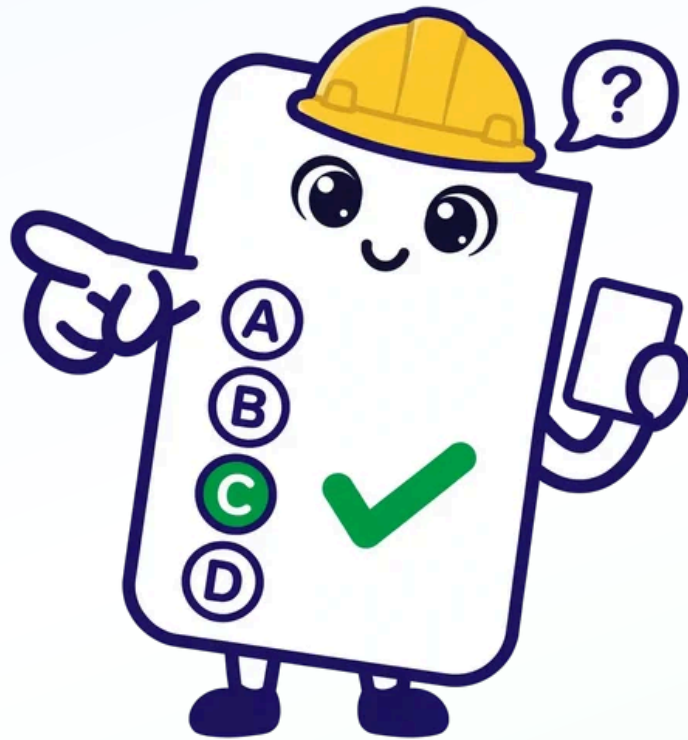




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100 MCQs

Real PIEAS subject split

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100 MCQs across one paper, each drawn in the same subject split as the real PIEAS paper:

- Mathematics: 30 MCQs per paper
- Physics: 30 MCQs per paper
- Chemistry: 30 MCQs per paper
- English: 10 MCQs per paper



MODEL PAPER 1 OF 1

PIEAS Admission Test

100 MCQs · 180 minutes · answer key at the back

**Mathematics**

30 MCQs

1. Certain quantity of food is sufficient for certain number of men for 13 days. After 1 day $\frac{2}{5}$ of them desert how long will the food now last?

- (A) 20 days
(B) 25 days
(C) 18 days
(D) 16 days

2. $3648.24 + 364.824 \div ? - 36.4824 = 3794.1696$

- (A) 2
(B) 3
(C) 4
(D) 5

3. Find the area of trapezium whose parallel sides are 20 cm and 18 cm long, and the distance between them is 15 cm.

- (A) 225 cm²
(B) 275 cm²
(C) 285 cm²
(D) 315 cm²

4. A man invested Rs. 1552 in a stock at 97 to obtain an income of Rs. 128. The dividend from the stock is _____?

- (A) 7.5%
(B) 8%
(C) 9.7%
(D) None of these

5. $21345 \times 45 = 4270 \times ?$

- (A) 215
(B) 235
(C) 225
(D) 255

6. The perimeter of a rhombus is 68 cm and one of its diagonals is 16 cm. Find its area?

- (A) 260 cm²
(B) 240 cm²
(C) 280 cm²
(D) 220 cm²

7. In a certain store, the profit is 320% of the cost. If the cost increases by 25% but the selling price remains constant, approximately what percentage of the selling price is the profit?

- (A) 30%
(B) 70%
(C) 100%
(D) 250%

8. A bag contains a total of 93 coins in the form of one rupee and 50 paise coins. If the total value of coins in the bag is Rs.56, find the number of 50 paise coins in the bag?

- (A) 60 (B) 56
(C) 64 (D) 74
(E) None of these

9. The length of a rectangular floor is more than its breadth by 200%. If Rs. 324 is required to paint the floor at the rate of Rs. 3 per sq m, then what would be the length of the floor?

- (A) 27 m (B) 24 m
(C) 18 m (D) 21 m

10. A man rows his boat 85 km downstream and 45 km upstream, taking $2\frac{1}{2}$ hours each time. Find the speed of the stream?

- (A) 5 kmph (B) 6 kmph
(C) 7 kmph (D) 8 kmph

11. The sum of two numbers is 25 and their difference is 13. Find their product :

- (A) 104 (B) 114
(C) 315 (D) 325

12. A rectangular field has dimensions 25m by 15m. Two mutually perpendicular passage of 2m width have been left in it's central part and grass has been grown in rest of the field. The area under the grass is_____?

