



No of Questions : 100

Time : 90 minutes

MODAL TEST -2

1. What is the sum of the first 12 terms of an arithmetic progression, if the first term is 3 and the last term is 47?
 a) 260 b) 300 c) 280 d) 220
2. The least number which must be added to the greatest number of 4 digits in order that the sum may be exactly divisible by 307 is
 a) 132 b) 32 c) 43 d) 75
3. $3\sqrt{1000} + 3\sqrt{1000} - 3\sqrt{0.125}$ is equal to
 a) 9.7 b) 9.97 c) 9.997 d) 9.9997
4. $\sqrt{3}\sqrt{3}\sqrt{3} \dots$ is equal to
 a) $\sqrt{3}$ b) 3 c) $2\sqrt{3}$ d) $3\sqrt{3}$
5. The ratio of the sum to the LCM of two natural numbers is 7 : 12. If their HCF is 4, then the smaller number is
 a) 20 b) 16 c) 12 d) 8
6. The average of marks of 28 students in Mathematics was 50.8. 8 students left the school, then this average increased by 5. What is the average of marks obtained by the students who left the school?
 a) 50.5 b) 37.5 c) 42.5 d) 45
7. The ratio of the ages of two persons is $\frac{1}{2}$ and age of one of them is greater than that of the other by 30 yr. the sum of their ages (in years) is
 a) 110 b) 100 c) 70 d) 40
8. The price of rice has increased by 60%. In order to restore the original price, the new price must be reduced by
 a) $33\frac{1}{3}\%$ b) $37\frac{1}{2}\%$ c) 40% d) 45%
9. The ratio $4^{3.5} : 2^5$ is the same as
 a) 4 : 1 b) 2 : 1 c) 1 : 2 d) 1 : 4
10. An alloy contains zinc, copper and tin in the ratio 2:3:1 and another contains copper, tin and lead in the ratio 5: 4:3. If equal weights of both alloys are melted

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- together to form a third alloy, then the weight of lead per kg in the new alloy will be
- a) $\frac{1}{2}$ kg b) $\frac{1}{8}$ kg c) $\frac{3}{14}$ kg d) $\frac{7}{9}$ kg
11. A DVD is listed at Rs. 300 with a discount of 20%. The additional discount to be offered to bring the net price to Rs. 216 is
- a) 15 % b) 10 % c) 8 % d) $12\frac{1}{2}$ %
12. The simple and compound interest that can be earned in two years at the same rate is Rs. 100 and Rs. 1040, respectively. What is the rate of interest?
- a) 9 % b) 10 % c) 8 % d) 11%
13. A sum fetched a total simple interest of Rs. 5400 at the rate of 12.5 % per annum in 4 yr. What is the sum?
- a) Rs. 11800 b) Rs. 12800 c) Rs. 9800 d) Rs. 10800
14. A can do a work in 15 days and B in 30 days. If they work on it together, then in how many days will they be able to do 50 % of the work?
- a) 5 days b) 6 days c) 4 days d) 3 days
15. If a taxi going at 40 km/h takes 25 min to travel a certain distance, then by how much should it increase its speed to travel the same distance in 20 min?
- a) 50 km/h b) 5 km/h c) 25 km/h d) 10 km/h
16. If a boat goes 100 km downstream in 10 h and 75 km upstream in 15 h. Then, the speed of the stream is
- a) 2 km/h b) 2.5 km/h c) 3 km/h d) 3.5 km/h
17. If $x + \frac{1}{x} = 2$ and x is real, then the value of $x^{17} + \frac{1}{x^{19}}$ is
- a) 1 b) 0 c) 2 d) -2
18. If $x = \sqrt[3]{x^2 + 11} - 2$, then the value of $x^3 + 5x^2 + 12x$ is
- a) 0 b) 3 c) 7 d) 11



