

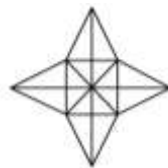
PART – 1 : MAT

SECTION – (I) : (Maximum Marks: 40)

- This section contains **TWENTY** questions.
- Each question has **FOUR** options (a), (b), (c) and (d). **ONLY ONE** of these four options is correct.
- For each question, darken the bubble corresponding to the correct option in the **OMR**.
- For each question, marks will be awarded in one of the following categories:

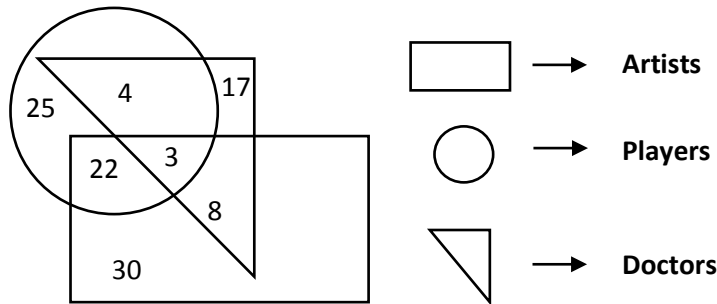
<i>Full Marks</i>	:	+2	If only the bubble corresponding to the correct option is darkened.
<i>Zero Marks</i>	:	0	In all other cases

- Which of the following interchange of sign would make the given equation correct?
 $64 - 8 \times 9 \div 8 = 64$
 (a) + and – (b) \div and \times (c) + and \div (d) – and \div
- In a class of 35 students, Ziya is placed 7th from the bottom where as Sofia is placed 9th from the top. Shahruk is placed in between the two. What is Ziya's position from Shahruk?
 (a) 10 (b) 15 (c) 19 (d) 21
- Complete the following series by inserting the number in place of '?':
 4, 8, 21, 59, ?, 365
 (a) 146 (b) 134 (c) 123 (d) 191
- MAGNIFICENT**
 If all the vowels are replaced with their immediate next letter as per English alphabet series then how many pairs are there in the newly formed word (either forward or backward) which has as many letters between them as they have in the English alphabet series?
 (a) One (b) Two (c) Three (d) None of these
- Kailash faces towards north. Turning to his right, he walks 25 metres. He then turns to his left and walks 30 metres. Next, he moves 25 metres to his right. He then turns to his right again and walks 55 metres. Finally, he turns to the right and moves 40 metres. In which direction is he now from his starting point?
 (a) South-west (b) South (c) North-west (d) South-east
- How many triangles are there in the given figure?



- (a) 28 (b) 36 (c) 40 (d) 48

7. One of the term in the following sequence is given wrong. Identify the wrong term in the series correcting which the numbers would be arranged in the logical sequence.
3, 5, 10, 20, 38, 63
(a) 5 (b) 10 (c) 20 (d) 38
8. Study the given Venn diagram and answer the following questions.



- How many artists are neither players nor doctors?
(a) 10 (b) 17 (c) 30 (d) 15
9. If $1+3=7$; $2+5=19$; Find the value of $3+9=?$
(a) 27 (b) 30 (c) 33 (d) 38
10. If the letters in the word 'CREATION' are rearranged as they appear in the English alphabet then the position of how many letters will remain unchanged after the rearrangement?
(a) Two (b) One (c) Three (d) None
11. One of the following number shows a property different from the rest. Identify the odd number.
(a) 199 (b) 147 (c) 102 (d) 52
12. In a family of some persons Sushant says that Manu is the daughter of my sister Rhea, who is the only daughter of Tahir. Arun is the child of Tahir and Ileana, who is the paternal grandmother of Kiara. Roma is the mother of Trisha, who is the only sister of Kiara. Arun is unmarried.
How is Arun related to Kiara?
(a) Maternal Uncle (b) Maternal Aunt
(c) Paternal Uncle (d) Paternal Aunt
13. Shaadi Inc., a Marriage organising company organized 6 marriages in the month of January, February, March, June, November and December. The names of the brides are Apurva, Shweta, Riya, Divya, Tanvi and Monica. The grooms were Rajeev, Jatin, Shiv, Naveen, Mohit and Shivam.