- (A) 295m² (B) 299m²
(C) 300m² (D) 375m²

13. In an exam, Amir scored 64 percent, Masood scored 36 percent and asif 44 percent. The maximum score awarded in the exam is 800. Find the average mark scored by all the three boys?

- (A) 384 (B) 364
(C) 324 (D) 404

14. The number of permutations of the letters of the word 'MESMERISE' is_____?

- (A) $9!/(2!)2\ 3!$ (B) $9!/(2!)3\ 3!$
(C) $9!/(2!)2\ (3!)2$ (D) $5!/(2!)2\ 3!$

15. The radius of a wheel is 22.4 cm. What is the distance covered by the wheel in making 500 resolutions.

- (A) 252 m (B) 704 m
(C) 352 m (D) 808 m

16. The simple interest and the true discount on a certain sum for a given time and at a given rate are Rs. 85 and Rs. 80 respectively. The sum is: _____?

- (A) Rs. 1800 (B) Rs. 1450
(C) Rs. 1360 (D) Rs. 6800

17. A heap of stones can be made up into groups of 21. When made up into groups of 16, 20, 25 and 45 there are 3 stones left in each case. How many stones at least can there be in the heap?

- (A) 7203 (B) 2403
(C) 3603 (D) 4803

18. The sides of a cube are in the ratio 1:2 the ratio of their volume is _____?

- (A) 1:2 (B) 1:4
(C) 1:8 (D) 2:1

19. A heap of coconuts is divided into groups of 2, 3 and 5 and each time one coconut is left over. The least number of Coconuts in the heap is _____?

- (A) 31 (B) 41
(C) 51 (D) 61

20. A statement that contains at least one of the symbols $<$, $>$, is called

- (A) an equation (B) an inequality
(C) both a and b (D) None

21. If the side of a square is increased by 25% then it's area is increased by _____?

- (A) 25% (B) 40.5%
(C) 55% (D) 56.25%

22. If Rs. 10 be allowed as true discount on a bill of Rs. 110 due at the end of a certain time, then the discount allowed on the same sum due at the end of double the time is:

- (A) Rs. 20 (B) Rs. 21.81
(C) Rs. 22 (D) Rs. 18.33

23. Atif ordered 16 chapatis, 5 plates of rice, 7 plates of mixed vegetable and 6 ice-cream cups. The cost of each chapati is Rs.6, that of each plate of rice is Rs.45 and that of mixed vegetable is Rs.70. The amount that Atif paid the cashier was Rs.961. Find the cost of each ice-cream cup?

- (A) Rs.25 (B) Rs.22.50
(C) Rs.20 (D) Rs.17.50
(E) None of these

24. A boat having a length 3 m and breadth 2 m is floating on a lake The boat sinks by 1 cm when a man gets on it. The mass of man is : _____?

- (A) 12 kg (B) 60 kg
(C) 72 kg (D) 96 kg

25. A and B can together do a piece of work in 15 days. B alone can do it in 20 days. In how many days can A alone do it ?

- (A) 40 days
- (B) 50 days
- (C) 60 days
- (D) 70 days

26. $(98 / 7 / 2) / ? = 14$

- (A) $1/2$
- (B) $1/3$
- (C) $1/4$
- (D) $1/5$

27. The diameter of a cylindrical tin is 6cm and height is 5 cm. Find the volume of the cylinder?

- (A) $30 \pi \text{ cc}$
- (B) $45 \pi \text{ cc}$
- (C) $150 \pi \text{ cc}$
- (D) $180 \pi \text{ cc}$

28. A group of people has provisions for 29 days for 24 men. If after 4 days $1/6$ of them desert then food will last for?

- (A) 25 days
- (B) 28 days
- (C) 30 days
- (D) 32 days

29. A gardener was asked to plant flowers in a row containing equal number of plants. He tried to plant 6, 8, 10 and 12 in each row, but 5 plants left in each case. When he planted 13 in a row, no plant was left. Find the number of plants with him?

- (A) 245
- (B) 125
- (C) 485
- (D) 845

30. The length of a rope by which a cow must be tethered in order that she may be able to graze an area of 9856 sq.m is:_____?

