MENTORS EDUSERV TALENT REWARD EXAM (METRE)
SAMPLE TEST PAPER

[For Students presently in Class 10 going to Class 11 in 2019]

[Stream: Medical]

Time : 2 hours **Maximum Marks: 240**

DO NOT BREAK THE SEALS ON THIS BOOKLET, AWAIT INSTRUCTIONS FROM THE INVIGILATOR.

INSTRUCTIONS

[A] General

1. This Question paper contains **FOUR** Parts, **A to D** (Physics, Chemistry, Biology and Mental Ability).
2. This Question Paper contains **16 pages.**
3. This question paper contains total **100 questions** (**20** questions each in Physics, Chemistry, Mental Ability **+ 40** questions in Biology).
4. The Question Paper has blank spaces at the bottom of each page for rough work. No additional sheets will be provided for rough work.
5. Blank papers, clip boards, log tables, slide rule, calculators, cellular phones, pagers and electronic gadgets, in any form, are **NOT** allowed.
6. The **OMR** (Optical Mark Recognition) sheet shall be provided separately.

[B] Answering on the OMR

7. In all the parts, each question will have **4 choices** out of which **only one choice is correct**.
8. Darken the bubble with **Ball Pen (Blue or Black) ONLY.**

[C] Filling OMR

9. On the **OMR sheet**, fill all the details properly and completely, otherwise your OMR will not be checked.
10. Do not write anything or tamper the barcode in the registration no. box.

SEAL

[D] Marking Scheme:

11. **Part A, Part B & Part D :** For each question you will be awarded **3 marks** if you darken the bubble corresponding to the correct answer **ONLY.** In all other cases, **minus one (–1) mark** will be awarded.

Part C (Biology) : For each question you will be awarded **1.5 marks** if you darken the bubble corresponding to the correct answer **ONLY.** In all other cases, **minus 0.5 mark** will be awarded.

Zero (0) marks if no bubble is darkened

Name :.....

Registration No.: | | | | | | | | | | | | | | | |

PART-A : PHYSICS

1. The specific resistance of manganin is 50×10^{-8} ohm × m. The resistance of a cube of length 50 cm will be

(A) 10^{-6} ohm (B) 2.5×10^{-6} ohm (C) 10^{-8} ohm (D) 5×10^{-4} ohm

2. The temperature coefficient of resistance for a wire is 0.00125 /°C. At 300 K its resistance is 1 ohm. The temperature at which the resistance becomes 2 ohm is

(A) 1154 K (B) 1100 K (C) 1400 K (D) 1127 K

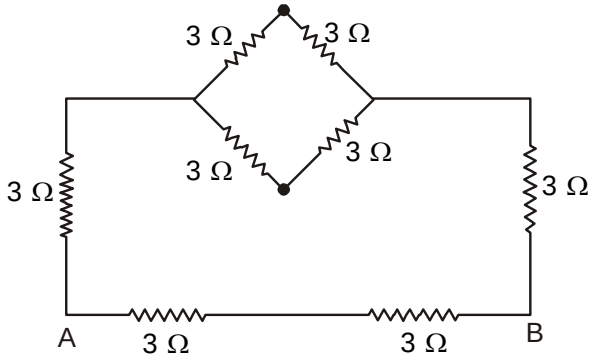
3. 62.5×10^{18} electrons per second are flowing through a wire of area of cross-section 0.1 m^2, the value of current flowing will be

(A) 1 A (B) 0.1 A (C) 10 A (D) 0.11 A

4. The resistance of a wire of uniform diameter d and length L is R. The resistance of another wire of the same material but diameter 2d and length 4L will be

(A) 2R (B) R (C) R/2 (D) R/4

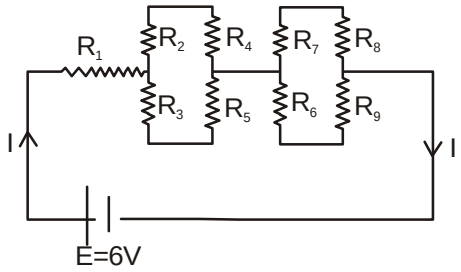
5. Equivalent resistance between A and B will be



