MOCK TEST - 3

MATHMETICS

1. Every body in a room shakes hands with everybody else. The total number of hand shakes is 66. The total number of persons in the room is

   (a) 11 (b) 12 (c) 13 (d) 14

2. The number of possible outcomes when a coin is tossed 6 times is

   (a) 36 (b) 64 (c) 12 (d) 32

3. All the letters of the word 'EAMCOT' are arranged in different possible ways. The number of such arrangements in which no two vowels are adjacent to each other is

   (a) 360 (b) 144 (c) 72 (d) 54

4. The number of signals that can be sent by 6 flags of different colours taking one or more at a time is

   (a) 63 (b) 1956 (c) 720 (d) 21

5. If P(n, r) = 2520 and C(n, r) = 21 then what is the value of C(n + 1, r + 1)?

   (a) 7 (b) 14 (c) 28 (d) 56

6. $\lim_{x\to\infty}\left(\frac{x+2}{x+1}\right)^{x+3}$ is equal to

   (a) e^2 (b) e (c) e^3 (d) 1

7. $\lim_{x\to 0}\frac{a^x-b^x}{e^x-1}$ is equal to

   (a) $\log_e\left(\frac{a}{b}\right)$ (b) $\log_e(ab)$ (c) $\log_e(a+b)$ (d) $\log_e\left(\frac{b}{a}\right)$

8. If $\lim_{x\to 0}\frac{ln(3+x)-ln(3-x)}{x}$ = k, the value of *k* is

   (a) 0 (b) - 1/3 (c) -2/3 (d) 2/3

9. $\lim_{x\to 0}\frac{\sin|x|}{x}$ is equal to

   (a) 1 (b) positive infinity (c) does not exist (d) 0

10. $\lim_{x\to\infty} x\sin\left(\frac{2}{x}\right)$ is equal to

    (a) 2 (b) 1/2 (c) ∞ (d) 0

11. If the sum of n terms of an A.P. is given by $S_n = 3n + 2n^2$, then the common difference of the A.P. is

    (a) 3 (b) 2 (c) 6 (d) 4

12. If 9 times the 9th term of an A.P is equal to 13 times the 13th term, then the 22nd term of the A.P. is

    (a) 0 (b) 22 (c) 220 (d) 198

13. If x, 2y, 3z are in A.P., where the distinct numbers x, y, z are in G.P. then the common ratio of the G.P. is

(a) 3 (b) 1/3 (c) 2 (d) 1/2

14. The 10^{th} common term between the series

3 + 7 + 11 + …… and 1 + 6 + 11 + ……. Is

(a) 191 (b) 193 (c) 211 (d) None of these

15. The minimum value of the expression $3^x + 3^{1-x}$, $x \in R$, is

(a) 0 (b) $\frac{1}{3}$ (c) 3 (d) $2\sqrt{3}$

16. The amplitude of $\sin\frac{\pi}{5} + i(1 - \cos\frac{\pi}{5})$ is

(a) $\frac{2\pi}{5}$ (b) $\frac{\pi}{5}$ (c) $\frac{\pi}{15}$ (d) $\frac{\pi}{10}$

17. If the complex number z = x + iy satisfies the condition | z + 1 | = 1, then z lies on

(a) x-axis (b) circle with centre (1, 0) and radius 1

(c) circle with centre (-1, 0) and radius 1 (d) y-axis

18. The value of $\frac{\log_3 5 \times \log_{25} 27 \times \log_{49} 7}{\log_{81} 3}$

(a) 1 (b) 6 (c) 2/3 (d) 3

19. The value of $\sqrt{8+2\sqrt{8+2\sqrt{8+2\sqrt{8+.....}}}}$

(a) 4 (b) 6 (c) 8 (d) 10

20. The solution set of the inequality $x^2 - 2|x| < 3$, is

(a) (-2, 2) (b) (-3, 3) (c) (0, 1) (d) (1, ∞)

21. The solution set of the inequation

$\log_{1/3}(x^2 + x + 1) + 1 > 0$ is

(a) $(-\infty, -2) \cup (1, +\infty)$ (b) [-1, 2] (c) (-2, 1) (d) $(-\infty, +\infty)$

22. If *A* and *B* are two mutually exclusive events, then

(a) $P(A) \le P(\overline{B})$ (b) $P(A) > P(\overline{B})$ (c) $P(\overline{A}) < P(\overline{B})$ (d) none of these

