

# FIITJEE SAMPLE PAPER – 2018

## (Big Bang Edge Test / Talent Recognition Exam)

for students presently in  
**Class 9 (Paper 2)**

Time: 3 Hours (1:45 pm – 4:45 pm)

**Code** **9009**

Maximum Marks: 311

### Instructions:

**Caution: Class, Paper, Code as given above MUST be correctly marked in the answer OMR sheet before attempting the paper. Wrong Class, Paper or Code will give wrong results.**

1. This Question paper consists of 3 sections. All questions will be multiple choice single correct out of four choices with marking scheme in table below:

Section – I, II & III (PCMB)	Question no.	Marking Scheme for each question	
		correct answer	wrong answer
PHYSICS	1 to 3, 10 to 11, 66	+3	-1
	4 to 8, 12 to 14, 67, 77	+4	-1
	9, 15, 68, 78	+5	-2
CHEMISTRY	16 to 18, 25 to 26, 69	+3	-1
	19 to 23, 27 to 29, 70 to 71	+4	-1
	24, 30, 72 to 73	+5	-2
MATHEMATICS	31 to 33, 40 to 41, 74	+3	-1
	34 to 38, 42 to 44, 75, 79	+4	-1
	39, 45, 76, 80	+5	-2
BIOLOGY	46 to 49, 60 to 61	+3	-1
	50 to 57, 62 to 64	+4	-1
	58 to 59, 65	+5	-2

2. Answers have to be marked on the OMR sheet. The Question Paper contains blank spaces for your rough work. No additional sheets will be provided for rough work.
3. Blank papers, clip boards, log tables, slide rule, calculator, cellular phones, pagers and electronic devices, in any form, are not allowed.
4. **Before attempting paper write your OMR Answer Sheet No., Registration Number, Name and Test Centre** in the space provided at the bottom of this sheet.
5. **See method of marking of bobbles of the back of cover page for question no. 66 to 80.**

**Note:** Please check this Question Paper contains all **80** questions in serial order. If not so, exchange for the correct Question Paper.

**OMR Answer Sheet No. :** \_\_\_\_\_

**Registration Number :** \_\_\_\_\_

**Name of the Candidate :** \_\_\_\_\_

**Test Centre :** \_\_\_\_\_

For questions **66 to 76**

Numerical based questions single digit answer 0 to 9

**Example 1:**

If answer is 6.

Correct method:

- 0    1    2    3    4    5    6    7    8    9

**Example 2:**

If answer is 2.

Correct method:

- 0    1    2    3    4    5    6    7    8    9

For questions **77 to 80**

Numerical answer type questions with answer XXXXX. XX

Correct bubbles to be darkened below the boxes for your answer.

If answer is 348.4 / 251.37 / 213

**Correct Method :**

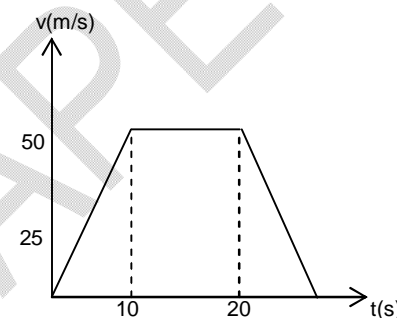
		3	4	8	.	4	0
		2	5	1	.	3	7
		2	1	3	.	0	0

**Wrong Method :**

	3	4	8		.	4	
3	4	8			.		4
		3	4	8	.		4
	3		4	8	.	4	
	2		5	1	.	3	7
		2	1	3	.		

**Section-I****Science & Mathematics****Physics****(Part - A)****Straight Objective Type**

Question numbers 1 to 15 are 15 multiple choice questions. Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE** is correct.