Read the information given below to determine the name of the bride and groom married in that particular month and answer the question.

Only for one couple, the name of Bride and groom started with the same Alphabet. Riya was married to Shiv. Divya got married in the month previous to the month of

Shivam's Marriage. Apurva Got married in December and Jatin got married in March. Monica got married in the month previous to Mohit's marriage. Rajeev got married in the month having 30 days.

Who got married in June?

- (a) Riya (b) Shweta (c) Tanvi (d) Divya

14. Find the missing term in the given pattern:

13	54	?
7	45	32
27	144	68

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

15. Complete the following series by inserting the number in place of '?':

BBQ, FCU, IAY, MDC, ___

- (a) PYG (b) PZH (c) QYH (d) PZG

16. If ONE = 16, TWO = 13, Find the value of FIVE?

- (a) 24 (b) 12 (c) 20 (d) 28

17. In a certain code, 'MANGO' is written as 'RJQDP'. Which word would be coded as 'UHGLF'?

- (a) CIDER (b) CITER (c) CITES (d) CTING

18. Identify the figure that gives the completes the pattern.



(X)



(1)



(2)



(3)



(4)

- (a) 3 (b) 2 (c) 4 (d) 1

19. How many such pairs of Numbers are there in the 5947680213, each of which has as many numbers between them in the number, as they have in the numeric series?

- (a) Four (b) Five (c) More than five (d) None

20. In the following relation, the first two elements separated by ':' before '::' possess a relationship. The same relationship is possessed by the two elements after '::'. Choose the most appropriate answer in place of '?' to complete the pattern.

8 : 28 :: 27 : ?

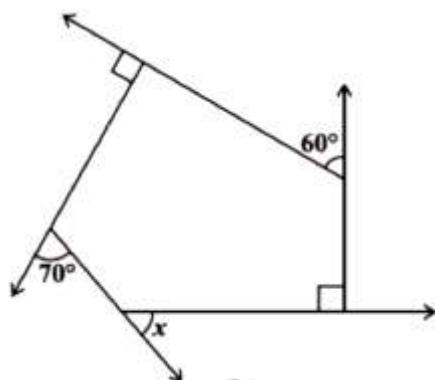
- (a) 55 (b) 63 (c) 64 (d) 65

PART – 2 : MATHS

SECTION – I : (Maximum Marks: 40)

- This section contains **TWENTY** questions.
- Each question has **FOUR** options (a), (b), (c) and (d). **ONLY ONE** of these four options is correct.
- For each question, darken the bubble corresponding to the correct option in the **OMR**.
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21. The cost of 32 packets of sugar, each weighing 900 gm is Rs. 84. What will be the cost of 27 packets of sugar each weighing 1 kg?
- (a) Rs.78.75 (b) Rs.70.75 (c) Rs.76.75 (d) Rs.80.75
22. Twelve years hence Ravi's age will be nine times his age twelve years ago, find the present age of Ravi.
- (a) 12 years (b) 15 years (c) 18 years (d) 20 years
23. Find the value of x in the given figure:



- (a) 60° (b) 50° (c) 100° (d) 130°
24. $(x + 2)(x + 3) + (x - 3)(x - 2) - 2x(x + 1) = 0$, solve for x
- (a) 4 (b) 2 (c) 6 (d) -1
25. Perimeter of a right angled triangle with lengths of the perpendicular sides as 20 & 99
- (a) 220 (b) 85 (c) 200 (d) 135

31. Sunita is twice as old as Ashima. If six years is subtracted from Ashima's age and four years added to Sunita's age, then Sunita will be four times Ashima's age. How old were they two years ago?
- (a) 18, 12 (b) 26, 12 (c) 16, 10 (d) 8, 12
32. If $n = 2^3 \times 3^4 \times 5^4 \times 7$, then the number of consecutive zeroes in n , where n is a natural number is
- (a) 3 (b) 2 (c) 4 (d) 5
33. The least square number which is exactly divisible by each of the numbers 8, 12, 15 and 20
- (a) 8100 (b) 1600 (c) 2500 (d) 3600
34. Match the following question and choose the correct option

