IMPORTANT INSTRUCTIONS

- The maximum marks are **300.** Time allotted is **90 MINTUES.**
- There are three sections in the question paper having total **75 questions:**
  - Section – A : Maths (25 Questions)
  - Section – B : Science (25 Questions)
  - Section – C : Aptitude (25 Questions)
- Each question carries **4 marks** each
- **Negative Marking**: **1/4 (one-fourth) marks** will be deducted for every incorrect answer.
- **Use only BLUE / BLACK Pen to fill the circles in bubble sheet.**
- Use of pencil is strictly **not allowed.**
- **Do not use marker or white fluid** to hide the mark.

Section – I Mathematics

1. The sum of two rational numbers is – 1. If one of the numbers is $\frac{-5}{4}$, then find the other number.

(a) $\frac{1}{4}$ (b) $\frac{3}{4}$ (c) $\frac{4}{5}$ (d) $\frac{5}{7}$

2. Find two parts of 34 such that $\left(\frac{4}{7}\right)^{th}$ of one part is equal to $\left(\frac{2}{5}\right)^{th}$ of the other.

(a) 16, 18 (b) 14, 20 (c) 15, 19 (d) None of these

3. Which of the following statements is correct?

Statement – 1 : x = 5 is the solution of $x + 7 - \frac{8x}{3} = \frac{17}{6} - \frac{5x}{2}$.

Statement – 2 : x = 28 is the solution of $\frac{2x}{7} + \frac{x}{2} = \frac{3x}{4} + 1$.

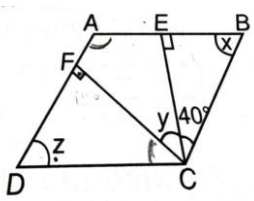
(a) Only Statement – 1 (b) Only Statement – 2

(c) Both Statement – 1 and Statement – 2 (d) Neither Statement – 1 nor Statement - 2

4. Four angles of a quadrilateral are in the ratio 3 : 7 : 6 : 4. The sum of the greatest and the smallest angle is _____.

(a) 120° (b) 70° (c) 180° (d) 95°

5. ABCD is a parallelogram. Find the angles x, y and z respectively in the given figure.



(a) 40°, 50°, 60° (b) 60°, 60°, 60°

(c) 50°, 50°, 50° (d) 60°, 70°, 70°

6. A die is thrown. The probability of getting an odd prime number is _____.

(a) $\frac{2}{3}$ (b) $\frac{1}{3}$ (c) $\frac{1}{7}$ (d) $\frac{1}{5}$

7. In a survey of 500 students, it was found that 380 like cricket while rest dislike it. From these students, one is chosen at random. The probability that the chosen student dislike cricket is _____.

(a) $\frac{19}{25}$ (b) $\frac{6}{25}$ (c) $\frac{3}{25}$ (d) $\frac{6}{35}$

8. The value of $\sqrt{610 + \sqrt{221 + \sqrt{169}}}$ is _____.

(a) 25 (b) 20 (c) 18 (d) 12

9. If $\sqrt{2 + \sqrt{x}} = 3$, then x = _____.

(a) 1 (b) $\sqrt{7}$ (c) 7 (d) 49

10. What should be added to 2714 to make the sum a perfect cube?

(a) 30 (b) 128 (c) 15 (d) None of these

11. A room is in the form of a cube whose volume is 1728000 m^3. Find the length of side of the room.

(a) 110 m (b) 140 m (c) 120 m (d) 190 m

12. A number x is 52% of the another number y. If the sum of these two numbers is 57% of 800, then y is equal to _____.

(a) 300 (b) 512 (c) 156 (d) 148

13. A T.V. worth Rs. 7200 is offered for sale at Rs. 4800. What percent discount is offered during the sale?

(a) (98/3)% (b) (100/3)% (c) (46/3)% (d) (77/3)%

14. If $x^2 + \frac{1}{x^2} = 7$, then find the value of $x + \frac{1}{x}$.

(a) 3 (b) $\sqrt{53}$ (c) $\sqrt{61}$ (d) $\sqrt{63}$

15. Find the value of $(4x^2 + 3y)(9y^2 + 4x)$ at x = 1, y = −2.

(a) −80 (b) 80 (c) 70 (d) −70

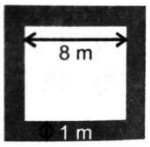
16. The volume of a cuboid is 440 cm^3 and the area of its base is 88 cm^2. Find its height.