- (A) 56m
- (B) 64m
- (C) 88m
- (D) 168m



Physics

30 MCQs

31. The energy absorbed as heat by an ideal gas for an isothermal process is equal to:

- (A) The work done by the gas
- (B) The work done on the gas.
- (C) Change in the internal energy of the gas
- (D) Zero, since the process is isothermal

32. The speedometer of a car shows 36 km/hr. The angular speed of the wheels having 0.5m radius is:

- (A) 5 rad/sec
- (B) 10 rad/sec
- (C) 15 rad/sec
- (D) 20 rad/sec

33. If $A, B = \frac{1}{2} AB$ then angle between A and B is

- (A) Zero
- (B) 30
- (C) 60
- (D) 90

34. A signal that is applied at the inverting input terminal of an op-amplifier undergo amplification, at the output terminal with a phase shift of:

- (A) 0°
- (B) 270°
- (C) 360°
- (D) 180°

35. Echo is produced by reflection of sound waves from a denser medium. What is the phase change between sound wave and echo?

- (A) 0 degrees
- (B) 180 degrees
- (C) 270 degrees
- (D) 90 degrees

36. In an ideal transformer:

- (A) Power input is equal to Power output.
- (B) Power input is less than half of the power output.
- (C) Power input is greater than Power output
- (D) Power input is more than half of the power output.

37. A wire of resistance 'R' is stretched till its radius is half of the original value. The 2R resistance of stretched wire is:

- (A) 2R
- (B) 4R
- (C) 8R
- (D) 16R

38. Earth receives large amount of energy directly from:

- (A) Wind
- (B) Water
- (C) Sun
- (D) Moon

39. The magnetic field inside the current carrying wire varies

- (A) Inversely with r
- (B) Inversely with r^2
- (C) Directly with r^2
- (D) Directly with r

40. The transition from $n = 4, 5, 6, \dots$ To $n=3$ in hydrogen spectrum gives

- (A) Balmer series
- (B) Lyman series
- (C) Paschen series
- (D) Pfund series

41. 1 atomic mass unit (amu) in terms of energy is nearly equal to:

- (A) 931 KeV
- (B) 931 MeV
- (C) 39 MeV
- (D) 139 KeV

42. The frequency of photon having momentum 4.42×10^{-26} Ns is:

- (A) 2.00×10^{16} Hz
- (B) 2.00×10^{14} Hz
- (C) 5.00×10^{16} Hz
- (D) 2.00×10^{18} Hz

43. Alternating Voltage and alternating have phase difference of 90° with each other in a circuit called:

- (A) Pure capacitive circuit
- (B) Pure inductive circuit
- (C) RLC series AC circuit at resonance
- (D) Both (A) & (B) are true

44. An astronomical telescope has magnifying power 5. If the focal length is 20 cm then what is the focal length of the objective?

- (A) 1m
- (B) 0.1 m
- (C) 50 cm
- (D) 25 cm
- (E) 15 cm

45. The substances which undergo deformation with a small force are called;

- (A) Elastic substances
- (B) Inelastic substances
- (C) Diamagnetic substances
- (D) Ductile substances

46. Value of escape velocity for the surface of the earth is 11 km/sec. Its value for surface of the moon is:

- (A) 11 km/sec
- (B) 10.4 km/sec
- (C) 2.4 km/sec
- (D) 4.3 km/sec

47. While studying charging and discharging of a capacitor, $\tau = \text{Resistance} \times \text{Capacitance}$ is known as?

- (A) Electrostatic constant
- (B) Time constant
- (C) Dielectric constant
- (D) Proportionality constant

48. Eight drops of water, each radius 2mm are falling through air at a terminal velocity of 8cms⁻¹. If they coalesce to form a single drop the terminal velocity of the combined drop will be:

- (A) 8 cms⁻¹
- (B) 16 cms⁻¹
- (C) 24 cms⁻¹
- (D) 32 cms⁻¹

49. In projectile motion, the range of projectile will be maximum at an angle of

- (A) 30 degrees
- (B) 45 degrees
- (C) 60 degrees
- (D) 90 degrees

50. The prefix 'tera' stands for

- (A) 10^4
- (B) 109
- (C) 10^{-6}
- (D) 1012

51. The thermodynamic process during which the pressure is kept constant is called

- (A) Isochoric process
- (B) Adiabatic process
- (C) Isobaric process
- (D) Isothermal process