Column-I		Column-II	
(a)	Two opposite angles of a parallelogram are $(3x - 2)$ and $(50 - x)^\circ$, then smaller angle of parallelogram is	(p)	128°
(b)	If an angle of the parallelogram is two third of its adjacent angle, then larger angle is	(q)	37°
(c)	The measure of larger angle of a parallelogram if one angle is 24° more than twice the smaller angle	(r)	108°

- (a) A-q, B-p, C-r (b) A-r, B-q, C-p
- (c) A-q, B-r, C-p (d) A-r, B-p, C-q
35. Three statements are as follow:
- I. If perimeter of a square is a , length of its diagonal is $\frac{a}{2\sqrt{2}}$
- II. If area of a rectangle is 12 sq mt, its perimeter is 14 mt.
- III. If length of the diagonals of a rhombus are integers and its area is 6 sq unit, then there are three such rhombus possible.
- Identify the correct True/False code
- (a) FTF (b) TTF (c) TFT (d) TTT

36. The sum of five consecutive odd natural numbers is 65. Find the sum of the extreme numbers.
- (a) 26 (b) 30 (c) 24 (d) 32
37. Diagonals of a parallelogram are 8 m and 6 m respectively. If one of side is 5 m, then the area of parallelogram is:
- (a) 18m^2 (b) 30m^2 (c) 24m^2 (d) 48m^2
38. The sum of the digits of a two-digit number is 9. If 45 is added to the number the digits get reversed. Find the number
- (a) 18 (b) 27 (c) 36 (d) 45
39. Match the column I and II

Column-I		Column-II	
(a)	The sum of four consecutive positive integers is 178. What is the smallest integer?	(p)	23
(b)	One-third of which number must be subtracted from $\frac{7}{11}$ to give $\frac{24}{55}$	(q)	43
(c)	Two-thirds of 9 subtracted from a number is equal to one fourth of the sum of the number and 45. Find the number	(r)	$\frac{3}{5}$

- (a) A-r, B-q, C-p (b) A-s, B-q, C-p
- (c) A-r, B-p, C-q (d) A-q, B-r, C-p
40. Find the product :

$$\left(x - \frac{1}{x}\right)\left(x + \frac{1}{x}\right)\left(x^2 + \frac{1}{x^2}\right)\left(x^4 + \frac{1}{x^4}\right) \text{ where } x = 3^{1/8}$$

- (a) $\frac{8}{3}$ (b) $\frac{10}{3}$ (c) $\frac{16}{3}$ (d) 20

PART – 3 : PHYSICS**SECTION – I : (Maximum Marks: 20)**

- This section contains **TEN** questions.
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41. Consider the given statements and select the correct option which correctly identifies true (T) and false (F).

(i) When a body is in steady motion on a surface, the force of friction is dynamic friction.

(ii) The force of friction between two bodies always acts parallel to the surface in contact with each other.

(iii) It is easier to push a lawn roller than to pull.

(iv) Limiting friction is greater than sliding friction.

- | | (i) | (ii) | (iii) | (iv) |
|-----|-----|------|-------|------|
| (a) | T | F | T | F |
| (b) | F | T | F | T |
| (c) | T | T | T | F |
| (d) | T | T | F | T |

42. When does a body float on water?

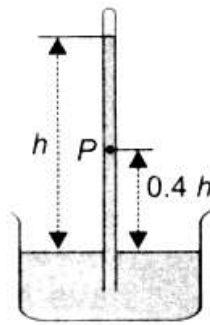
(a) When no force is acting on it.