(a) 5 cm (b) 11 cm (c) 4 cm (d) 8 cm

17. A square garden measuring each side 8 m is surrounded by a 1 m wide path. What is the area of the path?

(a) 8 m^2 (b) 9 m^2

(c) 28 m^2 (d) 36 m^2



18. When simplified, $(x^{-1} + y^{-1})^{-1}$ is equal to _____.

(a) x + y (b) $\frac{xy}{x+y}$ (c) x y (d) $\frac{1}{xy}$

19. Find the value of x, if $[3^{2x-2} + 54] \div 15 = 9$.

(a) 5 (b) 7 (c) 3 (d) 4

20. 56 men can do a piece of work in 42 days. How many men will do the same work in 14 days?

(a) 140 (b) 170 (c) 168 (d) 132

21. A shopkeeper has just enough money to buy 52 cycles worth Rs. 525 each. If each cycle were to cost Rs. 21 more, then number of cycles, he will be able to buy with that amount of money, is _____.

(a) 40 (b) 30 (c) 50 (d) 20

22. The factors of $6x^2 + 11x + 3$ are _____.

(a) (x + 3) (2x + 1) (b) (2x + 1) (3x + 1)

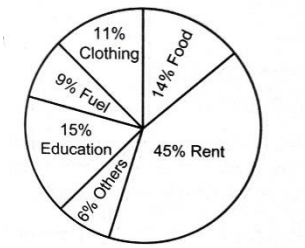
(c) (2x + 3) (3x + 1) (d) (3x + 2) (x + 3)

23. Factors of $81 - (x + y)^2$ are _____.

(a) $(3 - x + y)(3 - x - y)$ (b) $(9 + x + y)(9 - x - y)$

(c) $(9 - x + y)(9 + x - y)$ (d) $(3 - x + y)(9 - x + y)$

24. The given pie chart shows the spending of a family on various heads during a month. Study the graph and answer the following question.



If the total income of the family is Rs. 25000, then the amount spent on food and rent together is ___.

(a) Rs. 17250 (b) Rs. 14750 (c) Rs. 11250 (d) Rs. 8500

25. If 12.5% of 192 = 50% of x, then x =

(a) 45 (b) 25 (c) 48 (d) 92

Section – II
SCIENCE

26. Which of the following is /are incorrect statement (s) regarding manure?

(i) Manure enhances the water holding capacity of the soil.
(ii) Manure is nutrient specific i.e., supply a particular desired nutrient.
(iii) Manure decreases the number of friendly microbes.
(iv) Manure improves the texture of the soil.
(v) Manure is prepared by the decomposition of dead plant and animal matter

(a) (i), (iii) and (v) only
(b) (v) only
(c) (ii), (iii), (iv) and (v) only
(d) (ii) and (iii) only

27. Study the following table and select the correct option for P, Q, R and S.

Diseases	Causative organism	Mode of transmission
Chicken-pox	Virus	P
Q	Bacterium	Water/Food
Malaria	R	Mosquito
S	Virus	Water

(a) P-Air/contact; Q-Cholera; R-Protozoan; S-Polio
(b) P-Mosquito; Q-Measles; R-Fungi; S-Polio
(c) P-Water; Q-Polio; R-Protozoan; S-Hepatitis B
(d) P-Air; Q-Typhoid; R-Fungi; S-Measles

28. Match column I with column II and mark the correct option from the given codes.

Column I	Column II
(a) Polyester	(i) Prepared by using wood pulp
(b) Teflon	(ii) used for making parachute and stockings
(c) Rayon	(iii) Used for making non-stick cookwares
(d) Nylon	(iv) Fabrics do not wrinkle easily

(A) (a) – (iii), (b) – (iv) , (c) – (i), d – (ii)
(B) (a) – (iv), (b) – (iii), (c) – (i), d – (ii)
(C) (a) – (iv), (b) – (iii), (c) – (ii), d – (i)
(D) (a) – (i), (b) – (ii), (c) – (iii), d – (iv)