(A) 2 ohm (B) 18 ohm (C) 6 ohm (D) 3.6 ohm

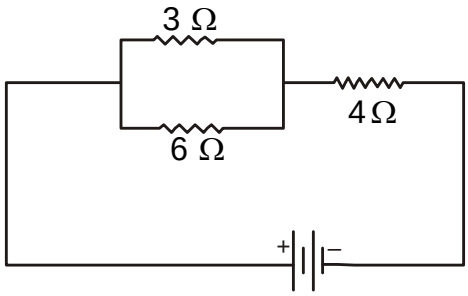
Space for rough work

6. Nine resistors each of resistance $1\,k\Omega$ are connected to a battery of 6 V as shown in the circuit given below. What is the total current flowing in the circuit



(A) 3 mA (B) $\frac{2}{3}$ mA (C) $\frac{3}{2}$ mA (D) 2 mA

7. In the figure current through the 3Ω resistor is 0.8 ampere, then potential drop through 4Ω resistor is



(A) 9.6 V (B) 2.6 V (C) 4.8 V (D) 1.2 V

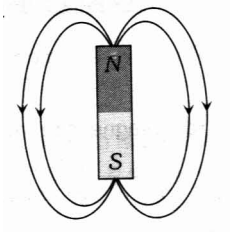
8. S.I. Unit of magnetic flux density is

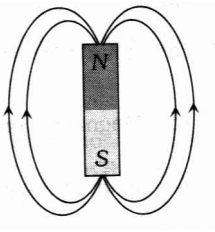
(A) Tesla (B) Weber/metre^2

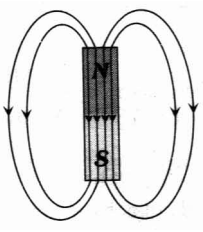
(C) Newton/ampere-metre (D) All of the above

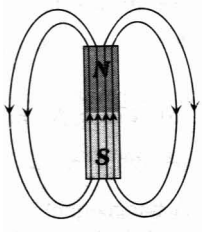
Space for rough work

9. The magnetic field lines due to a bar magnet are correctly shown in

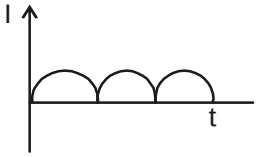
(A) 

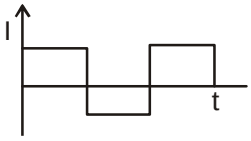
(B) 

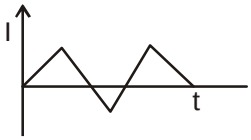
(C) 

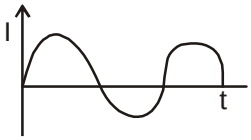
(D) 

10. Which of the following is not AC :

(A) 

(B) 

(C) 

(D) 

11. In the nuclear reaction $_{92}U^{235} +_{0} n^{1} \Rightarrow {}_{56}Ba^{141} +_{36} Kr^{92} + 3X + 200\,Mev$, X represents:

(A) Proton (B) Neutron (C) Electron (D) Alpha particle

12. Volt is the SI unit of

(A) potential difference (B) current

(C) resistance (D) charge

13. The magnetic lines of force

(A) always intersect each other

(B) never intersect each other

(C) sometimes intersect and sometimes do not intersect

(D) are always parallel to each other.

Space for rough work

14. The direction of induced current in a circuit is given by

(A) Fleming's left-hand rule (B) Fleming's right hand rule

(C) Right hand grip rule (D) Ampere's swimming rule

15. Current carrying conductor placed in a magnetic field experiences a force. The device based on this principle is

(A) electrical generator (B) electric motor

(C) electric bell (D) none of these.

16. The force on a charged particle which is moving in a magnetic field is maximum when the angle between direction of motion and field is

(A) zero (B) 90° (C) 180° (D) 45°

17. In which of the following device/process solar energy is converted into chemical energy?

(A) Solar evaporation (B) Photosynthesis

(C) Solar cells (D) Solar heater

18. Which one of the plants use conventional source of energy?

(A) Thermal power plant (B) Hydropower plant

(C) Solar panels (D) Windmill farm

19. Which of the following is not a form of ocean energy?

(A) Geothermal enrgy (B) Ocean thermal energy

(C) Tidal energy (D) Wave energy

20. The effect of using split rings in a simple DC motor is that :

(A) the direction of rotation of the coil is reversed.

(B) the current in the coil always flows in the same direction.

(C) the direction of the current flowing in the coil is reversed.