(b) When the net force acting on the body is zero

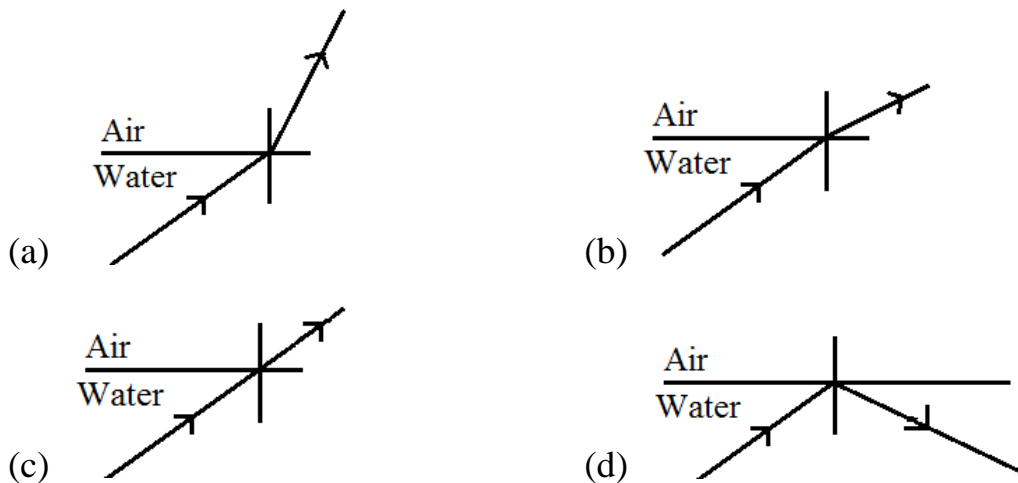
(c) When there is a gravitational pull.

(d) When there is friction between the body and the water

43. The diagram shows a simple mercury barometer. The mercury level is at a height h when the atmospheric pressure is 100000 Pa . What is the pressure at P?



- (a) 40000 Pa (b) 60000 Pa
 (c) 100000 Pa (d) 140000 Pa
44. A sound wave travels from water to air. Choose correct option regarding path followed by wave.

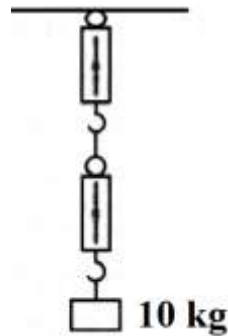


45. While walking on ice/why should one take small steps to avoid slipping?
 (a) Smaller steps ensure larger friction.
 (b) Smaller steps ensure smaller friction.
 (c) Smaller steps ensure larger distance covered.
 (d) Smaller steps ensure smaller distance covered.

46. Pitch of sound depends upon
 (a) frequency (b) amplitude
 (c) loudness (d) distance of source

47. The surface area of the base of a brick X is 100 cm^2 . The surface area of the base of the brick Y is 250 cm^2 . Each brick weighs 100 N . Which of the following is correct if P_1 and P_2 are the pressures exerted by the bricks X and Y respectively?
 (a) $P_1 = P_2$ (b) $P_1 > P_2$
 (c) $P_1 < P_2$ (d) $P_1 = P_2 = 0$

48. A block of mass 10 kg is suspended through two light spring balances as shown in figure. Then



- (a) Both the scales will read 10kg
(b) Both the scales will read 5kg
(c) The upper scale will read 10 kg and the lower scale zero
(d) The reading may be anything but their sum will be 10 kg.
49. What will happen to a moving object if there is no friction?
- (a) The object will stop. (b) The object will keep on moving.
(c) The object will change speed. (d) The object will change direction.
50. How does the pressure exerted by a liquid change?
- (a) Increases with depth (b) Decreases with depth
(c) Remains constant (d) First increases and then decreases

PART - 4 : CHEMISTRY

SECTION - I : (Maximum Marks: 20)

- This section contains **TEN** questions.
- Each question has **FOUR** options (a), (b), (c) and (d). **ONLY ONE** of these four options is correct.
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51. Amphoteric oxide is
(a) Na_2O (b) MgO (c) ZnO (d) CaO
52. Aluminium is a better conductor of heat than wood. It is so because
(a) aluminium has a higher density than wood.
(b) aluminium has a higher specific heat capacity than wood.
(c) aluminium has more free electrons than wood.
(d) aluminium has a higher mass than wood.
53. Incomplete combustion of methane forms
(a) $\text{CO}_2 + \text{H}_2\text{O}$ (b) $\text{CO} + \text{H}_2\text{O}$ (c) $\text{CO}_2 + \text{H}_2$ (d) $\text{CO} + \text{O}_2$
54. The composition of producer gas is
(a) $\text{CO} + \text{N}_2$ (b) $\text{CO} + \text{H}_2$ (c) $\text{CO} + \text{CH}_4$ (d) $\text{CO} + \text{NO}_2$
55. Cooling always accompanies evaporation because
(a) the air molecules cool the liquid surface.
(b) the more energetic molecules leave the liquid.
(c) there are fewer liquid molecules left in the liquid.
(d) the escaped molecules return to the liquid.
56. An element Z reacts with water to form a solution which turns Phenolphthalein indicator pink. The element Z is most likely to be:
(a) Sulphur (b) Sodium (c) Carbon (d) Silicon