19. if $\operatorname{cose} \theta = \frac{17}{8}$ then $\cot \theta = ?$
- a) $\frac{17}{8}$ b) $\frac{15}{8}$ c) $\frac{8}{15}$ d) $\frac{17}{15}$
20. $\triangle XYZ$ is similar to $\triangle PQR$. If ratio of perimeter of $\triangle XYZ$ and perimeter of $\triangle PQR$ is 4 : 9 and if $PQ = 27$ cm, then what is the length of XY (in cm)?
- a) 9 cm b) 12cm c) 16cm d) 15cm
21. What is the area (in cm^2) of a rectangle of perimeter 48 cm and breadth 10 cm?
- a) 140 b) 480 c) 240 d) 440
22. The ratio of present ages of two brothers is 1 : 2 and 5 yr back the ratio was 1 : 3 What will be the ratio of their ages after 5 yr?
- a) 1 : 4 b) 2 : 3 c) 3 : 5 d) 5 : 6
23. What will be the sum of 6 terms of the series $7 + 14 + 21 + 28 + \dots$?
- a) 150 b) 147 c) 152 d) -150
24. Find the roots of the quadratic equation $6x^2 - 11x - 35 = 0$.
- a) $\frac{5}{3}, \frac{-7}{2}$ b) $\frac{-5}{3}, \frac{7}{2}$ c) $\frac{-3}{5}, \frac{2}{7}$ d) $\frac{3}{5}, \frac{-2}{7}$
25. If the length of the shadow of a tower is equal to its height, then what is the Sun's altitude at that time?
- a) 15° b) 30° c) 45° d) 60°
26. Between 6 pm and 7 pm, the minute hand of a clock will be ahead of the hour hand by 3 min at
- a) 6 : 15 pm b) 6 : 18 pm c) 6 : 36 pm d) 6 : 48 pm
27. If α and β are the roots of the equation $x^2 + px + q = 0$, then what is $\alpha^2 + \beta^2$ equal to?
- a) $p^2 - 2q$ b) $q^2 - 2p$ c) $p^2 + 2q$ d) $q^2 - q$
28. If mean of five observations $X + 1, X + 2, X + 3, X + 4$ and $X + 5$ is 15, then mean of first three observations is



- a) 12 b) 13 c) 14 d) 15

29. The sum of infinite GP $1, \frac{1}{2}, \frac{1}{4}, \frac{1}{8}, \dots$ is

- a) 5 b) 4 c) 3 d) 2

30. The value of $\sin^2 30 + \sin^2 60$ is

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

Directions (Q. Nos 31 and 32) find the odd word / number from the given alternatives.

31. a) Distribution b) Dispersion c) Diversion d) Dilution

32. a) 121-196 b) 144-225 c) 36-83 d) 16-49

33. Select the wrong number in a given series from the given alternatives. 3, 5, 8, 11, 17, 23

- a) 8 b) 11 c) 17 d) 23

Directions (Q.Nos. 34-36) Select the related word/letters/number from the given alternatives.

34. $\frac{K}{T} : \frac{11}{20} :: \frac{J}{R} : ?$

- a) 10/18 b) 11/19 c) 10/8 d) 9/10

35. Bihu : Assom :: Onam : ?

- a) Karnataka b) Kerala c) Jammu and Kashmir d) Rajasthan

36. 85 : 42 :: 139 : ?

- a) 68 b) 69 c) 70 d) 67

37. Maya said, my mother is the sister of Ranjeet's brother. What is Ranjeet's relation with Maya?

- a) Cousin b) Meternal uncle c) Uncle d) Brother-in-law

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38. If ' $>$ ' = ' \div ', ' $\sqrt{\quad}$ ' = ' \times ', ' $<$ ' = ' $+$ ',
 ' \wedge ' = ' $^$ ', ' $-$ ' + ' $=$ ' = ' $'$ ', ' \times ' = ' $<$ ', ' $-$ ' = ' $>$ ',

Then which one is true?

- a) $6 < 2 > 3 \wedge 8 \sqrt{4} + 13$ b) $6 \wedge 2 < 3 > 8 < 4 - 13$
 c) $6 \sqrt{2} < 3 \wedge 8 > 4 \times 13$ d) $6 > 2 \sqrt{3} < 8 \wedge 4 + 13$

Directions (Q.Nos. 39 and 40) in each of the following questions, a series is given with one term missing. Choose the correct alternative.