29. Which of the following reactions are possible?

(i) $Mg + CuSO_4 \rightarrow MgSO_4 + Cu$

(ii) $Ca + MgSO_4 \rightarrow CaSO_4 + Mg$

(iii) $Cu + ZnSO_4 \rightarrow CuSO_4 + Zn$

(iv) $Fe + MgSO_4 \rightarrow FeSO_4 + Mg$

(a) (iii) and (iv) only (b) (i) and (iv) only

(c) (ii) and (iii) only (d) (i) and (ii) only

30. Read the given passage and fill in the blanks by selecting an appropriate option.

The process of conversion of wood into coal is called i . There are three main varieties of coal which vary in their carbon content. ii has upto 96 per cent of carbon, iii has about 65 percent of carbon while iv has about 38 percent carbon.

	(i)	(ii)	(iii)	(iv)
A	Destructive distillation	Lignite	Anthracite	Bituminous coal
B	Carbonisation	Anthracite	Lignite	Bituminous coal
C	Carbonisation	Anthracite	Bituminous coal	Lignite
D	Destructive distillation	Bituminous coal	Anthracite	Lignite

31. Which of the following represents an incorrect match?

(A) Coal gas – Methane + Hydrogen

(B) LPG – Propane + Butane

(C) Producer gas – Carbon + Nitrogen

(D) CNG – Compressed methane

32. Read the given statements and select the correct option.

Statement 1: Phosphorus burns in air at room temperature.

Statement 2: It is an example of spontaneous combustion.

(A) both Statements 1 and 2 are true and statement 2 is the correct explanation of statement 1.

(B) both statements 1 and 2 are true but statement 2 is not correct explanation of statement 1.

(C) Statement 1 is true and statement 2 is false.

(D) both statements 1 and 2 are false.

33. In a experiment, 4.5 kg of a fuel was completely burnt. The heat produced was 180,000 kJ. The calorific value of the fuel is

(a) 180,000 kJ (b) 40,000 kJ (c) 40,000 kJ /kg (d) 180,000 kJ/kg

34. Which of the following represents the correct increasing order of calorific value of the given fuels?

(a) Hydrogen < LPG < Biogas < Cow dung cake < coal

(b) Cow dung cake < Biogas < LPG < Coal < Hydrogen

(c) Cow dung cake < Coal < Biogas < LPG < Hydrogen

(d) Hydrogen < Cow dung cake < LPG < Biogas < Coal

35. Refer to the given terms.

(i) RBC (ii) WBC
(iii) Blood (iv) Muscle
(v) Blood vessels (vi) Brain
(vii) Heart (viii) Lung
(ix) Sperm (x) Kidney

Select the option which correctly classifies the given terms into cell, tissue and organ.

	Cell	Tissue	Organ
(A)	(i), (ii), (ix)	(iii), (iv)	(v), (vi), (vii), (viii), (x)
(B)	(i), (ii), (iii), (x)	(iv), (v)	(vi), (vii), (viii), (ix)
(C)	(i), (ii), (iv), (ix)	(iii), (v), (vi)	(vii), (viii), (x)
(D)	(i), (ii), (ix)	(iii), (iv), (v)	(vi), (vii), (viii), (x)

36. Read the given statements and select the option which correctly fill the blanks (i) – (iv).

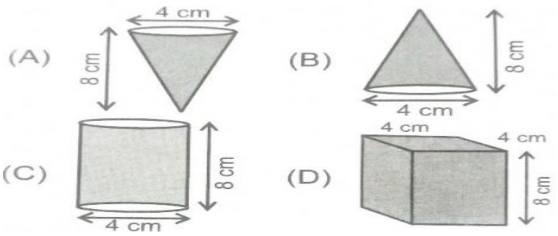
(i) _____ is membrane bound sac filled with fluid.
(ii) _____ is found in cytoplasm and on endoplasmic reticulum.
(iii) _____ is involved in the formation of lysosome and peroxisome.
(iv) _____ is capable of digesting any microorganism that enters the cell.