23. The total number of terms in the expansion of $(x + a)^{51} - (x - a)^{51}$ after simplification is

(a) 102 (b) 25 (c) 26 (d) None of these

24. If the coefficients of x^7 and x^8 in $\left(2+\frac{x}{3}\right)^n$ are equal, then n is

(a) 56 (b) 55 (c) 45 (d) 15

25. If A and B are coefficient of x^n in the expansions of $(1 + x)^{2n}$ and $(1 + x)^{2n-1}$ respectively, then $\frac{A}{B}$ equals

(a) 1 (b) 2 (c) $\frac{1}{2}$ (d) $\frac{1}{n}$

26. What is the number of terms in the expansion of $(a + b + c)^n$, $n \in N$?

(a) n + 1 (b) n + 2 (c) n(n+1) (d) $\frac{(n+1)(n+2)}{2}$

27. In a triangle *ABC,* if *a* = 2, *b* = 3 and *c* = 5, then *C* is
(a) an acute angle (b) an obtuse angle
(c) $\frac{\pi}{2}$ (d) triangle is not possible

28. If *A, B, C, D* are the angles of a cyclic quadrilateral taken in order, then $\cos(180° + A) + \cos(180° - B) + \cos(180° - C) - \sin(90° - D)$ is equal to
(a) 0 (b) 1 (c) –1 (d) none of these

29. There are *n* persons sitting in a row. Two of them are selected at random. The probability that two selected persons are not together is
(a) $\frac{2}{n}$ (b) $1 - \frac{2}{n}$ (c) $\frac{n(n-1)}{(n+1)(n+2)}$ (d) none of these

30. If the roots of the quadratic equation $x^2 + px + q = 0$ are tan 30° and tan 15°, respectively then the value of $2 + q - p$ is
(a) 0 (b) 1 (c) 2 (d) 3

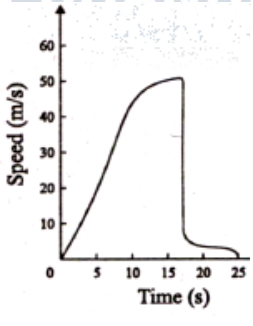
PHYSICS

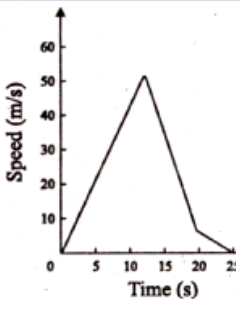
31. Out of Steel, Rubber and Chalk which has maximum elasticity?
(a) Steel (b) Rubber (c) Chalk (d) Cannot be compared

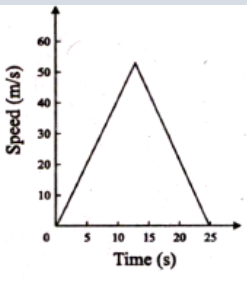
32. Which of the following is correct representation of atmospheric pressure?
(a) 760 mm of Hg (b) 101.325 Pa or N/m^2 (c) 10 Bar (d) All of the above

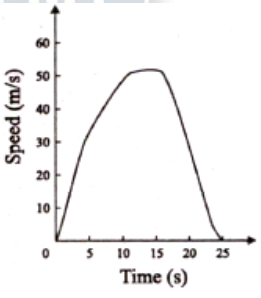
33. A block of wood floats in water with 3/4 part under water. If it floats in another liquid with 9/10 part under it, then the relative density of this liquid will be
(a) 0.79 (b) 1 (c) 0.89 (d) 0.59

34. Which of the following represent the motion of skydiver during the jump?

(a) 

(b) 

(c) 

(d) 

35. Which one of the following is a result of surface tension?
(a) Nearly spherical drop of rain (b) Capillary rise
(c) Removal of dirt by soap or detergent (d) All of the above

36. A capillary tube of radius R is immersed in water and water rises in it to a height H. The mass of water in capillary tube is M. If the radius of the tube is double, then mass of water that will rise in capillary will be

(a) 3M (b) M (c) 2M (d) M/4

37. The temperature for which the reading on Celsius and Fahrenheit scales are identical, is

(a) -40^0 C (b) 40^0 C (c) -30^0 C (d) 30^0 C

38. When water is heated from 0^0 C to 20^0 C, how does its volume change?

(a) It shall increase

(b) It shall decrease

(c) It shall first increase and then decrease

(d) It shall first decrease and then increase

39. When pressure on piece of ice is increases its melting point

(a) decreases

(b) increases

(c) remains unchanged

(d) first increases and then decreases

40. 1 g of ice at 0ºC is mixed with 1 g of steam at 100ºC. After thermal equilibrium, the temperature of the mixture is