- A car travels a distance  $S$  on a straight road in two hours and then returns to the starting point in the next three hours. Its average velocity is  
 (A)  $S/5$  (B)  $2S/5$   
 (C)  $S/2 + S/3$  (D) Zero
  - Figure shows velocity time graph for a particle in rectilinear motion. Find the displacement suffered by the object in first twenty seconds  
 (A) 500 m  
 (B) 750 m  
 (C) 650 m  
 (D) 1000 m
- 
- Which of the following statements is False? No net force act on:  
 (A) A rain drop falling vertically with a constant speed  
 (B) A car moving with uniform velocity on a rough road  
 (C) A car moving with uniform speed on a circular track  
 (D) A cork floating on water surface
  - If the normal force is doubled, then coefficient of friction is  
 (A) halved (B) tripled  
 (C) doubled (D) not changed
  - An object moving at 13 m/s slows uniformly at the rate of 2 m/s each second for a time of 6 sec. The average speed during the 6 sec. is  
 (A) 7 m/s (B) 6.5 m/s  
 (C) 7.5 m/s (D) 8.0 m/s
  - A billiard ball moving with a speed of 5 m/s collides with an identical ball, originally at rest. If the ball stops dead after collision, then the second ball will move forward with a speed of  
 (A) 10 m/s (B) 5 m/s  
 (C) 2.5 m/s (D) 1.0 m/s

**Space for Rough Work**

7. On decreasing the height of a satellite, its time period will  
(A) decrease (B) increase  
(C) remain unchanged (D) none of these
8. When a planet moves around the sun, its  
(A) areal velocity is constant (B) linear velocity is constant  
(C) angular velocity is constant (D) all the velocities are constant
9. The orbital velocity of an artificial satellite in a circular orbit just above the centre's surface is  $v$ . For a satellite orbiting at an altitude of half of the earth's radius, the orbital velocity is  
(A)  $3v/2$  (B)  $\sqrt{3/2}v$   
(C)  $\sqrt{2/3}v$  (D)  $(2/3)v$
10. A force of 5 N acts on a body of weight 9.8 N. What is the acceleration produced in  $\text{m/s}^2$ .  
(A) 0.51 (B) 1.96  
(C) 5.00 (D) 49.00
11. Weightlessness experienced while orbiting the earth, in spaceships, is the result of  
(A) acceleration (B) inertia  
(C) zero gravity (D) centre of gravity
12. A 1000 Kg aeroplane moves in straight flight with a constant velocity. The force of air friction is 1800 N. The net force on the plane is  
(A) zero (B) 1800 N  
(C) 9000 N (D) 3600 N
13. A body starts from rest and moves with a uniform acceleration then the ratio of distance covered by it during 5<sup>th</sup> second of its motion to the distance travelled in 5 second of motion is  
(A)  $\frac{16}{25}$  (B)  $\frac{9}{16}$   
(C)  $\frac{25}{9}$  (D)  $\frac{9}{25}$
14. A particle is moving in a straight line with initial velocity  $u$  and uniform acceleration  $f$ . If the sum of the distance covered in  $t^{\text{th}}$  and  $(t + 1)^{\text{th}}$  second is 100 m, then its velocity after  $t$  sec in  $\text{m/s}$  is  
(A) 20 (B) 30  
(C) 50 (D) 80
15. A ball is thrown in the vertically upward direction taking air resistance into account if  $t_1$  is the time of ascent and  $t_2$  the time of descent, how are  $t_1$  and  $t_2$  related to each other?  
(A)  $t_1 = t_2$  (B)  $t_1 > t_2$   
(C)  $t_2 > t_1$  (D) none of these

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Space for Rough Work

**Chemistry****(Part – B)****Straight Objective Type**

Question numbers 16 to 30 are 15 multiple choice questions. Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE** is correct.

16. Which of the following solid contains the strongest interparticle force?  
(A) NaCl (B) KCl  
(C) NaBr (D) KBr
17. Which of the following is a pure substance?  
(A) Vinegar (B) Gypsum  
(C) Steel (D) Formalin
18. The vapour pressure of a liquid depends on  
(A) amount of liquid (B) surface area of liquid  
(C) temperature (D) all are correct
19. Which of the following substance shows the most prominent Tyndall effect?  
(A) Common salt solution (B) Starch solution  
(C) Ferric hydroxide solution (D) Soap solution
20. Which of the following liquid can evaporate easily?  
(A) Water (B) Benzene  
(C) Dimethyl ether (D) Ethyl alcohol
21. Which of the following substance shows the properties of nitrogen?  
(A) Ammonia (B) Nitric acid  
(C) Nitric oxide (D) None of these
22. Which of the following forms a suspension with water?  
(A) Sugar (B) Limestone  
(C) Caustic soda (D) Glucose
23. Which of the following change is called condensation?  
(A) Conversion of ice to water (B) Conversion of water to ice  
(C) Conversion of steam to water (D) Conversion of water to steam
24. The correct statement regarding air is that  
(A) it is a heterogeneous mixture  
(B) its density is uniform  
(C) it displays the properties of oxygen gas  
(D) the mass ratio of its constituent elements remains same throughout