	(i)	(ii)	(iii)	(iv)
(A)	Ribosome	Lysosome	Golgi apparatus	Vacuole
(B)	Vacuole	Ribosome	Golgi apparatus	Lysosome
(C)	Ribosome	Lysosome	Vacuole	Golgi apparatus
(D)	Lysosome	Ribosome	Vacuole	Golgi apparatus

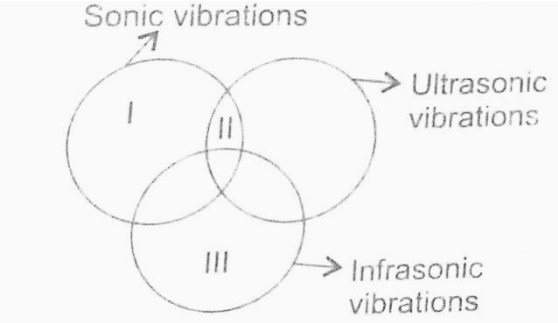
37. A sharp knife enable us to cut through things more easily as compare to a blunt knife because

(a) The pressure exerted is lesser when the same force is used
(b) The pressure exerted is greater when the same force is used
(c) The sharp edge can pass through the material slowly
(d) The sharp edge is not felt when cutting through the material.

38. Which of the following objects exerts the maximum pressure on the floor? (All objects have same mass).

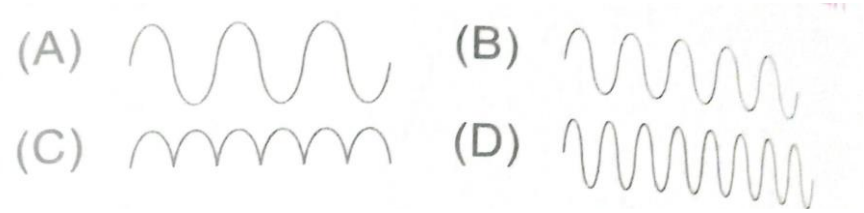


39. Observe the given Venn diagram and select the correct option.



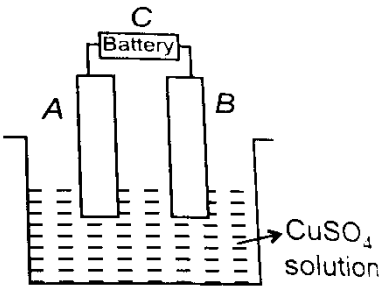
	I	II	III
(A)	Human	Bat	Rhinoceros
(B)	Rhinoceros	Human	Bat
(C)	Bat	Rhinoceros	Human
(D)	Elephant	Bat	Human

40. The sound wave with high frequency can be represented by

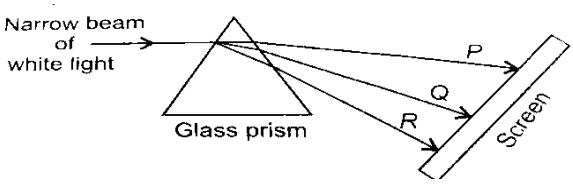


41. In the experiment if A is plated with copper, the anode would be

(a) A
(b) B
(c) C
(d) Data insufficient



42. A narrow beam of white light is passed through a glass prism as shown in the figure.



Which of the following is the correct order of colours emerging from the prism?

	P	Q	R
(A)	Red	Blue	Green
(B)	Red	Green	Blue
(C)	Blue	Green	Red
(D)	Blue	Red	Green

43. India ‘s first artificial satellite is

(a) APPLE (b) KANISHKA (c) ARYABHATTA (D) PSLV

44. Which planet does not have any moons?

(a) Venus (b) Mars (c) Jupiter (d) Saturn

45. Match the column I with column II and select the correct option from the codes given below.

Column I	Column II
(a) Made of ice and rocky material	(i) Orion
(b) Chunks of rocks that have never managed to come together as planet	(ii) Meteros
(c) Shooting stars in the sky	(iii) Asteroids
(d) The hunter	(iv) Comets

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

46. Read the given statements and select the option which correctly fill the blanks.

(i) _____is the first biosphere reserve of India.
(ii) _____ is the number and variety of plants, animals and other organisms that exist.
(iii) Species that no longer exist anywhere on the earth are called _____ species.
(iv) Cutting down forest and using the land for other purpose is known as _____.