(a) 0^0C (b) 50^0C (c) 80^0C (d) 100^0C

41. The quantity of heat required to convert .5 kg of ice at 0º to water at 20ºC (assuming the latent heat of ice to be 80 cal per gram) is

(a) 200 kcal (b) 150 kcal (c) 50 kcal (d) 225 kcal

42. A pressure cooker works on the principle of

(a) elevation of boiling point of water by application of pressure

(b) making the food-grains softer by application of pressure

(c) making the food-grains softer by application of pressure and temperature

(d) keeping the food-grains inside steam for a longer time

43. The mode of propagation of heat from the sun to the earth is

(a) conduction alone

(b) convection alone

(c) radiation alone

(d) Both convection and radiation

44. Air is blown over a hot body to cool it. This would increase the rate of heat loss by

(a) conduction

(b) radiation and convection

(c) convection

(d) Both conduction and convection

45. Which of the following are factors upon which the amount of heat radiated from a body depends?

I. Excess temperature of the body over surroundings.

II. Density of the body

III. Exposed area of the body

IV. Nature of the surface of the body

Choose the correct answer from the codes given below

(a) I, II and III (b) I, II and IV (c) I, III and IV (d) II, III and IV

46. Consider the following types of surfaces A surface that is

I. Coated with lamp black

II. Polished

III. Painted white

The correct sequence of the decreasing order of the emissive powers of the given surfaces will be

(a) I, III, II (b) III, II, I (c) II, I, III (d) II, III, I

47. A bucket full of water is kept in a room and it cools from 750C to 700C in time T1 minutes, from 700C to 650C in time T2 minutes, and from 650C to 600 C in time T3 minutes, then

(a) $T_1 = T_2 = T_3$ (b) $T_1 < T_2 < T_3$

(c) $T_1 > T_2 > T_3$ (d) $T_1 < T_3 < T_2$

48. A fan produces a feeling of comfort during hot weather because

(a) our body radiated more heat in air

(b) fan supplies cool air

(c) conductivity of air increase

(d) our perspiration evaporates rapidly

49. Propagation of sound in air is:

(a) Isothermal process

(b) Adiabatic process

(c) Isobaric process

(d) Isochoric process

50. If the door of working refrigerator is kept open then, temperature of the room:

(a) Increases (b) decreases (c) remains same (d) cant say

CHEMISTRY

51. Chlorine exists in two isotopic forms, Cl – 37 & Cl – 35 but its atomic mass is 35.5. This indicates that the ratio of Cl – 37 and Cl – 35 is approximately

(a) 1 : 2 (b) 1 : 1 (c) 1 : 3 (d) 3 : 1

52. Which one of the following statements is NOT correct?
(a) Water of crystallization is the fixed number of water molecules present in one formula unit of a salt
(b) The molecular formula of Plaster of Paris is $2CaSO_4.H_2O$
(c) Washing soda is used for removing the temporary hardness of water
(d) The atmosphere of Venus is made up of thick white and yellow clouds of sulphuric acid

53. Which of the following conclusions could not be derived from Rutherford's α – particle scattering experiment?
(a) Most of the space in the atom is empty.
(b) The radius of the atom is about 10^{-10} m while that of nucleus is 10^{-15} m.
(c) Electrons move in a circular path of fixed energy called orbits.
(d) Electrons and the nucleus are held together by electrostatic forces of attraction.

54. Numerically two thermometers, one in Fahrenheit scale & another in Celsius scale shall read same at:
(a) -40^0 (b) 0^0
(c) -273^0 (d) 100^0

55. Which of the following statement is not correct about the characteristics of Anode rays?
(a) They start from the anode and move towards the cathode.
(b) They travel in straight line in the absence of an external electrical or magnetic field
(c) Characteristics of cathode rays do not depend upon the material of electrodes in cathode ray tube.
(d) Characteristics of Anode rays do not depend upon the nature of gas present in the cathode ray tube.