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*Space for Rough Work*

25. Evaporation process is used to separate  
(A) copper sulphate from its aqueous solution  
(B) water from its mixture with acetone  
(C) sulphur from sulphuric acid  
(D) cream from milk
26. Which of the following forms a homogeneous solution with water?  
(A) Ethyl alcohol (B) Glucose  
(C) Hydrochloric acid (D) All are correct
27. Which of the following substance can be stored in container of any volume?  
(A) Kerosene oil (B) Table salt  
(C) Air (D) Ice
28. Which of the following gas can be easily converted to liquid by decreasing temperature and increasing pressure?  
(A)  $H_2$  (B)  $CO_2$   
(C) He (D)  $CH_4$
29. Which of the following mixture can be separated through separating funnel?  
(A) Two miscible liquids (B) Two immiscible liquids  
(C) More than two miscible liquids (D) A mixture of ethyl alcohol, acetone and milk
30. Surface tension is a property of  
(A) oxygen gas (B) air  
(C) water (D) nitrogen gas

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*Space for Rough Work*

**Mathematics****(Part - C)****Straight Objective Type**

Question numbers 31 to 45 are 15 multiple choice questions. Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE** is correct.

31. Which of the following expressions is a polynomial of degree 2?  
 (A)  $(x^3)^2 - 5x^2 + 2$  (B)  $\sqrt{3}y^2 + \sqrt{2}y + 1$   
 (C)  $x + \frac{1}{x} - 3$  (D)  $\sqrt[3]{x^2} + 9$
32. Find the value of a and b if  $\frac{\sqrt{11} - \sqrt{7}}{\sqrt{11} + \sqrt{7}} = a - \sqrt{77}b$   
 (A)  $a = \frac{9}{2}, b = \frac{1}{2}$  (B)  $a = \frac{1}{2}, b = \frac{1}{2}$   
 (C)  $a = \frac{3}{2}, b = \frac{1}{2}$  (D)  $a = 3, b = \frac{9}{2}$
33. The angle which is equal to 5 times its supplement is  
 (A)  $30^\circ$  (B)  $60^\circ$   
 (C)  $45^\circ$  (D)  $150^\circ$
34. ABC is a right triangle such that  $AB = AC$  and bisector of angle C intersects the side AB at D. Then,  
 (A)  $AB + AD = CD$  (B)  $AB + AD = BD + CD$   
 (C)  $AC + AD = BC$  (D)  $AB + AD = BD$
35. If each side of a triangle is doubled, then the ratio of area of the new triangle thus formed and the given triangle is:  
 (A) 2 : 1 (B) 3 : 1  
 (C) 1 : 4 (D) 4 : 1
36. The mirror image of point  $(-2, 3)$  in y-axis is  
 (A)  $(-2, -3)$  (B)  $(-2, 3)$   
 (C)  $(2, -3)$  (D)  $(2, 3)$

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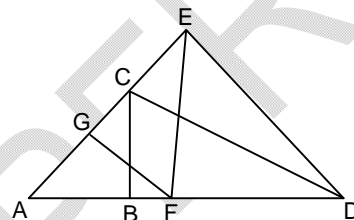
**Space for Rough Work**

37. If  $x + \frac{1}{x} = 3$ , then value of  $x^6 + \frac{1}{x^6}$  is  
 (A) 927 (B) 114  
 (C) 364 (D) 322

38. If  $x = 9 + 4\sqrt{5}$ , then the value of  $\sqrt{x} - \frac{1}{\sqrt{x}}$  is:  
 (A) 2 (B) 6  
 (C) 4 (D) 1

39. In the figure,  $AB = BC = CD = DE = EF = FG = GA$ . Then the measure of  $\angle DAE$  is:

- (A)  $\left(25\frac{5}{7}\right)^\circ$  (B)  $\left(51\frac{3}{7}\right)^\circ$   
 (C)  $\left(25\frac{3}{7}\right)^\circ$  (D)  $\left(57\frac{5}{7}\right)^\circ$