(D) none of these

Space for rough work

PART-B : CHEMISTRY

21. Plaster of Paris is obtained

(A) by adding water to calcium sulphate

(B) by adding sulphuric acid to calcium hydroxide

(C) by heating gypsum to a very high temperature

(D) by heating gypsum to 120°C

22. Bleaching powder gives smell of chlorine because it

(A) is unstable

(B) gives chlorine on exposure to atmosphere

(C) is a mixture of chlorine and slaked lime

(D) contains excess of chlorine

23. Which set of acids is solid in nature?

(A) Boric acid, oxalic acid

(B) Acetic acid and boric acid

(C) Formic acid and oxalic acid

(D) Formic acid and acetic acid

24. Which is not a dibasic acid?

(A) Carbonic acid (H_2CO_3)

(B) Sulphurous acid (H_2SO_3)

(C) Formic acid (HCOOH)

(D) Oxalic acid [$(COOH)_2$]

25. On electrolysis of brine solution, the products formed are

(A) sodium and chlorine

(B) hydrogen, chlorine and oxygen

(C) hydrogen, chlorine and sodium hydroxide

(D) sodium hydroxide, chlorine and oxygen

Space for rough work

26. What will be the pH value of 0.05 M $Ba(OH)_2$ solution?

(A) 12 (B) 13 (C) 1 (D) 12.96

27. Which of the following has highest pH ?

(A) $\frac{M}{4}KOH$ (B) $\frac{M}{4}NaOH$ (C) $\frac{M}{4}NH_4OH$ (D) $\frac{M}{4}Ca(OH)_2$

28. The reducing agent in thermite process is

(A) Mg (B) Al (C) Cr (D) Fe

29. Metals like copper, mercury and lead are obtained from their oxide ores by

(A) carbon reduction (B) aluminium reduction

(C) self reduction (D) electrolytic reduction

30. The process of heating an ore in limited air and below its melting point is called

(A) smelting (B) roasting (C) calcination (D) pyrolysis

31. Which of the following oxide cannot be reduced with carbon to obtain the metal?

(A) MnO_2 (B) Cr_2O_3 (C) Al_2O_3 (D) All of these

32. The process of electrolysis is used for obtaining such metals which are

(A) highly reactive (B) moderately reactive

(C) highly unreactive (D) all types of metals

33. In metallurgical process the flux used for removing acidic impurities is

(A) silica (B) sodium chloride (C) limestone (D) sodium carbonate

34. The difference of water molecules in gypsum and Plaster of Paris is

(A) 5/2 (B) 2 (C) 1/2 (D) 3/2

Space for rough work

35. If tartaric acid is not added in baking powder, the cake will taste bitter due to the presence of

(A) sodium hydrogen carbonate (B) sodium carbonate

(C) carbon dioxide (D) some unreacted tartaric acid

36. Which of the following is incorrectly matched?

(A) Tomato – tartaric acid (B) Ant sting – methanoic acid

(C) Citrus fruit – citric acid (D) Curd – lactic acid

37. The solution with the lowest concentration of H^+ ion is

(A) pH = 7 (B) pH = 8.6 (C) pH = 2.0 (D) pH = 6.8

38. $aMg_3N_2 + bH_2O \rightarrow cMg(OH)_2 + dNH_3$. When the equation is balanced, the coefficients a, b, c, d respectively are

(A) 1, 3, 3, 2 (B) 1, 6, 3, 2 (C) 1, 2, 3, 2 (D) 2, 3, 6, 2

39. In the reaction, $Br_2 + 2I^- \rightarrow 2Br^- + I_2$, the oxidizing agent is

(A) Br_2 (B) I^- (C) Br^- (D) I_2

40. Ferrous sulphate on heating produces

(A) ferric oxide (B) carbon dioxide (C) oxygen (D) water

PART-C : BIOLOGY

41. Bile juice is secreted by liver and is stored in the gall bladder.

Bile juice is chiefly involved in the digestion of

(A) proteins (B) carbohydrates (C) fats (D) glucose

42. The absorption of water from undigested food takes place in the

(A) small intestine (B) large intestine (C) stomach (D) liver

Space for rough work

43. Which is the longest part of the digestive tract?

(A) Esophagus (B) Stomach

(C) Small intestine (D) Large intestine

44. Which organ precedes anus?

(A) Large intestine (B) Small intestine (C) Rectum (D) Stomach

45. Longer small intestine is found in

(A) carnivores (B) herbivores (C) parasites (D) saprophytes.

