



INSTRUCTIONS:

- 1. This Questions paper contains 10 printed pages and 90 questions. All questions are compulsory. Please ensure that the question Paper you have received contains all questions and pages. If you find some mistake like missing questions or pages then contact the invigilator immediately.
- 2. The Question Paper contains 25 questions of Mathematics, 45 questions of Science and 20 questions of Mental Ability.
- 3. All questions are straight objective type questions and each carries 4 options for their answers out of which only one is correct.
- 4. Each Question carries 4 Marks.
 - There is **NO NEGATIVE** Marking.
 - 0 marks will be awarded for an unattempted question.
- 5. You have to indicate your response by darkening the appropriate bubble on the OMR sheet provided.
- 6. Use only HB pencil or Black/Blue Ball Pen for darkening the bubble(s).
- 7. Use of calculator, Blank Paper, Log Table, Slide Rule & Mobile is not allowed. If you are carrying any of these, then keep them at a place specified by invigilator at your own responsibility.

9th Moving 10th

MATHEMATICS

- Q1. N is a three-digit number. It exceeds the number formed by reversing the digits by 792. Its hundreds digit can
 - (a) 9
- (b) 8

- (c) Either 8 or 9
- (d) None of these
- If $a = \sqrt{6} \sqrt{3}$, $b = \sqrt{3} \sqrt{2}$ and $c = \sqrt{2} \sqrt{6}$, then find the value of $a^3 + b^3 + c^3 2abc$. Q2.
 - a) $3\sqrt{2} 5\sqrt{3} \sqrt{6}$ b) $3\sqrt{2} 5\sqrt{3} \sqrt{6}$ c) $3\sqrt{2} 4\sqrt{3} + \sqrt{6}$ d) $3\sqrt{2} + 4\sqrt{3} + \sqrt{6}$

- Q3. In a class, 45% of the students drink pulpy orange and 90% of the remaining students drink maaza. No student drinks both maaza and pulpy orange. Then the percentage of the students of the class who drink neither maaza nor pulpy orange, is
 - (a) 4.5%
- (b) 6.5%
- (c) 7.5%
- (d) 5.5%
- A trader claims to sell his goods at cost price. But he gives only 900 g for every one kg. Then his profit Q4.
 - (a) $11\frac{1}{9}\%$
- (b) $9\frac{1}{11}\%$
- (c) 10%

- $\sqrt{\sqrt{63} + \sqrt{56}}$ is equal to Q5.
 - a) $\sqrt[4]{7} (\sqrt{3} + \sqrt{5})$ b) $\sqrt[4]{7} (\sqrt{3} + 1)$

- Factors of $(x^2 2ax + a^2 b^2)$ is Q6.
 - (a) [x (a + b)][x (a + b)]

(b) [x + (a + b)][x - (a + b)]

(c) [x-(a-b)][x-(a+b)]

- (d) [x+(a-b)][x-(a-b)]
- The greatest among the following is Q7.
 - (i) ³√1.728
- (iii) $\left(\frac{1}{2}\right)^{-2}$

(a) i

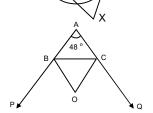
- Q8. The average of A & B is 25, B & C is 28, and C & A is 21, then the average of A, B & C is (approximately)
 - (a) 23
- (b) 27
- (c) 25
- (d) 26
- Q9. RS is a diameter of circle as shown in the diagram. X is a point lying outside the circle. Then ∠RXS is



- (b) Greater than 90°
- (c) Lesser than 90°
- (d) Can not be determined from given data
- Q10. In the given figure BO and CO are the bisectors of the exterior angles of B and C. then ∠BOC is



- (b) 56°
- (c) 66°
- (d) 76°



- Amar and Bhavan have a certain amount with them. If Bhavan gives Rs 20 to Amar, he will have half the amount that Amar has now. If Amar gives Rs 40 to Bhavan, he will have half the amount that Bhavan has now. Find the amount Bhavan has.
- c) 60
- d) 80
- Q12. If x < y < 2x; the median and the mean of x, y and 2x are 27 and 33 respectively, then find the mean of x and
 - a) 23.5
- b) 24
- c) 23
- d) 25.5