57. Which of the following has cross-linked polymer chains?
(a) Bakelite (b) Polyester (c) PVC (d) Nylon
58. The main elements present in Petroleum are: -
(a) Carbon and oxygen (b) Carbon and nitrogen
(c) Carbon and hydrogen (d) Hydrogen and Oxygen
59. Metal which reacts vigorously with HCl to produce salt and hydrogen is
(a) Sodium (b) Zinc (c) Tin (d) Lead
60. An element which is a metalloid
(a) Antimony (b) Gold (c) Arsenic (d) Both 'a' and 'c'

PART – 5 : BIOLOGY

SECTION – I : (Maximum Marks: 20)

- This section contains **TEN** questions.
- Each question has **FOUR** options (a), (b), (c) and (d). **ONLY ONE** of these four options is correct.
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61. Which is a cereal crop?

- (a) Brinjal (b) Wheat (c) Gram (d) Pea

62. Match the Column

	Column A		Column B
(i)	Wildlife sanctuary	(A)	Buffer zone
(ii)	Innermost zone of a biosphere	(B)	Transition zone
(iii)	Outermost one of a biosphere	(C)	Protection of wild animals
(iv)	Middle zone of a biosphere	(D)	Core zone

(a) (i-C), (ii-A), (iii-B), (iv-D) (b) (i-C), (ii-B), (iii-A), (iv-D)

(c) (i-C), (ii-D), (iii-B), (iv-A) (d) (i-C), (ii-D), (iii-A), (iv-B)

63. Species of plants and animals which are found exclusively in a particular area are known as:

- (a) Endangered species (b) Extinct species
 (c) Endemic species (d) Imbalanced species

64. Eutrophication is due to

- (a) High level of organic nutrients
 (b) Excessive growth of plants on water surface
 (c) Excessive use of fertilizers in the field which flow into water bodies
 (d) All the above

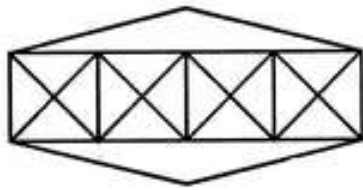
65. Which one of this is a nitrogenous fertilizer
- (a) Potassium sulphate (b) CAN
(c) Sodium nitrate (d) Both (B) or (C)
66. Which part within the uterus prevents the mixing of the blood of the foetus with that of the mother?
- (a) Umbilical cord (b) Uterus wall
(c) Placenta (d) Water sac
67. What causes the dough to rise when yeast is added to it?
- (a) An increase in temperature
(b) An increase in the amount of substance
(c) An increase in the amount of released water by yeast cells
(d) The release of carbon dioxide gas
68. Which of the following options is/are true about the diseases, microorganisms which cause them and the symptoms of the diseases?
- (a) Malaria, Protozoan, Fever and Chills
(b) Hepatitis B, Virus, Swollen liver
(c) Cholera, Virus, Vomiting, diarrhoea
(d) Both (A) and (B)
69. Which one is the traditional method of irrigation?
- (a) Dhekli (b) Sprinkles system
(c) Drip system (d) Tanks
70. Which of the following bacteria lives symbiotically in pea plants?
- (a) Rhizobium (b) Nitrosomonas
(c) Azotobacter (d) Clostridium

PART – 6 : BRAIN TEASERS

SECTION – I : (Maximum Marks: 20)

- This section contains **TEN** questions.
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71. How many triangles are there in the given figure?



- (a) 28 (b) 36 (c) 40 (d) 48

72. There is a 7-storey building. On each floor of the building, one person from A, B, C, D, E, F and G lives. Each person owns a different motorcycle, one of them has pulsar. Read the information given below to determine the bike and floor of each person and answer the questions.

C, D and A live one above the other on the consecutive floors in some definite order. The person who owns the bullet lives on the 5th floor. G, who owns a passion lives on the 1st floor. D owns a Platina and F owns a Discover. E lives on floor 7th. B lives with D and G. A does not own a Bullet or Shine. B does not own Suzuki or Shine.