52. The angular velocity for the daily rotation of the earth is

- (A) $\pi/3$ radian hr⁻¹
- (B) $\pi/6$ radian hr⁻¹
- (C) $\pi/12$ radian hr⁻¹
- (D) 12 radian hr⁻¹

53. Two vectors A and B are making angle θ with each other. The scalar projection of vector B on vector A is written as.

- (A) $\cos\theta$
- (B) $A \cdot B / B$
- (C) $A \cdot B / A$
- (D) $\sin\theta$

54. Practically, current flows in a reverse p-n junction.

- (A) No
- (B) Very large
- (C) Few milliamperes
- (D) Both A and C

55. Of the following properties of a wave, the one that is independent of the others is its:

- (A) Amplitude
- (B) Wavelength
- (C) Speed
- (D) Frequency

56. A coil of 150 loops is pulled in 0.06s from poles of the magnet, which decreases the magnetic flux linked with the coil from 6×10^{-4} Wb to 2×10^{-4} Wb. The average emf induced in the coil is:

- (A) 1 V
- (B) 1.5 V
- (C) 0.1 V
- (D) 0.15 V

57. Wheatstone Bridge is used to:

- (A) Compare resistances
- (B) Determine the current
- (C) Determine the charge
- (D) Determine the e.m.f

58. When the speed of your car is halved, by what factor does its kinetic energy decrease?

- (A) 1/2
- (B) 1/4
- (C) 1/8
- (D) 1/6

59. The dimension of magnetic field strength is same as that of:

- (A) Magnetic flux
- (B) Magnetic induction
- (C) Work done
- (D) Magnetic Force

60. The wavelength, of last spectral line in Lyman series in terms of Rydberg constant(R) is equal to:

- (A) R
- (B) R^2
- (C) $1/R$
- (D) $1/R^2$



Chemistry

30 MCQs

61. C.F.C gases are produced from

- (A) burning of coal
- (B) burning of charcoal
- (C) automobile engines
- (D) refrigeration and air conditioning

62. Compound having lowest boiling point is:

- (A) Carbon tetrachloride
- (B) Ethyl alcohol
- (C) Benzene
- (D) Acetic acid

63. The study of heat changes accompanying a chemical reaction is known as:

- (A) Thermo-chemistry
- (B) Thermodynamics
- (C) Electro chemistry
- (D) Chemical kinetics

64. Geometric isomerism is exhibited by:

- (A) Alcohol
- (B) Ethers
- (C) Alkynes
- (D) Alkenes

65. _ are product of reaction of an alcohol and aromatic bi-functional acids.

- (A) Acrylic resins
- (B) Polyester resins
- (C) PVCs
- (D) Polyamide resins

66. The electronic configuration for degenerate orbitals is explained by:

- (A) Aufbau Principle
- (B) $n+l$ Rule
- (C) Hund's Rule
- (D) Pauli's Exclusion Principle

67. A salt AB ionizes as $AB \rightleftharpoons A^+ + B^-$. The solubility product for the salt AB is 4.0×10^{-4} . The molar solubility of the salt is:

- (A) $4.0 \times 10^{-4} \text{ M}$
- (B) $2.0 \times 10^{-2} \text{ M}$
- (C) $8.0 \times 10^{-4} \text{ M}$
- (D) $2.0 \times 10^{-4} \text{ M}$

68. Which statement correctly describes the structure of sodium chloride crystal?

- (A) Each sodium ion is surrounded by six chloride ions and each chloride ions surrounded by six sodium ions
- (B) The crystal is face centered cubic structure
- (C) Each sodium ion is surrounded by 3 chloride ions and each chloride ion surrounded by 3 sodium ions
- (D) Inter molecular forces are present between two oppositely charges ions

69. rate of reaction independent to concentration reaction is

- (A) zero order reaction
- (B) 1 order reaction
- (C) 2 order reaction
- (D) 3 order reaction

70. Which one of the following is the correct equation of 1st ionization of sulphuric acid?

- (A) $\text{H}_2\text{SO}_4(\text{aq}) + \text{H}_2\text{O}(\text{l}) \rightarrow \text{H}^+ + \text{SO}_4^{2-}$
- (B) $\text{H}_2\text{SO}_4(\text{aq}) + \text{H}_2\text{O}(\text{l}) \rightarrow \text{H}^+(\text{aq}) + \text{HSO}_4^-$
- (C) $\text{H}_2\text{SO}_4(\text{aq}) + \text{H}_2\text{O}(\text{l}) \rightarrow 2\text{H}^+ + \text{SO}_4^{2-}$
- (D) $\text{H}_2\text{SO}_4(\text{aq}) + \text{H}_2\text{O}(\text{l}) \rightarrow \text{H}_3\text{O}^+ + \text{SO}_4^{2-}$

71. Osmotic pressure of a solution is _ property.

- (A) Obligative.
- (B) Fractional.
- (C) Colligative
- (D) Automated.