40. The area of an isosceles triangle having base 2 cm and length of one of the equal sides 4 cm is

- (A)  $\sqrt{\frac{15}{2}} \text{ cm}^2$  (B)  $\sqrt{15} \text{ cm}^2$   
 (C)  $4\sqrt{15} \text{ cm}^2$  (D)  $2\sqrt{15} \text{ cm}^2$

41. The number of line segments determined by four NON collinear points is:

- (A) 2 (B) 6  
 (C) 1 (D) 4

42. Evaluate:  $5.\overline{73} + 8.\overline{6}$

- (A)  $\frac{72}{5}$  (B)  $\frac{74}{5}$   
 (C)  $\frac{73}{5}$  (D)  $\frac{76}{5}$

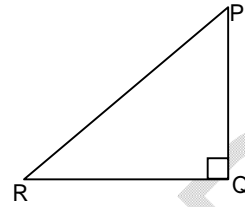
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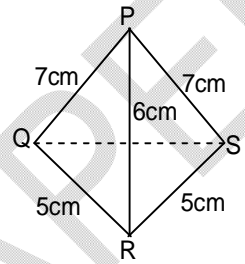


43. If  $p = \sqrt[3]{5}$ ,  $q = \sqrt[5]{3}$ ,  $r = \sqrt[4]{4}$  then the correct relationship is:  
 (A)  $p > q > r$  (B)  $q < r < p$   
 (C)  $r > p > q$  (D) cannot be determined

44. In a right angled triangle PQR,  $\angle PRQ = 2 \angle RPQ$ . Then PQR  
 (A)  $PR = 2QR$   
 (B)  $PR = 3QR$   
 (C)  $PR = \frac{5}{2}QR$   
 (D)  $PR = 4QR$



45. The lengths of four sides and a diagonal of the given kite are indicated in the diagram. If A denotes the area and l the length of the other diagonal, then A and l are respectively:  
 (A)  $12\sqrt{6}, 4\sqrt{6}$   
 (B)  $12\sqrt{6}, 5\sqrt{6}$   
 (C)  $6\sqrt{6}, 4\sqrt{6}$   
 (D)  $6\sqrt{6}, 5\sqrt{6}$




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*Space for Rough Work*

**Biology****(Part - D)****Straight Objective Type**

Question numbers 46 to 65 are 20 multiple choice questions. Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE** is correct.

46. Choose the complex fertilizer  
 (A) Potassium sulphate (B) Calcium ammonium nitrate  
 (C) Triple super phosphate (D) Urea ammonium phosphate
47. Epithelial tissue is a:  
 (A) Corpuscle (B) Nerve cell  
 (C) Protective covering (D) Reproductive structure
48. Terrestrial Plants get the carbon from:  
 (A) Soil (B) Water  
 (C) Atmosphere (D) Lithosphere
49. Energy flow in an ecosystem is  
 (A) Unidirectional (B) Bidirectional  
 (C) Multidirectional (D) None of these
50. Which of the following process includes all other processes?  
 (A) Osmosis (B) Facilitated diffusion  
 (C) Diffusion of a solute across a membrane (D) Passive transport
51. Cells that store food and water are:  
 (A) Parenchyma cells (B) Collenchyma cells  
 (C) Sclerenchyma cells (D) Meristematic cells
52. Poultry farming is undertaken to raise following  
 (i) Egg production (ii) Feather production  
 (iii) Chicken meat (iv) Milk production  
 (A) (i) & (iii) (B) (ii) & (iv)  
 (C) (ii) & (iii) (D) (iii) and (iv)
53. Assertion (A): Deforestation is one main factor contributing to global warming.  
 Reason(R): Besides CO<sub>2</sub>, two other gases methane & CFCs are also included under green house gases.  
 (A) If both (A) and (R) are true and (R) is the correct explanation of (A).  
 (B) If both (A) and (R) are true but (R) is not the correct explanation of (A).  
 (C) If (A) is true and (R) is false  
 (D) If (A) and (R) are false