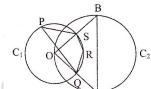
Q13. From the month of August, whose first day is Tuesday, a day is selected. Find the probability that the day selected is not a Tuesday.

a) 5/6
b) 26/31
c) 6/31
d) 27/31

Q14. The probability that in a family of 3 children, there will be at least one boy is

(a) 7/8
(b) 1/8
(c) 1/2
(d) 3/4

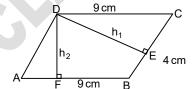
Q15. In the shown figure (not to scale), O is the centre of the circle C, and AB is the



Q15. In the shown figure (not to scale), O is the centre of the circle C, and AB is the diameter of the circle C_2 . Quadrilateral PQRS is inscribed in the circle with centre O. Find \angle QRS.



a) 1/9 b) 1/18 c) 1/12 d) 1/6 Q17. The adjacent sides of a parallelogram are 4 cm and 9 cm. The ratio of its altitudes, i.e. h_1/h_2 is



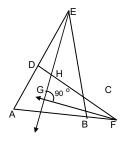
(a) 16:81 (b) 9:4 (c) 2:3 (d) 3:2

numbers on them was a two-digit prime number.

Q18. In the given figure ABCD is a cyclic quadrilateral, \angle DAB = 50° and \angle ABC = 80°. \overrightarrow{EG} and \overrightarrow{FG} are the angle bisectors of \angle DEC and \angle BFC. Find \angle FHG.



- b) 90°
- c) 75°
- d) 105°



- **Q19.** In a triangle, the average of any two sides is 6 cm more than half of the third side. Find area of the triangle (in sq cm).
 - a) $64\sqrt{3}$
- b) $48\sqrt{3}$
- c) $72\sqrt{3}$
- d) $36\sqrt{3}$
- **Q20.** Raman suffered a loss of 10% by selling an article. Had he sold it at Rs 180 more, he would have made a profit of 2%. Find his cost price (in Rs).
 - a) 1350
- b) 1800
- c) 1650
- d) 1500
- **Q21.** In an election, there were only two contestants P and Q. 14% of the total votes polled were invalid. The number of valid votes secured by P was 15% more than that secured by Q. What percentage of the total votes were polled in favour of Q?
 - a) 48%
- b) 37.5%
- c) 40%
- d) 31 5%
- Q22. Rs 585 is to be divided among A, B and C in the ratio 3 : 4 : 6. By mistake, it is divided in the ratio $\frac{1}{6}$: $\frac{1}{4}$: $\frac{1}{3}$.

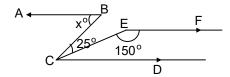
Find the loss incurred to C due to this mistake (in Rs).

- a) 10
- b) 15
- c) 20
- d) 25
- **Q23.** Two chords AB and CD of a circle cut each other when produced outside the circle at P, AD and BC are joined. If \angle PAD = 30° and \angle CPA = 45°. Find \angle CBP



- a) 105°
- b) 115°
- c) 135°
- d) None
- **Q24.** At the rate of m metres per s seconds, how many metres does a cyclist travel in x minutes?
 - a) $\frac{m}{sx}$
- b) $\frac{60 \,\mathrm{m}\,\mathrm{x}}{\mathrm{s}}$
- c) $\frac{60 \, \text{m}}{\text{s}}$
- d) $\frac{60 \text{ ms}}{x}$

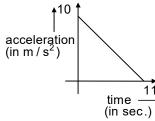
- **Q25.** In the figure find x if AB | CD | EF.
 - a) 45°
- b) 55°
- c) 60°
- d) 70°



SCIENCE

PHYSICS

- Q26. A 150 m long train is moving with a uniform velocity of 45 km/h . The time taken by the train to cross a bridge of length 850 meters is
 - (a) 56 sec
- (b) 68 sec
- (c) 80 sec
- (d) 92 sec
- **Q27.** A body moving with an initial velocity of 5 m/s accelerates at 2 m/s 2 . Its velocity after 10 seconds is
 - (a) 20 m/s
- (b) 25 m/s
- (c) 5 m/s
- (d) 22.5 m/s
- **Q28.** A particle starts from rest. Its acceleration (a) versus time (t) is as shown in the figure. The maximum speed of the particle will be
 - (a) 110 m/s
- (b) 55 m/s
- (c) 550 m/s
- (d) 660 m/s