56. Which one of the following will have the largest number of atoms?
(a) 1 g Mg (s) (b) 1 g Na (s) (c) 1 g Li (s) (d) 1 g of Cl_2 (g)

57. Which one of the following is not a bio – mass energy source?
(a) Wood (b) Nuclear reactor (c) Gobar gas (d) Coal

58. There are two elements-calcium (atomic number 20) and argon (atomic number 18). The mass number of both the elements is 40. They are therefore known as
(a) isotones (b) isochores (c) isobars (d) isotopes

59. Bleeding of gums, falling of teeth, fragile bones and delayed wound healing occur due to the deficiency of which one of the following vitamins?
(a) Vitamin C (b) Vitamin K (c) Vitamin D (d) Vitamin B

60. Which one of the following is a physical change?
(a) Burning of coal (b) Burning of wood
(c) Heating of a platinum crucible (d) Heating of potassium chlorate

61. Water boils at a lower temperature at high altitudes, because

(a) the air pressure is less (b) outside temperature is less

(c) latent heat is less (d) None of the above

62. Which of the following statements indicates that a law of multiple proportions is being followed.

(a) Sample of carbon dioxide taken from any source will always have carbon and oxygen in the ratio 1 : 2

(b) Carbon forms two oxides namely CO_2 and CO, where masses of oxygen which combine with fixed the mass of carbon are in the simple ratio 2 : 1.

(c) When magnesium burns in oxygen, the amount of magnesium taken for the reaction is equal to the amount of magnesium in magnesium oxide formed.

(d) At constant temperature and pressure 200 mL of hydrogen will combine with 100 mL oxygen to produce 200 mL of water vapour.

63. The reaction that occurs on passing carbon dioxide gas through lime water is

(a) $CaCO_3 + H_2O + CO_2 \rightarrow Ca(HCO_3)_2$ (b) $Ca(OH)_2 + CO_2 \rightarrow CaCO_3 + H_2O$

(c) $CaO + CO_2 \rightarrow CaCO_3$ (d) $CaCl_2 + H_2O + CO_2 \rightarrow CaCO_3 + 2\ HCl$

64. Which one of the following statements is NOT correct?

(a) The interconversion of states of matter is a physical change

(b) During burning of a candle, both chemical and physical changes take place

(c) During a physical change, the chemical composition of molecules changes

(d) Rusting of iron is a chemical change

65. Which one of the following is considered to be the purest source of water?

(a) River water (b) Sea water (c) Well water (d) Rain water

66. Which one of the following is known as 'water gas'?

(a) $H_2O + CO_2$ (b) NH_3 (c) $H_2 + N_2$ (d) $CO + H_2$

67. Which one of the following is NOT a heterogeneous mixture?

(a) Solution of $K_2Cr_2O_7$ in water (b) Solution of $CaCO_3$ in water

(c) A mixture of alcohol and water (d) Solution of oil in water

68. Which of the elements whose atomic numbers are given cannot be accommodated in the present set up of the long form of the periodic table?

(a) 107 (b) 118 (c) 126 (d) 102

69. Which molecule / ion out of the following does not contain unpaired electrons?

(a) N_2^+ (b) O_2 (c) O_2^{2-} (d) B_2

70. In which of the following substance will hydrogen bond be strongest?

(a) HCl (b) H_2O (c) HI (d) H_2S

ENGLISH

SYNONYMS

71. **IMPECCABLE**- a) remarkable b) unbelievable c) flawless d) displeasing

72. **AFFLUENT**- a) blossom b) flourish c) prosperous d) thrive

73. **FUTILITY**-a) uselessness b) insignificance c) irrelevance d) unimportance

74. **BRUTAL**- a) humane b) savage c) sympathetic d) compassionate

75. **ALTRUISTIC**- a) hostile b) outdated c) selfish d) philanthropic

ANTONYMS

76. **Awe-** a. borrow b. shallow c. low d. contempt

77. **Pit-** a. group b. peak c. select d. marry

78. **Rotund-** a. round b. unimportant c. thin d. dull

79. **Talent-** a. ungrateful b. silent c. show d. inability

80. **Scrupulous-** a. strange b. uneasy c. dishonest d. fast

FILL UPS

81. **His performance was exemplary, ___ he received the award."**

A. hence B. although C. unless D. despite

82. **"She argued ____ the decision, citing unfair treatment."**

A. for B. against C. toward D. about

83. **"The company's profits have __- _ dramatically in the past year."**

A. risen B. raised C. risen up D. razed

84. **"He looked at the map ___ , trying to locate the village."**

A. attentively B. inattentive C. inattentively D. attentiveness

85. **"Their proposal was ____ by the committee for being unrealistic."**

A. accepted B. endorsed C. rejected D. adopted

86. **"He is ___ in his beliefs and seldom changes his mind."**

A. fickle B. steadfast C. vacillating D. wavering

CHOOSE THE CORRECT OPTION: NARRATION

87. **He said, "I have been waiting for you since morning."-**

A) He said that he was waiting for me since morning.

