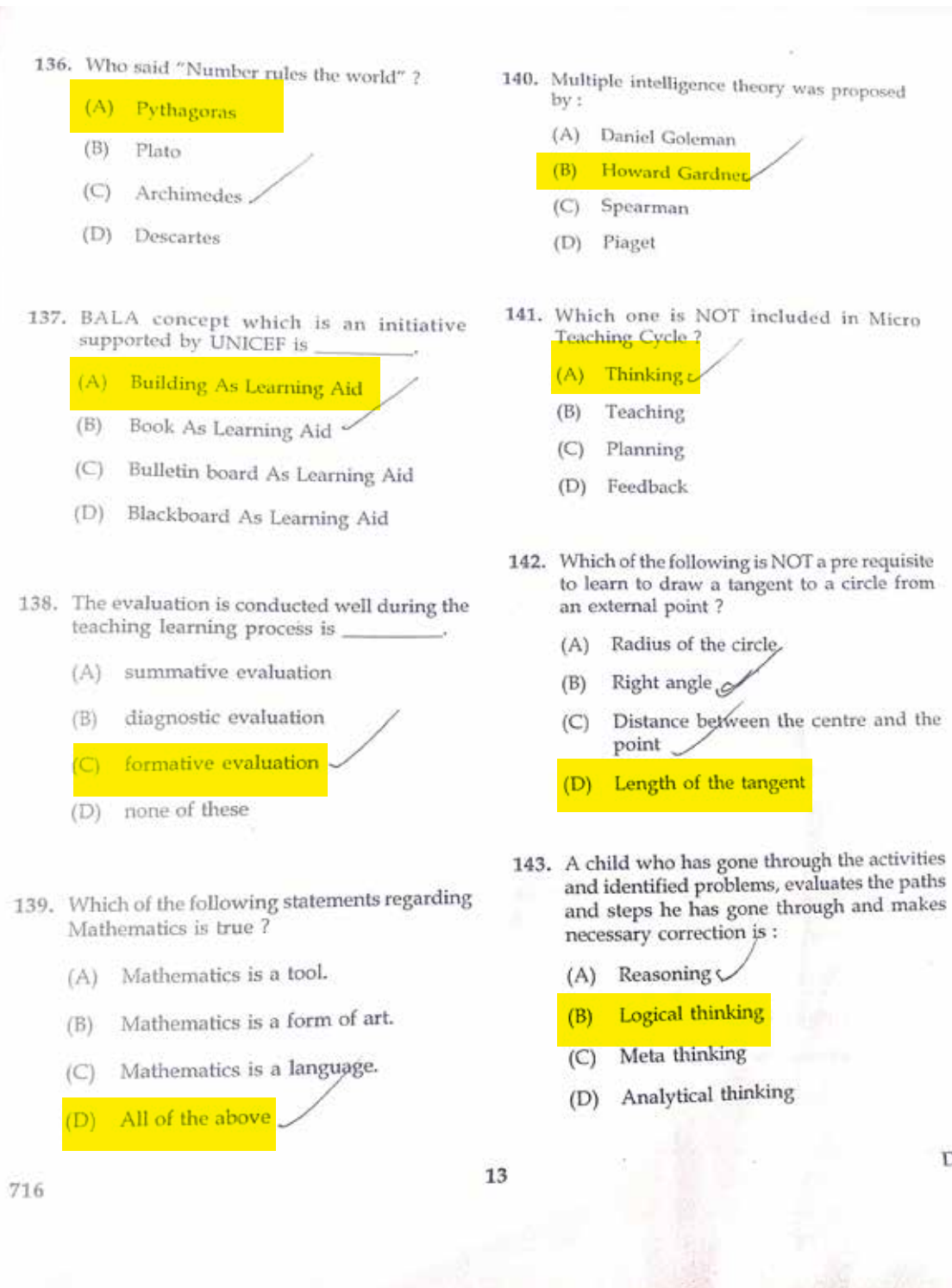
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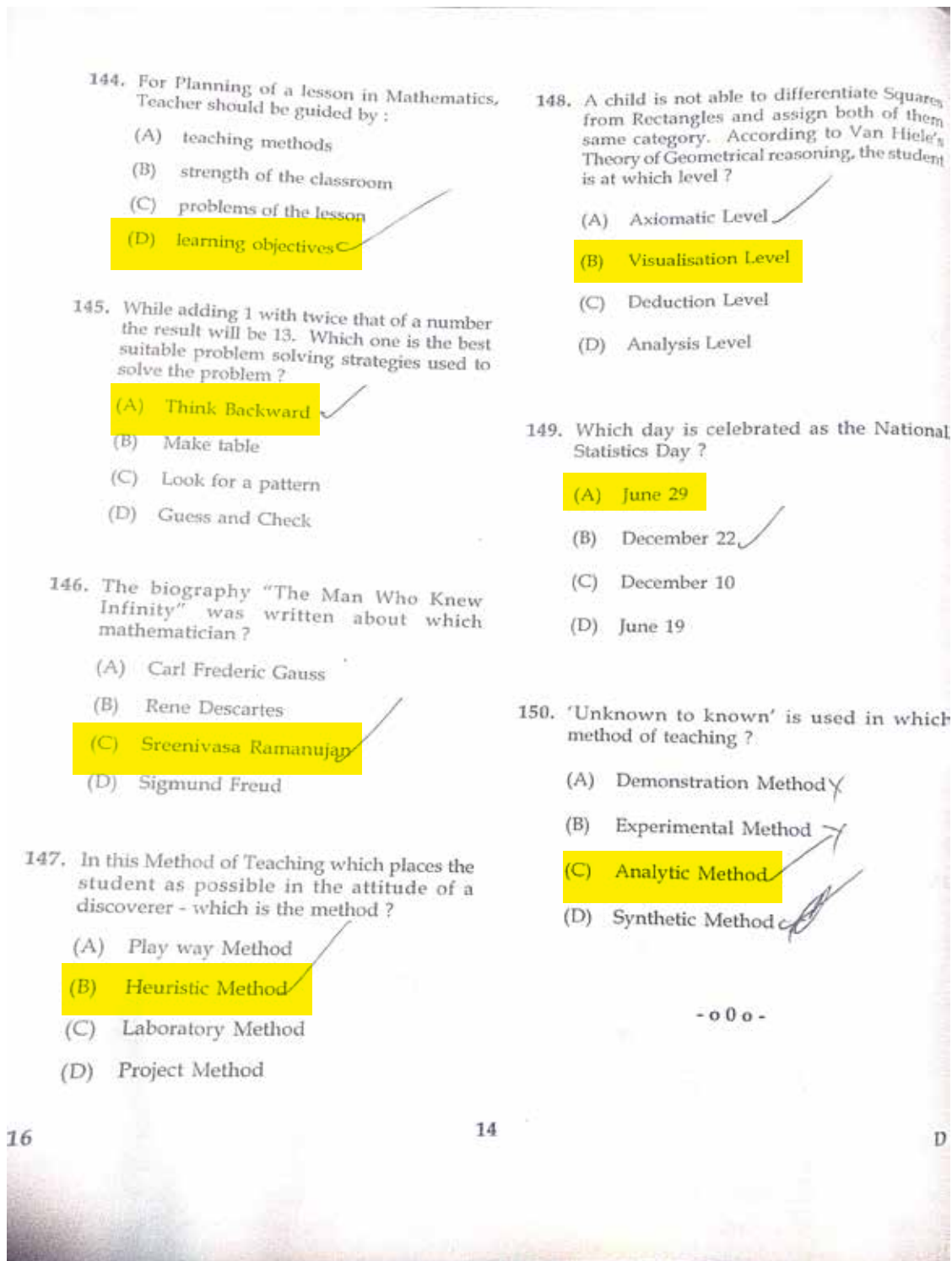