- Q29. The ratio of magnitudes of average speed to average velocity, is
 - (a) Always less than one

(b) Always equal to one

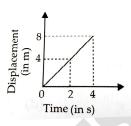
(c) Always more than one

- (d) Equal to or more than one
- **Q30.** Two wave pulses travel in opposite directions on a string and approach each other. The shape of one pulse is inverted with respect to the other.
 - (a) The pulse will collide with each other and vanish after collision
 - (b) The pulses will reflect each other that is pulse going towards right will finally move towards left and vice versa.
 - (c) The pulses will pass through each other but their shapes will be modified.
 - (d) The pulse will pass through each other without any change.
- **Q31.** An astronaut with all her equipments has a mass of 95 kilograms. How much will she weight on the moon, where the acceleration due to gravity is 1.67 meter per second square?
 - (a) 159 N
- (b) 169 N
- (c) 149 N
- (d) 100 N
- Q32. A force of 2×10^5 N acts on a body of mass 4×10^4 kg at rest for 10 s. The final velocity of the body is
 - (a) 5 m s^{-1}
- (b) 50 ms^{-1}
- (c) 150 m s^{-1}
- (d) 250 m s^{-1}
- Q33. A body is moving in a straight line with in increasing speed. The unbalanced force acts
 - (a) In the direction of motion of the body
 - (b) In a direction opposite to the direction of motion
 - (c) In a direction perpendicular to the direction of motion of the body
 - (d) None of these

Q34. Displacement-time graph of an object of mass 2 kg is shown in figure.

The force required to move the object for first four seconds is

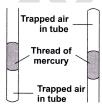
- (a) 0
- (b) 4 N
- (c) 2 N
- (d) 8 N



Q35. A thin tube contains a thread of mercury which traps air at the end of the tube.

The other end of the tube is open to the atmosphere. When the tube is turned slowly upside down, the volume of the trapped air increases. It is because,

- (a) The air gets hotter when the tube is turned upside down
- (b) The atmosphere pushes less when it acts upwards on the mercury
- (c) The pressure of the trapped air is reduced
- (d) The trapped air molecules hit the mercury harder when travelling downwards.



- During a football match, the ball shot towards the goal struck the defender's foot at the speed of 10 ms⁻¹ and Q36. it bounces back at 20 m s⁻¹. If the time of impact was 0.2 sec, and mass of the ball is 1/2 kg, then average force exerted by defender on the ball is
 - (a) 75 N
- (b) 35 N
- (c) 50 N
- (d) 40 N
- Q37. If R is the radius of the earth, the height at which the weight of a body becomes 1/4 its weight on the surface of the earth is
 - (a) 2R
- (b) R

- A stone is dropped form the top of a tower. Its velocity after it has fallen 20 m is Q38.
 - (a) 5 ms^{-1}
- (b) $10 \,\mathrm{ms}^{-1}$
- (c) $15 \,\mathrm{m\,s^{-1}}$
- (d) $20 \,\mathrm{ms}^{-1}$
- Q39. A coin and a feather are dropped together from same height, in vacuum. Then
 - (a) The coin will reach the ground first
- (b) The feather will reach the ground first
- (c) Both will reach the ground at the same time (d) The feather will not fall down
- Q40. If the distance between two bodies becomes 6 times original distance, then the force between them becomes
 - (a) 36 times
- (b) 6 times
- (c) 12 times
- (d) $\frac{1}{36}$ times



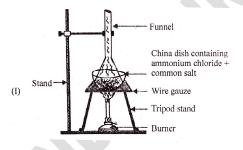
CHEMISTRY

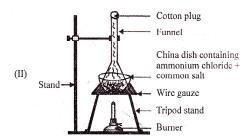
- Q41. Select the one that when used would be considered as best condition for liquefaction of a gas.
 - (a) Increasing the temperature.
 - (b) Decreasing the pressure
 - (c) Increasing the pressure and decreasing the temperature
 - (d) Decreasing the pressure and increasing the temperature.
- Q42. The process of change of liquid state into gaseous state at constant temperature is known as
 - (a) Boiling
- (b) Melting
- (c) Fusion
- (d) Evaporation

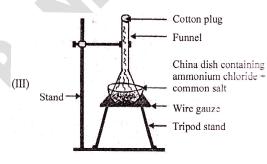
- Q43. Which of the following will yield a mixture?
 - (a) Crushing of marble tile
 - (b) Breaking of ice-cubes
 - (c) Addition of sodium metal to water in a china dish
 - (d) Agitating a detergent with water in a washing machine.
- Q44. A few substances are arranged in the increasing order of 'forces of attraction' between their particles. Which one of the following represents a correct arrangement?