B) He said that he had been waiting for me since morning.

C) He said that he had waited for me since morning.

D) He said that he has been waiting for me since morning.

88. **She said to her brother, "Why are you so lazy?"**

A) She asked her brother why was he so lazy.

B) She asked her brother why he was so lazy.

C) She asked her brother why he is so lazy.

D) She said her brother was lazy.

89. The teacher said, "The Earth revolves around the Sun."

A) The teacher said that the Earth revolved around the Sun.

B) The teacher said that the Earth has revolved around the Sun.

C) The teacher said that the Earth revolves around the Sun.

D) The teacher told that the Earth revolves around the Sun.

90. She said to him, "Please, help me with this bag."

A) She requested him to help her with that bag.

B) She said him to help her with this bag.

C) She told him to please help her with that bag.

D) She asked him that help her with the bag.

READING COMPREHENSION

Mankind's experience of various evolutionary changes from primitive times to the present day has been extensive and varied. However, man's problems were never before as complicated as they seem to be today. Man's economic activity centres primarily around production. Labour is said to be the primary factor of production; its role, therefore, has been given a lot of importance. It should be useful to have an overall view of the economic history of man-from the nomadic times to the modern factory system-and study its relevance to the various labour problems of today.

Initially, man passed through 'the hunting and fishing stage'. During this period, his basic needs were adequately met by Nature. Wild animals, birds and fruits satisfied his hunger, and his thirst was quenched by the waters of springs and rivers. Caves gave him shelter and barks of trees were used as clothing. During this stage of man's progress, labour problems did not exist because of the absence of any economic, political and social systems.

Then came 'the pastoral stage', which was marked by a certain amount of economic activity. The nomadic and migratory nature of man persisted, and, together with his goats and cattle, he moved on to fresh pastures and meadows. Some conflicts would sometimes take place among herd-owners, for, during this period, the institution of nominal private property ownership was not known. This stage paves the way for 'the agricultural stage', during which the class system began to develop.

There was a small artisan class mostly self-employed; and there were also landed proprietors or Zamindars as well as slaves. Thus, arose the feudal system. During the fourth stage of these developments, the handicrafts stage', a number of social and economic changes took place which marked the beginning of the labour problem in the world. The self-sufficient economy of the village underwent a drastic change. The community of traders and merchants emerged.

91. Humanity's evolution from primitive stage to the present has been-

(a) static and smooth (b) huge and diversified

(c) always violent (d) always peaceful.

92. ……..."man's problems were never before as complicated as they seem to be today" means

(a) the present times are the best times of humanity

(b) the present times are the crucial period for humanity

(c) the present times pose much more challenges to humans than the previous times

(d) the present times provide much more facilities than the previous times

93. Why does the author say that labour problems did not exist during 'the hunting and fishing stage'?

(a) There was no nation existing at that time

(b) There were no economic, political and social systems

(c) There was no capitalism and market

(d) There was no labour law

94. "The pastoral stage was marked by a certain amount of economic activity." How?

(a) Humans started migrating and held goat-herds

(b) Humans started owning land

(c) Conflicts started as humans owned goats

(d) Humans started doing agriculture

95. Which word in the passage means 'surfaced'?

(a) Quenched (b) Nomadic (c) Emerged (d) Adequately.

GAT

96. Members of Lok Sabha are elected by:

(a) Proportional representation (b) Direct election

(c) Electoral College (d) Indirect election

97. Article 19(1)(a) guarantees:

(a) Freedom of speech and expression (b) Freedom of assembly

(c) Freedom to form associations (d) Right to property

98. Who was elected as the Chairman of the Drafting Committee of the Constituent Assembly?

(a) Jawaharlal Nehru (b) B. R. Ambedkar

(c) S. Radhakrishnan (d) Rajendra Prasad

99. The Preamble of the Indian Constitution was adopted on:

(a) 26th November 1949 (b) 26th January 1950

(c) 15th August 1947 (d) 9th December 1946

100. Article 371 provides for:

(a) Special provisions for certain states (b) Emergency powers

(c) Fundamental Rights (d) Directive Principles

101. The difference between CBR and CDR is called:
(a) Population Growth Rate (b) Natural Increase Rate
(c) Net Migration Rate (d) Dependency Ratio