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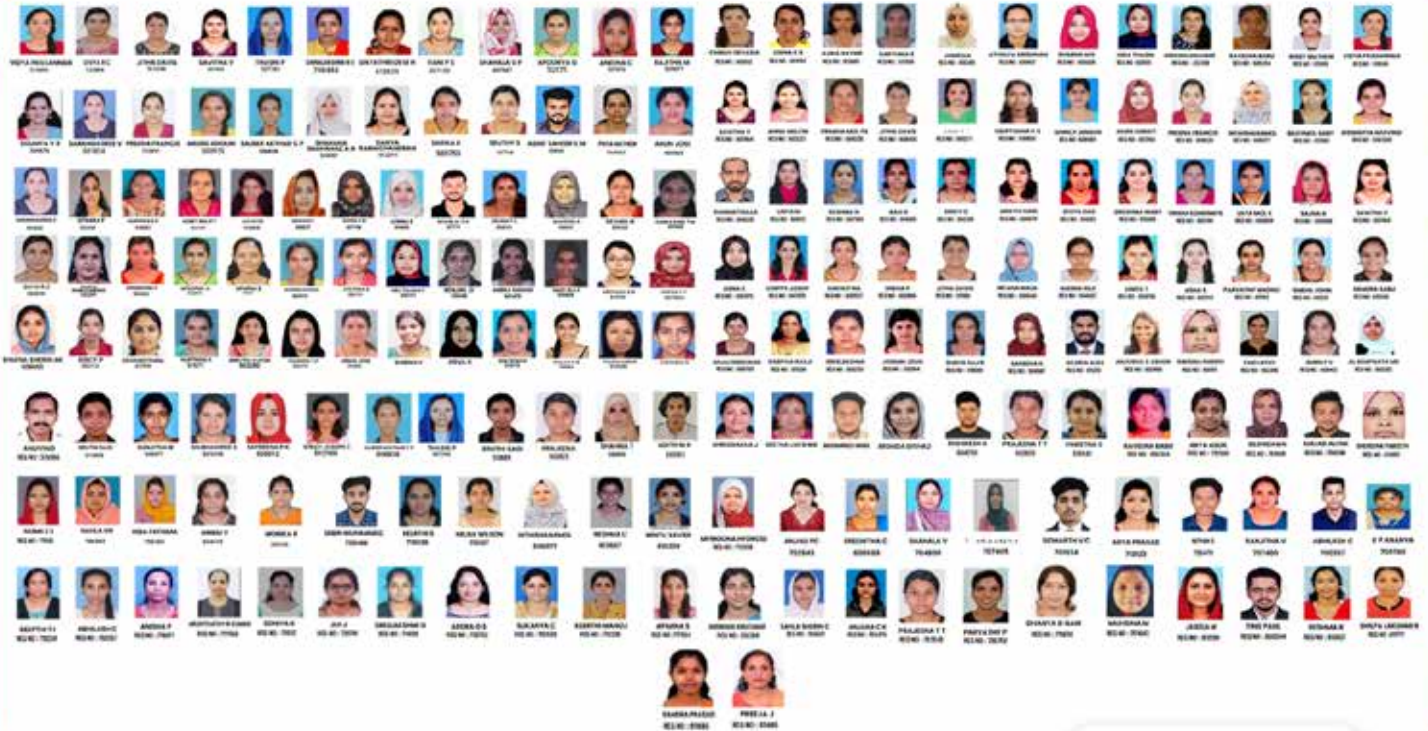


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