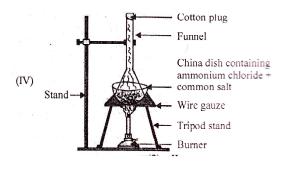
 - (a) Water < air < wind (b) Air < sugar < oil
- (c) Oxygen < water < sugar
- (d) Salt < juice < air
- Q45. A mixture of common salt, sulphur, sand and iron filings is shaken with carbon disulphide and filtered through a filter paper. The filtrate is evaporated to dryness in a china dish. What will be left in the dish after evaporation?
 - (a) Sand
- (b) Sulphur
- (c) Iron filings
- (d) Common salt

- Q46. Chemical change is always accompanied by
 - (i) Production of sound
 - (iii) Change in mass
 - (a) (i) (ii) & (iii)
- (b) (ii) & (iv)
- (ii) Heat and light
- (iv) Change in colour
- (c) (i) only
- (d) (i), (ii) & (iv)
- Q47. Which of the following is the correct arrangement for separation a mixture of common salt and ammonium chloride?









(a) I

(b) II

(c) III

(d) IV

	Column I		Colum I
(A)	Evaporation	(p)	Solid
(B)	Sponge	(q)	Diffusion
(C)	Spreading of virus on sneezing	(r)	Liquid into vapours above room temperature
(D)	Fusion	(s)	Liquid into vapours
(E)	Boiling	(t)	Melting

- (a) A (s); B-(q); C-(p); D-(t); E-(r)
- (b) A-(s); B-(p); C-(q); D-(t); E-(r)
- (c) A-(p); B-(s); C-(q); D- (t); E-(r)
- (d) A-(s); B-(p); C-(q); D-(r); E-(t)
- Q49. Consider the following statements:
 - (1) Colloids shows the property of tyndall effect
 - (2) We can regard solutions as homogeneous mixture.

Which of these statement (s) is /are correct?

- (a) (a) only
- (b) (2) only
- (c) Both (1) and (2)
- (d) Neither (1) nor (2)

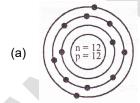
- Q50. Neon is
 - (a) Monoatomic
- (b) Diatomic
- (c) Triatomic
- (d) Tetra atomic

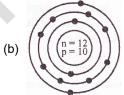
- Q51. The charge on an electron is
 - (a) 1.6×10^{-6} coulombs (b) 1.6×10^{-20} coulombs (c) 1.6×10^{-19} coulombs
- (d) 1.6×10^{-16} coulombs

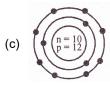
- Q52. Which of the following correctly represents 360 g of water
 - (i) 2 moles of H₂O

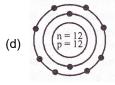
- (ii) 20 moles of water
- (iii) 6.022×10^{23} molecules of water
- (iv) 1.2044×10^{25} molecules of water

- (a) (i)
- (b) (i) and (iv)
- (c) (ii) and (iii)
- (d) (ii) and (iv)
- Q53. In the Thomson's model of atom, which of the following statements are correct?
 - (i) The mass of the atom is assumed to be uniformly distributed over the atom.
 - (ii) The positive charge is assumed to be uniformly distributed over the atom.
 - (iii) The electrons are uniformly distributed in the positively charged sphere
 - (a) (i), (ii) and (iii)
- (b) (i) and (iii)
- (c) (i) and (iv)
- (d) (i), (iii) and (v)
- Identify the Mg²⁺ ion from the fig. where, n and p represent the number of neutrons and protons respectively Q54.