72. A single molecule of haemoglobin is composed of:

- (A) Three polypeptide chains
- (B) Four polypeptide chains
- (C) Five polypeptide chains
- (D) Six polypeptide chains

73. 40.0 dm³ of an ideal gas at 250C and 750 mm Hg is expanded to 50.0 dm³. The pressure of the gas changed to 765 mm Hg. What is the temperature of the gas?

- (A) $(298)(750)(50)/(40)(765)$
- (B) $(298)(750)(40)/(50)(765)$
- (C) $(298)(765)(50)/(750)(40)$
- (D) $(40)(750)/(298)(50)(765)$

74. Predict the color change when a base is added into potassium dichromate solution

- (A) Yellow to blue
- (B) Orange to yellow
- (C) Yellow to orange
- (D) Green to yellow

75. If the electronegativity difference between bonded atoms is zero, the bond between the two atoms is:

- (A) Polar
- (B) Partially Ionic
- (C) Non-polar
- (D) Both B and C

76. Which is the correct formula for ammonium carbamate?

- (A) H_2NCONH_2 (B) $\text{NH}_4\text{COONH}_4$
(C) $\text{H}_2\text{NCOONH}_2$ (D) $\text{NH}_2\text{COONH}_4$

77. For atomic numbers given below, which pair of elements will have the same chemical properties?

- (A) 13, 22 (B) 3, 11
(C) 4, 24 (D) 2, 4

78. Primary amines on treatment with alkyl halide yield:

- (A) Secondary amine (B) Tertiary amine
(C) Quaternary ammonium salt (D) Mixture of (a), (b) & (c)

79. Which of the following gives a positive test Fehling solution?

- (A) Cu (I) oxide (B) Ethanal
(C) Acetone (D) Phenol

80. Consider the given balanced chemical equation: $2\text{H}_2 + \text{O}_2$ gives $2\text{H}_2\text{O}$. If 4 g of H_2 reacts with 32 g of O_2 to produce 28 g of H_2O , what is the percentage yield of the reaction? (Molar mass of $\text{H}_2 = 2$ g/mol, $\text{O}_2 = 32$ g/mol and $\text{H}_2\text{O} = 18$ g/mol)

- (A) 63.6% (B) 77.8%
(C) 87.5% (D) 92.5%

81. The relative abundance of the isotopes of the elements can be determined by:

- (A) Mass Spectrometry (B) X-rays
(C) Chromatography (D) Solvent Extraction

82. The order of reactivity of alcohols when C-O bonds break is:

- (A) Tertiary alcohols > secondary alcohol > Primary alcohol
(B) Secondary alcohol > Primary alcohol > tertiary alcohols
(C) Primary alcohol > Secondary alcohol > tertiary alcohol
(D) Tertiary alcohols > Primary alcohol > Secondary alcohol

83. Sublimation is used to purify:

- (A) Ammonium sulphate (B) Sodium chloride
(C) Benzoic acid (D) Lead carbonate

84. The type of isomerism present in the compound given, is:

- (A) Structural (B) Optical
(C) Stereo (D) None of the above

85. Ammonium hydroxide was added to a salt solution, and a deep blue color was obtained. The solution contains ions of:

- (A) Zn^{2+}
- (B) Cu^{2+}
- (C) Fe^{2+}
- (D) Ba^{2+}

86. The amount of methane in biogas is approximately:

- (A) 10-30%
- (B) 50-90%
- (C) 50-75%
- (D) 60-75%

87. The boiling point of ammonia (NH_3) is maximum among the hydrides of group V elements due to:

- (A) Very small size of Nitrogen
- (B) Pyramidal structure of NH_3
- (C) Enhanced electronegative character of Nitrogen
- (D) Enhanced electropositivity of nitrogen

88. The net heat change in a chemical reaction is same whether it takes place in one step or several steps. This law is known as:

- (A) First law of thermodynamics
- (B) Henry's law
- (C) Hess's law
- (D) Joule's law