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**Space for Rough Work**

54. The rough endoplasmic reticulum (RER) in the cell are because of the presence of  
 (A) Mitochondria associated with ER (B) Ribosomes on the surface of ER  
 (C) Volutin granules on the surface of ER (D) Sulphur granules on the surface of ER
55. Smooth muscles are \_\_\_\_\_.  
 (A) Involuntary, spindle shaped, uninucleated, tapering  
 (B) Voluntary, multinucleate, cylindrical  
 (C) Involuntary, cylindrical, multinucleate  
 (D) Voluntary, branched, uninucleate
56. The hybrid varieties of wheat are:  
 (A) Sharbati Sonara (B) Pusa Lerma  
 (C) Both (A) & (B) (D) Golden
57. Photochemical smog consist of  
 (A) O<sub>3</sub>, SO<sub>x</sub> and hydrocarbons (B) O<sub>3</sub>, PAN and NO<sub>x</sub>  
 (C) O<sub>2</sub>, CO<sub>2</sub> and hydrocarbons (D) O<sub>2</sub>, PAN and smoke
58. A type of cell called a lymphocyte makes proteins that are exported from the cell. It is possible to track the path of these proteins within the cell by labelling them with radioactive isotopes. Which of the following might be the path of the protein from the site where its polypeptides are made to the lymphocyte's plasma membrane?  
 (A) Rough ER → Golgi → Plasma membrane  
 (B) Golgi → Rough ER → Plasma membrane  
 (C) Smooth ER → Lysosome → Plasma membrane  
 (D) Plasma membrane → Golgi → Rough ER
59. Match the items in column-A with column-B and choose the correct answer given below:
- | Column – I |             | Column – II |               |
|------------|-------------|-------------|---------------|
| (P)        | Neuron      | (1)         | Ossein        |
| (Q)        | Bone matrix | (2)         | Nissl bodies  |
| (R)        | RBC of man  | (3)         | Antibodies    |
| (S)        | Lymphocytes | (4)         | Non-nucleated |
- (A) (P)→(4), (Q)→(2), (R)→(3), (S)→(1) (B) (P)→(2), (Q)→(1), (R)→(4), (S)→(3)  
 (C) (P)→(4), (Q)→(1), (R)→(2), (S)→(3) (D) (P)→(2), (Q)→(4), (R)→(1), (S)→(3)
60. Which of the following is considered an exception to cell theory?  
 (A) Protists (B) Mycoplasma  
 (C) Virus (D) Algae
61. Tissue that store fat is:  
 (A) Areolar tissue (B) Adipose tissue  
 (C) Nervous tissue (D) Epithelial tissue

*Space for Rough Work*

62. Pisciculture is commercial rearing and production of  
(A) Fishes (B) Birds  
(C) Reptiles (D) Wool yielding animals
63. In nitrogen cycle, which bacteria are responsible for nitrification.  
(A) *Clostridium* (B) *Rhizobium*  
(C) *Nitrosomonas* (D) *Nitrosomonas & Nitrobacter*
64. Vacuole in a plant cell:  
(A) Lacks membrane and contains water and excretory substances  
(B) Is membrane-bound and contains storage proteins only  
(C) Is membrane-bound and contains water and excretory substances  
(D) Lacks membrane and contains air
65. The crop which is affected by red rot disease is  
(A) Sugarcane (B) Chick pea  
(C) Rice (D) Pigeon pea

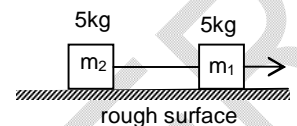
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*Space for Rough Work*

**Section-II****Physics, Chemistry & Mathematics****Physics****(Part - A)****Numerical Based Questions**

Question numbers 66 to 68 are 3 numerical based questions single digit answer 0 to 9.

66. In the given figure if  $F = 30$  N, the acceleration of both the blocks is  $1 \text{ m/s}^2$ . The frictional force between  $m_1$  and ground is  $K$  times of  $10$  N. Find 'K'.



67. A car initially at rest starts moving on straight line with constant acceleration and attains speed of  $8 \text{ m/s}$  in time interval  $t$  sec. Average speed (m/s) of car in time interval  $t$  sec is
68. Two identical spheres of radii  $r$  each are placed touching each other. The gravitational force between them is  $F_G$ . It is found that  $F \propto r^n$ , where 'n' is \_\_\_\_\_ .