39. 3, 15, 4, 16, 5, 17, 6, ? 7
 a) 12 b) 13 c) 15 d) 18

40. YYZ, YYZ, SYZ, PYZ, ?
 a) TYZ b) RYZ c) MYZ d) XYZ

41. A ate grapes and pineapple, B ate grapes and oranges, C ate oranges, pineapple and apple, D ate grapes, apple and pineapple. After taking fruits, b and C fell sick. In the light of the above facts, it can be said that the cause of sickness was
 a) apple b) pineapple c) grapes d) oranges

42. A statement is followed by two conclusions. You have to take the given statement to be true even, if they seem to be at variance from commonly known facts. Read the conclusions and then decide which of the conclusions, if any, logically follows from the two given statements, disregarding the known facts

Statement The old order changed yielding place to new.

Conclusions

- I. Change is the law of nature.
 II. Discard old ideas because they are old.
 a) Only Conclusion I follows b) Only conclusion II follows
 c) either I or II follows d) Both I and II follow

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43. If Reason is coded as 5 and Believed as 7, what is the code number for government?
 a) 6 b) 8 c) 9 d) 10
44. A boy walks Northwards. After a while, he turns towards his right and a little farther to his left. Finally, after walking a distance of 1 km, he turns to his left again. In which direction, he is moving now?
 a) North b) South c) East d) West
45. The question given below consist of a question followed by two statements labeled as I and II. You have to decide whether these statements give enough information required to answer the question or not.

Given Answer

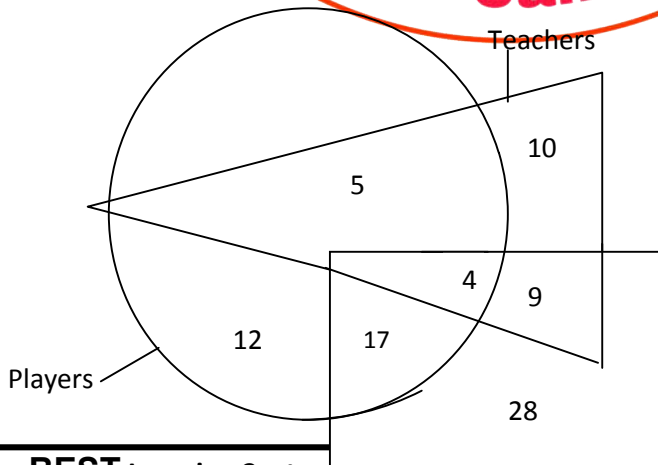
- a) If Statement I alone is sufficient to answer the question
 b) if Statement II alone is sufficient to answer the question
 c) If Statements I and II together are needed to answer the question
 d) If Statements I and II together are not sufficient to answer the question

How is P related to R?

I. Q is the son of R.

II. Q is the brother of P.

46. How many players are neither teachers nor singers?





Singers _____

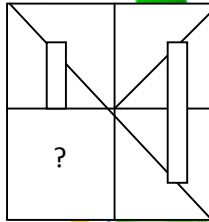
- a) 17
- b) 12
- c) 4
- d) 5

47. Six girls are standing in such a way that they form a circle, facing the centre. Subbu is to the left of Pappu, revathi is between Subbu and Nisha, Aruna is between Pappu and Keethana. Who is to the left of Keerthana?

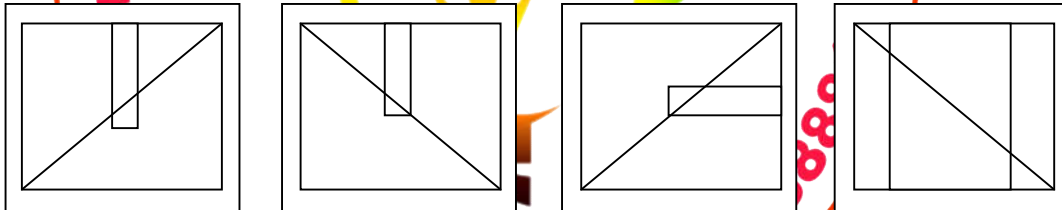
- a) Subbu
- b) Pappu
- c) Nisha
- d) Aruna