46. Iodine used to detect presence of starch. It gives starch

(A) red colour (B) green colour

(C) blue-black colour (D) colourless appearance

47. Vocal cards occur in

(A) pharynx (B) glottis (C) bronchial tube (D) larynx

48. What is not produced during cellular respiration?

(A) Carbon dioxide (B) Water molecules

(C) Glucose molecules (D) ATP molecules

49. Correct statement is

(A) roots of plant respire through lenticles and stomata.

(B) stem of plant respire through lenticles

(C) both A and B are correct

(D) both A and B are incorrect

50. The most common substrate of respiration is _____.

(A) fats (B) amino acids (C) glucose (D) sucrose

51. In a closed circulatory system, blood is completely enclosed with in

(A) sinuses (B) vessels (C) heart (D) skeleton

Space for rough work

52. Blood is carried away from the heart by__*i*__ and carried back to the heart by__*ii*__. Which alternative completes the above sentence?
(A) i - kidney, ii - Lungs (B) i - arteries, ii - veins
(C) i - lungs, ii - kidney (D) i - veins, ii - arteries

53. Absorption of water by a root is increased by
(A) increase in the transpiration (B) increase in the rate of photosynthesis
(C) decrease in transpiration (D) decrease in salt up take.

54. The ascent of sap in plants takes place due to _____.
(A) root pressure (B) transpiration pull
(C) both a and b (D) osmosis

55. Pulse beat is measured in _____.
(A) nerve (B) artery (C) vein (D) heart

56. The end product of protein as a result of digestion is
(A) glycerol (B) monosaccharides
(C) fatty acids (D) amino acids

57. Excess amino acids in the body are broken down to form urea in
(A) kidney (B) liver (C) spleen (D) pancreas

58. A severe fall in blood pressure disturbs the function of kidneys and reduces
(A) renal absorption (B) glomerular filtration
(C) reabsorption (D) secretion of nitrogenous wastes

59. Excretion of bile pigments in urine indicates
(A) anaemia (B) diabetes (C) gout (D) jaundice

60. A human kidney receives about one to three litres of blood per minute.Blood is transported to the glomerulus by the
(A) renal vein (B) hepatic vein (C) efferent arteriole (D) afferent arteriole

61. Which term is used for the minute vessel that runs parallel to the Henle's loop?
(A) Vasa recta (B) Glomerulus
(C) Afferent arteriole (D) Efferent arteriole

Space for rough work

62. Which of the following arrow diagrams correctly represents the movement of filtrate in nephrons to form urine?

(A) Glomerulus → proximal convoluted tubule → descending limb of Henle → ascending limb of Henle → distal convoluted tubule → collecting ducts

(B) Glomerulus → descending limb of Henle → proximal convoluted tubule → distal convoluted tubule → ascending limb of Henle → collecting ducts

(C) Glomerulus → proximal convoluted tubule → distal convoluted tubule → ascending limb of Henle → descending limb of Henle → collecting ducts

(D) Glomerulus → descending limb of Henle → ascending limb of Henle → proximal convoluted tubule → distal convoluted tubule → collecting ducts

63. During micturition, the urinary bladder ____***i***____ and the urethral sphincter____***ii***____.

The information in which alternative completes the above statement?

(A) i-contracts ii-contracts (B) i-contracts ii-relaxes

(C) i-relaxes ii-relaxes (D) i-relaxes ii- contracts

64. The spinal cord is a continuation of the brain stem. It is encased in the vertebral column. Which of the following functions is performed by the spinal cord?

(A) It controls one's memory and learning ability

(B) It controls body temperature

(C) It controls voluntary muscles

(D) It controls reflex actions

65. The involuntary muscles present in the stomach and heart cannot be controlled at will. Which part of the brain controls involuntary muscles?

(A) Medulla (B) Cerebrum (C) Cerebellum (D) Hypothalamus

66. Which of the following is not an involuntary action?

(A) vomiting (B) chewing (C) heart beat (D) salivation

Space for rough work

67. The junction between two adjacent neurons is called

(A) nerve junction (B) sensory junction

(C) synapse (D) neuro-muscular joint

68. The olfactory receptors in humans are located in:

(A) eyes (B) tongue (C) ears (D) nose

69. It is a common observation that roots of plants always grow toward the source of water. The given phenomenon is explained by the concept of

(A) gravitropism (B) hydrotropism (C) phototropism (D) thermotropism

70. The movement shown by the leaves of *touch-me-not* on being touched is known as__*i*__. __*ii*__ involves the bending of shoots towards a source of light.