*Space for Rough Work*

## Chemistry

## (Part – B)

### Numerical Based Questions

Question numbers 69 to 73 are 5 numerical based questions single digit answer 0 to 9.

69. The normal boiling point of a liquid is  $140^{\circ}\text{C}$ . What will be the vapour pressure of the liquid at  $140^{\circ}\text{C}$ , in atm unit?
70. Washing powder, baking powder, glucose, carbon dioxide, dry ice, coal, carbon, sulphur dioxide. How many pure substances are there in the above list?
71. An ideal gas exert 2 atm pressure in a 2 L container at 100 K. The gas is then transferred to a one litre container and the container was heated to 200 K. What will be the final pressure of the gas in atm unit?
72. A sample of air contains 3 g sulphur dioxide, 5 g carbon dioxide and 42 g nitrogen. What is the percentage weight of sulphur dioxide present in the sample?
73. The concentration of a  $\text{CuSO}_4$  solution in mass percentage unit is 40%. 20 g of this solution was crystallized. How many gram of  $\text{CuSO}_4$  crystal is obtained?

*Space for Rough Work*

**Mathematics****(Part - C)****Numerical Based Questions**

Question numbers 74 to 76 are 3 numerical based questions single digit answer 0 to 9.

74. Two sides of a triangle are 13 cm and 14 cm and its semi-perimeter is 18 cm. Then third side of the triangle is \_\_\_\_\_
75. If  $x + y + z = 0$  and  $x^2 + y^2 + z^2 = 12$ , then the value of  $|xy + yz + zx|$  is \_\_\_\_\_
76. If  $a^2 + b^2 + c^2 + d^2 = 1$ , then the maximum value of  $16abcd$  is \_\_\_\_\_

*Space for Rough Work*

### **Section-III**

### **Physics, Chemistry & Mathematics**

### **Physics**

### **(Part - A)**

#### **Numerical Answer Type**

Question numbers 77 to 78 are 2 numerical answer type questions with answer **XXXXX.XX**.

77. The value of  $g$  at the earth's surface is  $10 \text{ m s}^{-2}$ , the value of  $g$  at a height of  $3 R_E$  from the surface of earth is  $\frac{n}{10}$ . Find the value of 'n'.
78. A stone is dropped from the top of a tower of height  $h$ . After 1 second another stone is dropped from the balcony 20 m below the top. Both reach the bottom simultaneously. What is the value of  $h$ ? (Take  $g = 10 \text{ m/s}^{-2}$ )

*Space for Rough Work*



**Mathematics****(Part - B)****Numerical Answer Type**

Question numbers 79 to 80 are 2 numerical answer questions with answer **XXXXX.XX**.

79. If  $(x^2 - 4)$  is a factor of  $(mx^3 - x^2 - 2x + n)$ , then find the value of  $(2m + n)$ .
80. An equilateral triangle BPC is drawn inside a square ABCD. What is the value of the angle APD in degrees?

*Space for Rough Work*

# FIITJEE SAMPLE PAPER – 2018

(Big Bang Edge Test / Talent Recognition Exam)

for students presently in

## Class 9

## ANSWERS

## Paper 2

1.	D	2.	B	3.	C	4.	D
5.	A	6.	B	7.	A	8.	A
9.	C	10.	C	11.	A	12.	A
13.	D	14.	C	15.	C	16.	A
17.	B	18.	C	19.	C	20.	C
21.	D	22.	B	23.	C	24.	C
25.	A	26.	D	27.	C	28.	B
29.	B	30.	C	31.	B	32.	A
33.	D	34.	C	35.	D	36.	D
37.	D	38.	C	39.	A	40.	B
41.	B	42.	A	43.	B	44.	A
45.	A	46.	D	47.	C	48.	C
49.	A	50.	C	51.	A	52.	A
53.	B	54.	B	55.	A	56.	C
57.	B	58.	A	59.	B	60.	C
61.	B	62.	A	63.	D	64.	C
65.	A	66.	1	67.	4	68.	4
69.	1	70.	5	71.	8	72.	6
73.	8	74.	9	75.	6	76.	1
77.	00006.25	78.	00031.25	79.	00005.00	80.	00150.00