102. An economy dependent mostly on agriculture is called:
(a) Agrarian economy (b) Industrial economy
(c) Service economy (d) Mixed economy

103. Germany is an example of which type of economy based on sector dominance?
(a) Agrarian (b) Industrial (c) Service (d) Socialist

104. Which is an example of an oligopoly in India?
(a) Indian Railways (b) Automobile industry
(c) State Bank of India (d) Local vegetable market

105. The first attempt to estimate India's national income was made by:
(a) Dadabhai Naoroji (b) M.G. Ranade
(c) William Digby (d) V.K.R.V. Rao

106. Which of the following is a destination-based tax?
(a) GST (b) VAT (c) Service Tax (d) Excise

107. Modern banking in India began with the establishment of:
(a) Bank of Bengal (b) State Bank of India
(c) Reserve Bank of India (d) Punjab National Bank

108. India's standard meridian is:
(a) 82.5° E (b) 90° E (c) 75° E (d) 66.5° E

109. What is a volcano?
(a) An earthquake (b) A mountain with lava
(c) A fault line (d) A sedimentary basin

110. Earth receives vertical rays of the Sun between:
(a) Arctic and Antarctic Circles (b) Tropics of Cancer and Capricorn
(c) Poles (d) Equator only

111. The Alvars were devotees of:
(a) Vishnu (b) Shiva (c) Shakti (d) Krishna

112. Chandragupta Maurya overthrew which dynasty to establish the Mauryan Empire?
(a) Nanda (b) Shishunaga (c) Haryanka (d) Gupta

113. The term "Pakistan" was first used in a political context by:
(a) Muhammad Iqbal (b) Chaudhry Rahmat Ali
(c) Muhammad Ali Jinnah (d) Liaquat Ali Khan

114. The Quit India Movement was launched on:
(a) 8 August 1942 (b) 9 August 1942
(c) 10 August 1942 (d) 15 August 1942

115. Which social reform by the British was one of the causes of the Revolt?
(a) Abolition of Sati (b) Widow Remarriage Act
(c) English Education Act (d) All of the above

116. Which of the following regions in India has major Archean rock formations?
(a) Indo-Gangetic Plain (b) Eastern Ghats
(c) Bundelkhand Region (d) Deccan Plateau

117. Which of the following is NOT a Himalayan river system?
(a) Indus (b) Ganga (c) Narmada (d) Brahmaputra

118. Which parallel of latitude passes almost halfway through India?
(a) Equator (b) Tropic of Cancer (c) Arctic Circle (d) Tropic of Capricorn

119. Renewable resources are best defined as resources that:
(a) Are unlimited in quantity (b) Can be reused directly
(c) Regenerate naturally over time (d) Are produced artificially

120. Natural vegetation refers to:
(a) Cultivated plants (b) Forests planted by humans
(c) Vegetation grown without human aid (d) Urban parks and gardens

ANSWERS

1.b	21.c	41.c	61.a	81.a	101.a
2.b	22.a	42.a	62.b	82.b	102.b
3.b	23.c	43.c	63.b	83.a	103.b
4.b	24.b	44.c	64.c	84.a	104.a
5.c	25.b	45.c	65.d	85.c	105.b
6.b	26.d	46.a	66.d	86.b	106.c
7.a	27.d	47.b	67.c	87.b	107.b
8.d	28.a	48.d	68.c	88.b	108.c
9.c	29.b	49.b	69.b	89.c	109.b
10.a	30.d	50.a	70.b	90.a	110.b
11.d	31.a	51.c	71.c	91.b	111.b
12.a	32.a	52.c	72.c	92.c	112.d
13.b	33.a	53.c	73.a	93.b	113.c
14.a	34.a	54.a	74.b	94.a	114.a
15.d	35.d	55.d	75.d	95.c	115.b
16.d	36.c	56.c	76.d	96.a	116.c
17.c	37.a	57.b	77.b	97.a	117.c
18.d	38.d	58.c	78.c	98.a	118.c
19.a	39.a	59.a	79.d	99.b	119.c
20.b	40.d	60.c	80.c	100.b	120.b