The information in which alternative completes the given statements?

(A) i-growth-independent movement , ii-Growth-dependent movement

(B) i-growth-dependent movement, ii-Growth-independent movement

(C) i-growth-independent movement, ii-Growth-independent movement also

(D) i-growth-dependent movement, ii-Growth-dependent movement also

71.

Column-A	**Column-B**
(i) Mimosa pudica	a Phototropism
(ii) Radical	b Thigmotropism
(iii) Plumule	c Chemotropism
(iv) Growth of pollen tube	d Geotropism

The alternatives in the given table can be correctly matched as

(A) i $\rightarrow$ b, ii $\rightarrow$ a, iii $\rightarrow$ c, iv $\rightarrow$ d (B) i $\rightarrow$ c, ii $\rightarrow$ d, iii $\rightarrow$ a, iv $\rightarrow$ b

(C) i $\rightarrow$ b, ii $\rightarrow$ d, iii $\rightarrow$ a, iv $\rightarrow$ c (D) i $\rightarrow$ c, ii $\rightarrow$ a, iii $\rightarrow$ d, iv $\rightarrow$ b

Space for rough work

72. Which of the following is not a plant hormone?

(A) auxin (B) ascorbic acid (C) cytokinin (D) abscisic acid

73. One of the following plant hormones is responsible for the phenomenon of phototropism in plants. This is:

(A) gibberellin (B) eltroxin (C) cytokinin (D) auxin

74. Pituitary is one of the most important glands of the endocrine system. It secretes gonadotropic hormones. Gonadotropic hormones regulate the functioning of the

(A) reproductive system (B) respiratory system

(C) circulatory system (D) excretory system

75. The increased level of glucose in blood can affect the functioning of various organ systems. Which hormone lowers the blood sugar level to normal?

(A) Insulin (B) Thyroxine (C) Progesterone (D) Testosterone

76. Dwarfism is a deficiency disorder in which a person does not attain normal height and remains short. Dwarfism occurs due to the deficiency of

(A) insulin (B) adrenaline (C) growth hormone (D) thyroxin hormone

77. The proper intake of iodine in diet helps prevent goitre. Iodine is essential for the functioning of which endocrine gland?

(A) Adrenal (B) Thyroid (C) Testis (D) Ovary

78. One of the following acts as an endocrine gland as well as an exocrine gland. This one is:

(A) salivary gland (B) pancreas (C) pituitary (D) parathyroid

79. Which of the following hormone prepares our body for action in emergency situations?

(A) testosterone (B) growth hormone (C) adrenaline (D) insulin

80. The dramatic changes in body features associated with puberty are mainly because of the secretions of

(A) estrogen from testes and testosterone from ovary

(B) estrogen from adrenal gland and testosterone from pituitary gland

(C) testosterone from testes and estrogen from ovary

(D) testosterone from thyroid gland and estrogen from pituitary gland

Space for rough work

PART-D : MENTAL ABILITY

81. Anoop starts walking towards South, After walking 15 m he turns towards North. After walking 20 m, he turns towards East and walks 10 m. He then turns towards South and walks 5 m. How far is he from his original position and in which direction?

(A) 10 m, North (B) 10 m, South (C) 10 m, West (D) 10 m, East

82. Village Chimur is 20 km to the North of village Rewa. Village Rahate is 18 km to the East of village Rewa. Village Angne is 12 km to the West of Chimur. If Sanjay starts from village Rahate and goes to village Angne, in which direction is he from his starting point?

(A) North (B) North-West (C) South (D) South-East

83. If H = 8 and HAT = 29, find how BOX =?

(A) 46 (B) 43 (C) 42 (D) 41

DIRECTIONS (Q. Nos. 84-86) : From the given alternative words, select the word which cannot be formed using the letters of the given word.

84. **UNCONTAMINATED**

(A) MINE (B) NATON (C) CONNOTE (D) TANDEM

85. **PROVINCIALISM**

(A) SAILOR (B) NAIL (C) MAN (D) INITIAL

86. **DEPARTMENT**

(A) ENTER (B) PARENT (C) TEMPER (D) PARADE

87. Which of the following interchange of sign would make the given equation correct?

64 × 8 ÷ 6 × 8 = 6

(A) + and – (B) ÷ and × (C) + and ÷ (D) – and ×

88. If + stands for division; × stands for addition; – stands for multiplication; ÷ stands for subtraction, which of the following is correct?