- No. of valence electrons in an element $^{14}_{7}\,\mathrm{X}$ is: Q55.
 - (a) 5

(b) 1

- (c)7
- (d) 3

BIOLOGY

- Q56. The undefined nuclear region in a bacteria is called
 - (a) Nucleoid
- (b) Nucleus
- (c) Chromosome
- (d) Nucleolus
- Q57. The SER helps in building the cell membrane. This process is called
 - (a) Protein synthesis

(b) Membrane abiogenesis

(c) Membrane biogenesis

- (d) Glycogenesis
- The organelles that contain their own genetic material are Q58.
 - (a) Mitochondria, Vacuoles

(b) Plastids, Golgi complex

(c) Mitochondria, Plastids

- (d) Ribosomes, Nucleolus
- Q59. Cardiac muscle cells are cylindrical, branched,
 - (a) Uninucleate and voluntary
- (b) Uninucleate and involuntary
- (c) Multinucleate and voluntary
- (d) Multinucleate and involuntary
- Q60. While doing work and running, you move your organs like hands, legs etc. Which among the following is
 - (a) Smooth muscles contract and pull the ligament to move the bones.
 - (b) Smooth muscles contract and pull the tendons to move the bones.
 - (c) Skeletal muscles contract and pull the ligament to move the bones.
 - (d) Skeletal muscles contract and pull the tendon to move the bones.
- Q61. Find out the incorrect sentence
 - (a) Parenchymatous tissues have intercellular spaces
 - (b) Collenchymatous tissues are irregularly thickened at corners.
 - (c) Apical and intercalary meristems are permanent tissues.
 - (d) Meristematic tissues, in its early stage, lack vacuoles.
- Q62. Match Column I with Column II and select the correct answer using the codes given below the columns.

	Column I		Colum I
(A)	Cell wall	(p)	Workbench for protein synthesis
(B)	Cell membrane	(q)	External support and protection, made up of cellulose
(C)	Nucleus	(r)	Encloses cytoplasm, osmosis
(D)	Ribosomes	(s)	Location of chromatin

- (a) A (q); B (r); C-(s); D- (p)
- (b) A (r); B -(q); C (s); D- (p)
- (c) A (r); B (q); C-(s); D- (s)
- (d) A (r); B-(p); C-(g); D-(s)
- Q63. Consider the following statements:
 - (1) Robert Hooke discovered the nucleus in the cell.
 - (2) Nucleus and mitochondria are surrounded by a double membrane.

Which of these statement(s) is/are correct?

- (a) (1) only
- (b) (2) only
- (c) Both (1) and (2)
- (d) Neither (1) nor (2)
- Q64. The entire body surface and cavities inside the body are lined by
 - (a) Muscle tissue
- (b) Epithelial tissue
- (c) Connective tissue
- (d) Nervous tissue

- Q65. Consider the following statements:
 - (1) Lysosomes are called as 'suicide bags' of a cell.
 - (2) The folds of inner membrane of mitochondria increase the area for ATP generating chemical reactions.
 - (3) Lysosomes are produced by endoplasmic reticulum.
 - (4) Chlamydomonas is a multicellular organism.

Which of these statement(s) is/are correct? (a) (1) and (2)

- (b) (1), (3) and (4)
- (c) (2), (3) and (4)
- (d) All are correct

- Q66. The living cells providing tensile strength are
 - (a) Parenchyma
- (b) Collenchyma
- (c) Sclerenchyma
- (d) Sclerotic cells



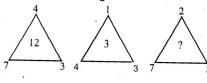
- Q67. Average life span of human R.B.C. is
 - (a) 100 days
- (b) 90 days
- (c) 120 days
- (d) 80 days

- Q68. The fibrous tissue which connects the two bone is
 - (a) Connective tissue
- (b) Tendon
- (c) Ligament
- (d) Adipose tissue

- Q69. The girth of the stem or root increases due to
 - (a) Apical meristem
- (b) Intercalary meristem (c) Lateral meristem
- (d) None
- Q70. The thickening of the walls of the sclerenchyma tissues is due to
 - (a) Suberin
- (b) Magnesium
- (c) Lignin
- (d) Calcium

MENTAL ABILITY

Q71. From among the four alternatives given below, which number replaces the question mark?