Who owns a pulsar?

- (a) C (b) D (c) A (d) B

73. In a race of three horses, the first beat the second by 11 metres and the third by 90 metres. If the second beat the third by 80 metres, what was the length, in metres, of the racecourse?

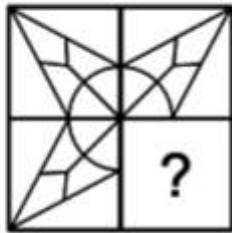
- (a) 800 (b) 880 (c) 820 (d) 850

74. Two circular tracks T1 and T2 of radii 100 m and 20 m, respectively touch at a point A. Starting from A at the same time, Parnav and Tarush are walking on track T1 and track T2 at speeds 15 km/hr and 5 km/hr respectively. The number of full rounds that Parnav will make before he meets Tarush again for the first time is

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

75. Identify the figure that gives the completes the pattern.

Question Figure

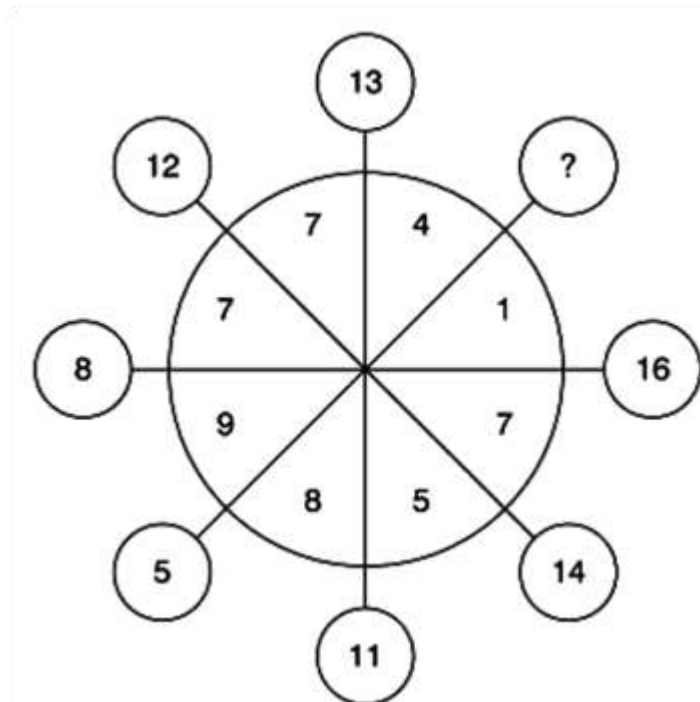


Answer Figure



- (a) (b) (c) (d)

76. Find the missing term in the given pattern:



- (a) 12 (b) 17 (c) 15 (d) 16

77. Dhvanit takes twice as much time as Gurpreet to finish a job. Gurpreet and Hemank together take one- thirds of the time to finish the job than Dhvanit takes working alone. Moreover, in order to finish the job, Dhvanit takes three days more than that taken by three of them working together. In how many days will Hemank finish the job working alone?
- (a) 2 (b) 4 (c) 1 (d) 8
78. In November, Sarvesh bought the same amount of rice and the same amount of wheat as he had bought in October, but spent Rs. 150 more due to price increase of rice and wheat by 20% and 12%, respectively. If Sarvesh had spent Rs. 450 on rice in October, then how much did he spend on wheat in November?
- (a) Rs. 580 (b) Rs. 570 (c) Rs. 560 (d) Rs. 590
79. At their usual efficiency levels, A and B together finish a task in 12 days. If A had worked half as efficiently as she usually does, and B had worked thrice as efficiently as he usually does, the task would have been completed in 9 days. How many days would A take to finish the task if she works alone at her usual efficiency?
- (a) 18 (b) 12 (c) 24 (d) 36
80. A chemist mixes two liquids 1 and 2. One litre of liquid 1 weights 1 kg and one litre of liquid 2 weights 800 gm. If half litre of the mixture weighs 480 gm, then the percentage of liquid 1 in the mixture, in terms of volume, is
- (a) 70 (b) 85 (c) 80 (d) 75

Space for Rough Work

Space for Rough Work