	(i)	(ii)	(iii)	(iv)
(A)	Sunderbans Biosphere	Species	Endangered	Afforestation
(B)	Nilgiri Biosphere Reserve	Biodiversity	Extint	Deforestation
(C)	Nilgiri Biosphere Reserve	Species	Extinct	Afforestation
(D)	Sunderbans Biosphere Reserve	Biodiversity	Endangered	Deforestation

47. The dramatic changes in body features associated with puberty are mainly because of secretions of:

A. Thyroxine B. Estrogen C. Adrenaline D. Testosterone

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

48. If the sliding friction between two surfaces is found to be 8 N, then the static friction between these two surfaces is most likely to be:

(a) 5 N (b) 10 N (c) 4 N (d) 2 N

49. Which of the following is a mis–matched pair?

(a) adrenaline : pituitary gland (b) estrogen : ovary
(c) pancreas : insulin (d) testosterone : testis

50. In human males, the testes lie in the scrotal sacs outside the body because it helps in the:

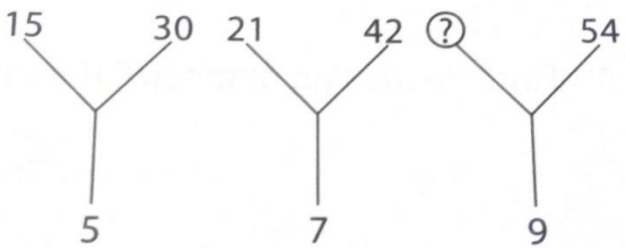
(a) Process of mating (b) formation of sperms
(c) easy transfer of sperms (d) all the above

Section – III
Mental Ability

51. Find the missing term – 0.5, 1.5, 4.5, 13.5, ?

(a) 45.5 (b) 39.5 (c) 30.5 (d) 40.5

52. Find the missing number, if same rule is followed in all the three figures.



(a) 27 (b) 28 (c) 22 (d) 16

53. If there is a certain relationship between the pair of numbers on either side of :: Identify the missing number 8 : 56 :: 9 : ?

(a) 90 (b) 81 (c) 72 (c) 89

54. If HEALTH is written as GSKZDG, then how will NORTH written is that code?

(a) OPSUI (b) FRPML (c) GSQNM (d) TUSPQ

55. In a certain code, OVER is written as $ # % * and VIST is written as # + x -. How is SORE written in that code?

(a) +$*% (b) ×*$% (c) %×$* (d) ×$*%

56. Pointing towards Neha, Dhawal says, "This girl is the daughter of only child of my father". What is the relation of Dhawal's wife to Neha?

(a) Daughter (b) Ant (c) Mother (d) Sister

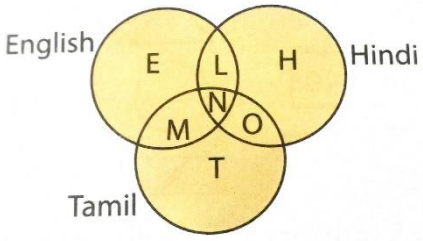
57. Vipul walks 20 metres towards North. He then turns left and walk 40 metres. He again turns left and walk 20 metres. Further, he moves 20 metres after turning to the right. How far is Vipul from his original position?

(a) 20 m (b) 30 m (c) 60 m (d) 50 m

58. It is 3 o'clock in a watch. If the minute hand points towards the North-East, then the hour hand will point towards the_____.

(a) South (b) South-west (c) North – West (d) South - East

59. Study the diagram and identify the people who can speak only one language



(a) L + M + O (b) T + H + E (c) T (d) E

60. If all the vowels are removed after reversing the English alphabetical series, then which will be the 8th letter from the right end?

(a) L (b) H (c) K (d) J

61. Dilip's position from the left in a row of students is 10th and Jagdish's position is 20th from the right. Both of them interchange their positions and Jagdish becomes 23rd from the right. How many students are there in the row?