89. The substitution of a '-H' by '-NO₂' group in benzene is called:

- (A) Nitration
- (B) Ammonolysis
- (C) Sulphonation
- (D) Reduction of benzene

90. Silicones are resistant to chemical attack and are used as

- (A) Paints
- (B) Varnishes
- (C) Water proofing fabrics
- (D) All of the above



English

10 MCQs

91. Indirect form of the sentence is: He said, "May this child live long!"

- (A) He prayed that that child may live long
- (B) He prayed that that child will live long
- (C) He prayed that that child might live long
- (D) He said that that child might live long

92. Find one error in the sentence, if any. I just don't want to get out off bed today.

- (A) Get out
- (B) Just
- (C) Off
- (D) No error

93. Identify the error and choose the correct option: The first space traveller was dennis tito from united states

- (A) The first space traveller was Dennis Tito from the United States.
- (B) The First Space Traveller was Dennis Tito, from, the United states.
- (C) The first space traveller was Dennis Tito-from the United states.
- (D) The first space traveller was Dennis Tito, from the United States.

94. Choose the word nearly opposite in meaning to the given word. FORTH

- (A) Back
- (B) Out
- (C) Into view
- (D) Onward

95. Complete the sentence using the most suitable preposition. I shall visit you _ summers.

- (A) At
- (B) On
- (C) In
- (D) Over

96. Pick up the wrong part in the sentence: Each of the defaulters were heavily fined for delay in payment of dues.

- (A) Were
- (B) Fined
- (C) Delay
- (D) Payment

97. Identify the sentence with no spelling error:

- (A) Imtiaz invited me on a dinner party at restaurant.
- (B) Imtiaz invited me on a diner party at restaurant.
- (C) Imtiaz invited me on a dinner party at resturant.
- (D) Imtiaz invited me on a dinnar party at restaurent.

98. Shah Jahan _ the great mosque at Delhi.

- (A) Founded
- (B) Created
- (C) Raised
- (D) Established

99. (Fix this) Select the correct sentence:

- (A) Certainly she is the best person for the job.
- (B) She is the best person for the job certainly.
- (C) She is certainly the best person for the job.
- (D) The best person certainly she is for the job.

100. In each of the following questions, four alternative sentences are given. Choose the CORRECT one and fill in the Circle corresponding to that letter in the MCQ Response Form.

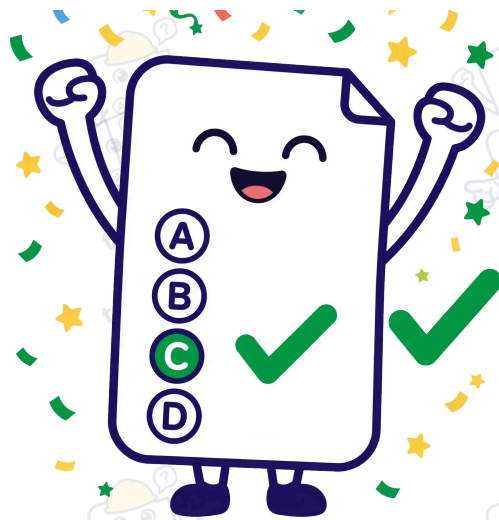
- (A) They felt bad while leaving their friends.
- (B) They felt very badly about leaving their friends.
- (C) They felt badly about leaving their friends.
- (D) They felt badly while teaving their friends.

Answer key

Tap any answer to open its full explanation on TestUstad.

Model Paper 1

1	A	2	A	3	C	4	B	5	C	6	B	7	B	8	D	9	C	10	D
11	B	12	B	13	A	14	A	15	B	16	C	17	A	18	C	19	A	20	B
21	D	22	D	23	A	24	B	25	C	26	A	27	B	28	C	29	D	30	A
31	A	32	D	33	C	34	D	35	B	36	A	37	D	38	C	39	D	40	C
41	B	42	A	43	A	44	A	45	A	46	C	47	B	48	D	49	B	50	D
51	C	52	C	53	C	54	A	55	A	56	A	57	A	58	B	59	B	60	C
61	A	62	A	63	A	64	D	65	B	66	C	67	B	68	A	69	B	70	B
71	C	72	B	73	C	74	B	75	C	76	D	77	B	78	D	79	B	80	B
81	A	82	A	83	C	84	C	85	B	86	C	87	C	88	C	89	A	90	A
91	C	92	C	93	A	94	A	95	C	96	A	97	A	98	A	99	C	100	A



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