48. Which answer figure will complete the pattern in the question figure?

Question figure

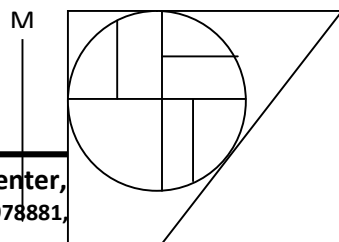


Answer figures



49. If a mirror is placed on the line MN, then which of the answer figures is the right image I n the given figure.

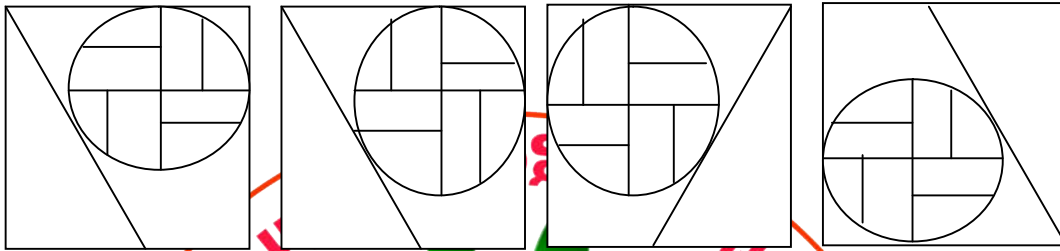
Question figure





N

Answers figures



(a)

(b)

(c)

(d)

Direction (Q.No.50) Two statements are given followed by two Conclusions I and II. You have to consider the statement to be true, even if it seems to be at variance from commonly known facts. You are to decide which of the given conclusions can definitely be drawn from the given statements.

50. **Statements**

- I. All children are students.
- II. all students are players.

Conclusions

- I. All cricketers are students.
- II. All Children are players

- a) Only Conclusion I follows
- b) Neither Conclusion I nor II follows
- c) Only conclusion II follows
- d) Both Conclusions I and II follow

51. A statement followed by two assumptions I and II is given. Which one of the four given alternatives is correct?

Statement One should not sleep under a tree at night.

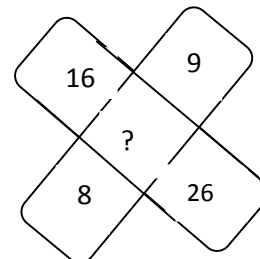
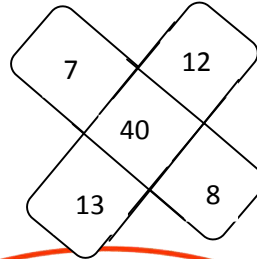
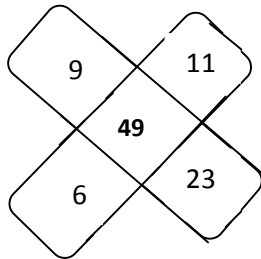
Assumptions

- I. The falling leaves may spoil our clothes.
- II. Trees give out CO₂ at night which is injurious to health.

- a) Only I is implicit
- b) Only II is implicit
- c) Both I and II are implicit
- d) Neither I nor II is implicit



52. Find the missing term from the given responses in the following questions.



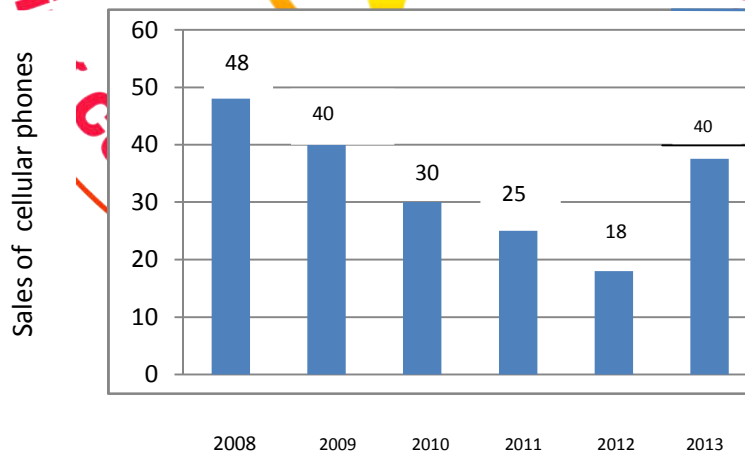
- a) 52 b) 42 c) 59 d) 17

53. In the following question, arrange the given words in a meaningful and ascending order and select the option indicating the correct order.