(a) 33 (b) 44 (c) 32 (d) 42

62. If A denotes ×, B denotes ÷, C denotes + and D denotes - , then 16 C 24 B 8 D 6 B 2 A 3 = ?

(a) $\frac{13}{6}$ (b) 10 (c) $14\frac{1}{2}$ (d) $-\frac{1}{6}$

63. Select the correct set of symbols which will fit in the blank spaces of 5_0_3_5 = 20.

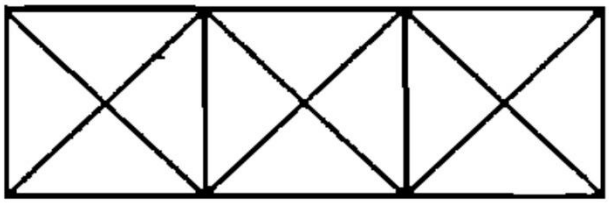
(a) ×,×,× (b) - , +, × (c) ×, + , × (d) +, - , ×

64. If – denotes ÷, + denotes ×, ÷ denotes - , × denotes +, then which of the following equations is correct?

(a) 52 ÷ 4 + 5 × 8 – 2 = 36 (b) 43 × 7 ÷ 5 + 4 – 8 = 25

(c) 36 × 4 – 12 + 5 ÷ 3 = 420 (d) 36 – 12 × 6 ÷ 3 + 4 = 60

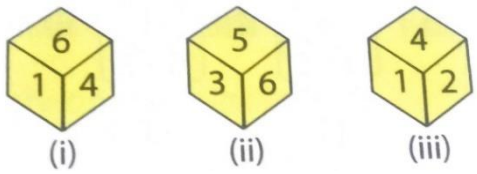
65. Count the number of triangle and squares in the given figure.



(a) 28 triangles, 3 squares (b) 24 triangles, 5 squares

(c) 28 triangles, 5 squares (d) 24 triangles, 3 squares

66. Three positions of a dice are given. Based on them find out which number is opposite the number 2 in the given dice.



(a) 6 (b) 5 (c) 3 (d) 1

67. Identify the odd one out.

(a) 343 (b) 121 (c) 125 (d) 729

68. Choose the figure which is different from the others.



69. If a certain code language, 'men are very busy' is written as '1234', 'busy persons need encouragement' is written as '4567', 'encouragement is very important is written as '3589' and 'important persons are rare' is written as '2680', then how will 'encouragement' be written in that language?

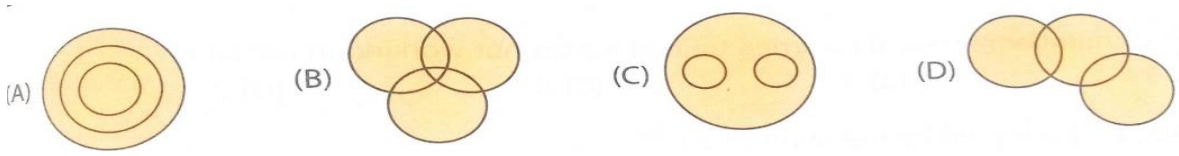
(a) 5 (b) 6 (c) 8 (d) 9

70. Priyanshu walked 8 m in East, then he turned right and walked 3 m. Again he turned to the right walked 12 m. How far is he now from the starting point?

(a) 20 m (b) 4 m (c) 5 m (d) 23 m

71. Which of the following diagrams indicates the best relation amongst the following?

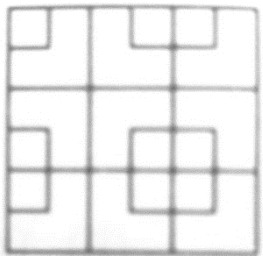
Science, Physics, Chemistry



72. 1st October is Sunday, then 1st November will be_____.

(a) Monday (b) Tuesday (c) Wednesday (d) Thursday

73. How many squares are there in the given figure?

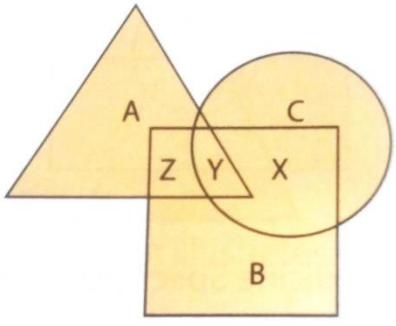


(a) 24 (b) 26 (c) 20 (d) None of these

74. Pointing to a woman in a photograph, a man said, "She is the only daughter of the only daughter of my brother-in-law's father". How is the woman related to the man?

(a) Wife (b) Mother (c) Daughter (d) Niece

75. In the given figure, square represents doctors, triangle represents ladies and circle represents professors. By which letter the ladies who are both doctors and professors represented?



(a) X (b) Y (c) Z (d) A