(A) 15 ÷ 5 × 2 – 6 + 3 = 28 (B) 15 × 5 + 2 – 6 ÷ 3 =56.5

(C) 15 + 5 – 2 ÷ 6 × 3 = 3 (D) 15 – 5 + 2 × 6 ÷ 3 = 41

Space for rough work

DIRECTIONS (Q. Nos. 89-91) : Select the missing number from the given responses.

89.

14	10	22
2	3	4
7	3	11
4	10	?

(A) 2 (B) 4 (C) 6 (D) 8

90.

6	8	7
36	64	49
24	48	35
18	24	?

(A) 17 (B) 18 (C) 19 (D) 21

91.

5	2	3
3	6	5
4	7	2
60	84	?

(A) 10 (B) 25 (C) 30 (D) 40

DIRECTIONS (Q. Nos. 92-94) : Find the odd number/letters/ number pair from the given alternatives.

92. (A) AZBY (B) CXDW (C) EVFU (D) TGSH

93. (A) 1 0 1 (B) 2 1 2 (C) 3 2 6 (D) 1 1 1

94. (A) 12 – 144 (B) 13 – 156 (C) 15 – 180 (D) 16 – 176

DIRECTIONS : (95-96) Select the missing number from the given responses.

95.

14	10	22
2	3	4
7	3	11
4	10	?

(A) 2 (B) 4 (C) 6 (D) 8

96.

6	8	7
36	64	49
24	48	35
18	24	?

(A) 17 (B) 18 (C) 19 (D) 21

Space for rough work

DIRECTIONS (Q. Nos. 97-98) : Find out the wrong number in the series.

97. 17, 23, 31, 41, 53, 69

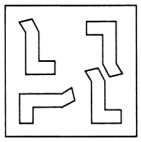
(A) 23 (B) 31 (C) 41 (D) 69

98. 27, 81, 1331, 125

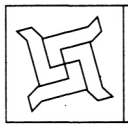
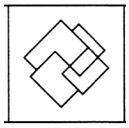
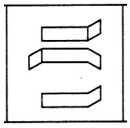
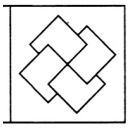
(A) 125 (B) 27 (C) 1331 (D) 81

99. Identify the answer figure from which the pieces given in the question figure have been cut.

Question Figure

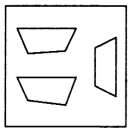


Answer figure

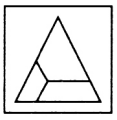
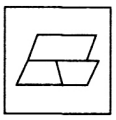
(A)  (B)  (C)  (D) 

DIRECTIONS : In which among the answer figures can be constructed from the parts given in question figure?

100. Question Figure



Answer figure

(A)  (B)  (C)  (D) 

Space for rough work

ANSWER - KEY

PART- A : PHYSICS

1. (A)	2. (D)	3. (C)	4. (B)
5. (D)	6. (D)	7. (C)	8. (A)
9. (D)	10. (A)	11. (B)	12. (A)
13. (B)	14. (B)	15. (B)	16. (B)
17. (B)	18. (A)	19. (A)	20. (C)

PART- B : CHEMISTRY

21. (D)	22. (B)	23. (A)	24. (C)
25. (C)	26. (B)	27. (D)	28. (B)
29. (C)	30. (C)	31. (D)	32. (A)
33. (C)	34. (D)	35. (B)	36. (A)
37. (B)	38. (B)	39. (A)	40. (A)

PART- C : BIOLOGY

41. (C)	42. (B)	43. (C)	44. (C)
45. (B)	46. (C)	47. (D)	48. (C)
49. (B)	50. (C)	51. (B)	52. (B)
53. (A)	54. (C)	55. (B)	56. (D)
57. (B)	58. (B)	59. (D)	60. (D)
61. (A)	62. (A)	63. (B)	64. (D)
65. (A)	66. (B)	67. (C)	68. (D)
69. (B)	70. (A)	71. (C)	72. (B)
73. (D)	74. (A)	75. (A)	76. (C)
77. (B)	78. (B)	79. (C)	80. (C)

PART- D : MENTAL ABILITY

81. (D)	82. (B)	83. (D)	84. (C)
85. (D)	86. (D)	87. (B)	88. (A)
89. (D)	90. (D)	91. (C)	92. (D)
93. (A)	94. (D)	95. (D)	96. (D)
97. (D)	98. (D)	99. (A)	100. (A)