1. Fruit b) Pollen c) Corolla d) Stamen
 a) 2, 4, 3, 1 b) 2, 3, 4, 1 c) 2, 1, 3, 4 d) 1, 3, 4, 2

54. **Directions** (Q.Nos. 54 and 55) Study the following bar chart and answer the questions that follow.

Sales of cellular phones over the years



54. find the percentage in sales from 2012 to 2013.
 a) 122% b) 100 % c) 150 % d) 125 %
55. Find the two years between which the rate of change of cellular phones is minimum.
 a) 2010-11 and 2012-13 b) 2009-10 and 2011-12



-
- c) 2008-09 and 2012- increase **13** d) 2008-09 and 2010-11
56. Under which Article of the Constitution is the President's rule introduced in a state due to the failure of the constitutional machinery?
a) Article 352 b) Article 356 c) Article 360 d) Article 350
57. When did India join the United Nations?
a) 1945 b) 1947 c) 1950 d) 1954
58. Deficit financing means that the government borrows money from the
a) Revenue Department b) World Bank
c) RBI d) None of the above
59. Which of the following storage device is volatile in nature?
a) RAM b) Hard disk c) Magnetic tape d) ROM
60. Name the Greek ambassador at the Mauryan Court.
a) Alexander b) Megasthenese c) Plato d) Aristotle
61. Which of the following will be the official Mascot for 2020 Olympic Games to be held in Tokyo?
a) Vinicius b) Izzy c) Amik d) Miraitowa
62. Who has authored the book 'Straight from the Heart'?
a) Kapil Dev b) Kapil Singh
c) Kapil Srimohan d) None of the above
63. The Secretary General of UNO is appointed by
a) The General Assembly
b) The Security Council
c) International Court of Justice
d) The General Assembly on the recommendation of the Security Council
64. The 25th edition of SIMBEX, a Maritime Bilateral Exercise, between India and which country, started on November 10, 2018, in Andaman Sea and Bay of Bengal?
a) Malaysia b) Singapore c) South Korea d) Australia



65. The world's largest and deepest rail tunnel Gotthard Base tunnel is located in which country?
 a) Belgium b) Austria c) Switzerland d) Sweden
66. Which Viceroy was associated with the 'Ilbert Bill' controversy?
 a) Lord Lytton b) Lord Ripon c) Lord Hardinge d) Lord Curzon
67. Which among the following is the west flowing river of India?
 a) Godavari b) Narmada c) Krishna d) Ganga
68. 2022 Asian game will be held in which country?
 a) India b) Japan c) China d) Myanmar
69. Atal Bihari Vajpayee was awarded Bharat Ratna in which year?
 a) 2014 b) 2013 c) 2015 d) 2012
70. The Chilka lake is located in which state
 a) Odisha b) West Bengal c) Assam d) Karnatka
71. Why does one get a sinking feeling when going down a elevator?
 a) Weightlessness on our body b) Speed is more than gravity
 c) Our body does not support d) Our muscles become slow
72. If the displacement of an object is proportional to square of time, then the object moves with
 a) Uniform velocity b) Uniform acceleration
 c) increasing acceleration d) decreasing acceleration
73. An object of mass 1.6 kg is taken to the surface of a planet of radius 4×10^6 m. There the weight of the object is found to be 66.7 N. The mass of the planet is ($G=6.67 \times 10^{-11}$ N- m^2/kg^2)
 a) 1.6×10^{25} kg b) 8.0×10^{24} kg c) 1.0×10^{25} kg d) 2.0×10^{25} kg
74. Which of the following contains maximum number of molecules?
 a) 1 g CO_2 b) 1 g N_2 c) 1 g H_2 d) 1 g CH_4
75. Rutherford's α -particles scattering experiment resulted into discovery of