(a) 9

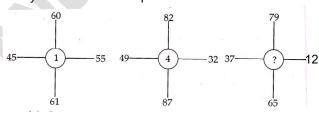
- (b) 10
- (c) 18
- (d) 23
- Q72. From among the four alternative given below, which letter replaces in the given figure the question mark?



(a) A

- (b) B
- (c) S
- (d) Y
- Q73. Choose the correct mirror-image most closely resembles the word **source**, from the four given alternatives.
 - ecruos(a)
- SOUTCE (d)
- SOUCTE(D)
- (d)e cruos

Q74. Identify the number in the position of '?'.



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

(d) 6

Q75.	will be completed?	·	·	very 10 days, in how many days work				
	(a) 55.66	(b) 56.44	(c) 56.66	(d) 54.66				
Q76.	is between A and E, C	is immediate right to E a tatement is definitely true	row facing south but not necessarily in the same order. Only B and D is immediate left to A. On the bais of above information, ue? b) B is to the right of E d) D is third to the left of E					
Q77.	E is not at end of any ro D is second to the left of	ow of F s sitting diagonally oppos column? nd B and C	o rows, three persons are site to D (b) A and F; D and E; a (d) A and D; B and E; a	nd B and C				
Q78.		3 and D taken together.		ether. The sum of incomes of A and C as much as the sum of the incomes of (d) D				
Q79.	A cube whose two adjacubes are not coloured a) 24		is cut into 64 identical s	mall cubes. How many of those small d) 48				
Q80.	Rohit, Kunal, Ashish an near it. Two studies in Sciences and Sceince. from the school and is the school. Neither of t	class IV, one in class \ One is good at all four good at mathematics or	s of a school. Three of the soft of and one in class VI. The subjects while another only while Kunal is weak in the soft one will be soft on the soft one will be soft one wi	nem stay far from the school and one hey study Hindi, Mathematics, Social is weak in all of these. Rohit stay far n mathematics only and stay close to no is good at all the subjects study in (d) Ashish				
Q81.	111, 331, 482, 551, 263		•					
Q82.	(a) 263 Z J M D E D 3 6 ?	(b) 331	(c) 383	(d) 551				
	(a) 6	(b) 8	(c) 7	(d) 9				
Q83.		92/22 = 7 then what is 28		1) 0				
	a) 5	b) 6	c) 4	d) 9				
Q84.	A boat starts with the speed of 1 km per hour. After every 1 km, the speed of boat becomes twice. How much will be the average speed of the boat at the end of journey of 2.5 km?							
	(a) $\frac{2.5}{1.5125}$	(b) $\frac{2.5}{1.75}$	(c) $\frac{2.5}{1.625}$	(d) $\frac{2.5}{1.50}$				

Directions for Question No.85: Answer the question based on the sequence of number given below. 3823728337828378737873827

Q85. How many time 8 comes between 2 and 3?

(a) 2

(b) 3

(c)4

(d)5

Q86. Find the missing character







a) 11

b) 2

- c) 10
- d) 13
- Q87. Given that the total cost of 5 erasers, 7 sharpeners and 9 pencils in Rs. 100 and the total cost of 2 erasers 6 sharpeners and 10 pencils is Rs. 80. What is the total cost (in Rs.) of one eraser one sharpener and one pencil?

(a) 10

(b) 15

(c) 20

(d) Data not sufficient

Q88. Renu went to the market between 7 am and 8 am. The angle between the hour-hand and the minute-hand was 90°. She returned home between 7 am and 8 am. Then also the angle between the minute-hand and hour-hand was 90°. At what time (nearest to secon(d) did Renu leave and return home?

(a) 7 h 18 m 35 s and 7 h 51 m 24 s

(b) 7 h 19 m 24 s and 7 h 52 m 14 s

(c) 7 h 20 m 42 s and 7 h 53 m 11 s

- (d) 7 h 21 m 49 s and 7 h 54 m 33 s
- Q89. Sahil is facing north west. He turns 59° clockwise and then he turns 138° anticlockwise, then he again turns 27° anticlockwise and finally he turns 196° clockwise. Which direction is facing now?

(a) South-West

(b) West

(c) South-East

(d) North-East

Q90. Find the next two letters in the given series.

BCEHL??

a) X Y

b) MN

c) QW

d) OP

Answers

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