-
- a) electron b) proton c) nucleus in the atom d) atomic mass
76. Rusting of an article made up of iron is called
- a) corrosion and it is a physical as well as chemical change
 b) dissolution and it is a physical change
 c) corrosion and it is a chemical change
 d) dissolution and it is a chemical change
77. Rainbow formation is due to
- a) absorption of sunlight by water droplets
 b) diffusion of sunlight through water droplets
 c) ionization of water droplets
 d) refraction and reflection of sunlight by water droplets
78. Red light is used in traffic signals because
- a) colour of blood is red b) animals can identify red
 c) red light disperses least d) red is the symbol of danger
79. A man cannot see clearly beyond 10.m The disease he suffers from
- a) far sight b) myopia c) cataract d) hypermetropia
80. The part of the eye having the largest refractive index is
- a) cornea b) aqueous humor c) lens d) vitreous humor
81. Preventive and control measures for storing grains for future use include
- a) fumigation using chemicals b) washing the produce
 c) packing the produce in polythenes d) cutting the produce
82. Asexual reproduction in Monera occur by
- a) fission b) spore formation
 c) Both (a) and (b) d) None of the above
83. Consider the following cell organelles of the organisms
- I. Mitochondria II. Chloroplasts III. Endoplasmic reticulum.



-
- Which of the ones given above is/are semi-autonomous organelles(s)?
- a) Only III b) I and II c) II and III d) I, II and III
84. Soil erosion is caused due to
- a) strong wind b) heavy rains
 c) Keeping the fields barren for a long time d) All of the above
85. Rocket works on the principle of conservation of
- a) mass b) energy c) momentum d) velocity
86. A boy is whirling a stone tied with a string in an horizontal circular path. If the string breaks, the stone.
- a) will continue to move in the circular path
 b) will move along a straight line towards the centre of the circular path
 c) will move along a straight line tangential to the circular path
 d) will move along a straight line perpendicular to the circular path away from the boy
87. Which one of the following elements is an example of noble gas?
- a) Nitrogen b) Hydrogen c) Chlorine d) Helium
88. Litmus is obtained from
- a) a bacterium b) a fungus c) an alga d) lichen
89. Which one of the following does not increase while moving down the group of the periodic table
- a) Atomic radius b) Metallic character
 c) Valency d) Number of shells in an element
90. Sulphuric acid + substance (Y) \longrightarrow a
 Salt + water + carbon dioxide
- What could be the substance (y)?
- a) Copper (II) oxide b) Magnesium
 c) Sodium carbonate d) Sodium hydroxide



91. For which of the following Substances, the resistance decrease with increase in temperature?
- a) Pure silicon b) Copper c) Nichrome d) Platinum
92. When a bar magnet is cut in to two equal halves, the pole strength of each piece.
- a) becomes double b) becomes half c) becomes zero d) remains the same
93. Ohm's law is valid in case of
- a) superconductor b) insulator
c) semiconductor d) conductor
94. a current carrying conductor is associated with
- a) a magnetic field b) an electric field
c) an electromagnetic field d) an electrostatic field
95. When a body falls freely towards the earth, then its total energy
- a) increases b) decreases
c) remains constant d) first increases and then decreases
96. Earthquake produces which kind of sound before the main shock wave begins
- a) ultrasound b) infrasound
c) audible sound d) None of the above
97. Which one of the endocrine glands is known as master gland?
- a) Pituitary b) Adrenal c) Thyroid d) Parathyroid
98. The main constituent of biogas is
- a) methane b) carbon dioxide
c) hydrogen d) hydrogen sulphide
99. In which vertebrate oxygenated and deoxygenated blood gets mixed
- a) Fish b) Amphibian c) Bird d) Mammal



100. Which of the following helps in providing nutrition from mother to the embryo?

- a) Ovaries b) Cervix c) Placenta d) Oviduct





1-b	2-a	3-a	4-b	5-c	6-b	7-a	8-b	9-a	10-b
11-b	12-c	13-d	14-a	15-d	16-b	17-c	18-b	19-b	20-b
21-a	22-c	23-b	24-b	25-c	26-c	27-a	28-c	29-d	30-a
31-d	32-c	33-b	34-a	35-b	36-b	37-b	38-d	39-d	40-c
41-d	42-a	43-c	44-d	45-d	46-b	47-d	48-a	49-a	50-c
51-b	52-c	53-a	54-a	55-d	56-b	57-a	58-c	59-a	60-b
61-d	62-a	63-d	64-b	65-c	66-b	67-b	68-c	69-c	70-a
71-a	72-b	73-c	74-c	75-c	76-c	77-d	78-c	79-b	80-c
81-a	82-c	83-b	84-d	85-c	86-c	87-d	88-d	89-c	90-c
91-a	92-d	93-d	94-a	95-c	96-b	97-a	98-a	99-b	100-c

