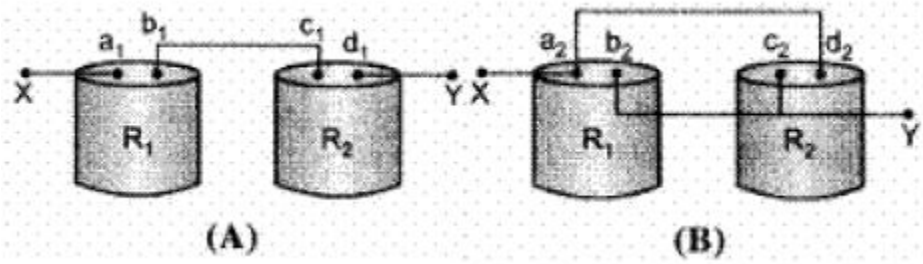
Sample Paper (Class – 11th)

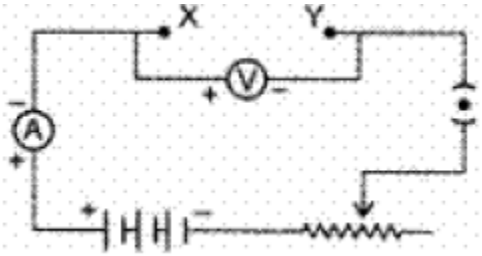
ISE Year - 2021

Physics

1. Students A and B connected the two resistors R_1 and R_2 given to them in the manners shown below :



and then insert at X and Y into the measuring circuit shown below :



We can say that

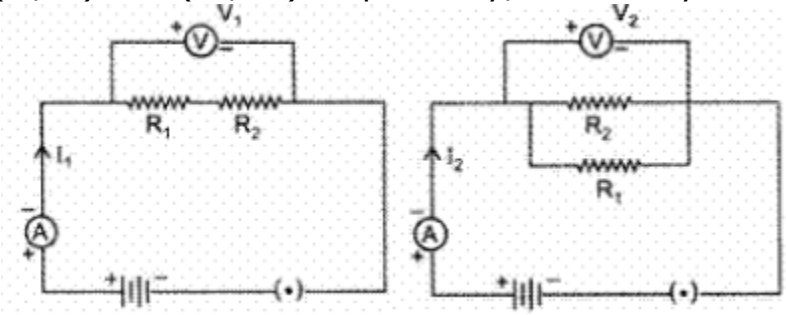
(1) Both the students will determine the equivalent resistance of the series combination of R_1 and R_2.

(2) Student A will determine the equivalent resistance of the series combination while student B will determine the equivalent resistance of the parallel combination of $R_1$and R_2.

(3) Both the student will determine the equivalent resistance of the parallel combination of R_1 and R_2.

(4) Student A will determine the equivalent resistance of the parallel combination while student B will determine the equivalent resistance of the series combination of R_1 and R_2.

2. A student, using the same two resistors, battery, ammeter and voltmeter, sets up two circuits, connecting the two resistors, first in series and then in parallel. If the ammeter and voltmeter readings, in the two cases, are (I_1, I_2) and (V_1, V_2) respectively, he is likely to observe that



(1) $I_1 = I_2$ but $V_1 = V_2$
(2) $I_1 > I_2$ but $V_1 = V_2$
(3) $I_1 = I_2$ but $V_1 \neq V_2$
(4) $I_1 < I_2$ but $V_1 = V_2$

3. What will happen when a magnet is taken towards a circular coil?

(1) Induced current will start flowing
(2) No effect on the circular coil
(3) No effect of magnetic field
(4) No current will flow in the circuit

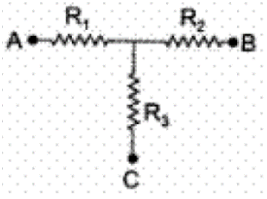
4. Magnetic field lines determine

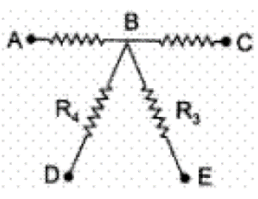
(1) Only the direction of magnetic field
(2) Both the direction and the relative strength of magnetic field
(3) Only the relative strength of the magnetic field
(4) The shape of magnetic field

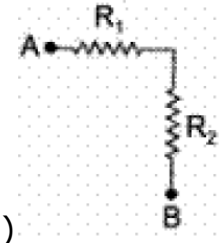
5. What type of currents is produced by most of the power stations in India?

(1) AC current having frequency of 50 Hz
(2) AC current having frequency of 100 Hz
(3) DC current having frequency of 50 Hz
(4) DC current having frequency of 100 Hz

6. The combination exhibiting series combination of resistors is

(1) 

(2) 

(3) All of these (4) 

7. Which of the following is/are good conductor(s) of electricity?

(1) Mica, Quartz
(2) Metals, Mica
(3) Metals, Quartz
(4) Metals, Rubber

8. When the main switch of the house circuit is put off, it disconnects the _____?

(1) Earth wire
(2) Live wire
(3) Live wire and Neutral wire
(4) None of these

9. Which energy is not derived from the sun?

(1) Biomass energy
(2) Ocean wave energy
(3) Wind energy
(4) Nuclear energy

10. Match the following with correct response.

(a) Appliances with exposed metal parts always need	(i) D.C
(b) The unidirectional current flow in the circuit	(ii) Electric motor
(c)The current which changes its direction at regular intervals	(iii) A.C
(d) Device that makes use of the fact that magnetism in presence of electricity produces motion	(iv) Three pin plug

(1) a-i, b-iii, c-ii, d-iv
(2) a-ii, b-iv, c-i, d-iii
(3) a-iii, b-ii, c-iv, d-i
(4) a-iv, b-i, c-iii, d-ii

11. Match the following with correct response

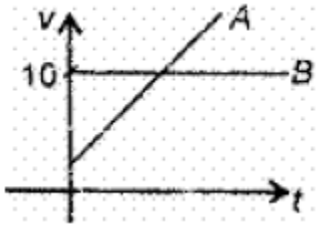
(a) S.I unit of magnetic field	(i) Small bar magnet capable of rotating freely
(b) Magnetic field inside the solenoid	(ii) Tesla
(c) Compass needle	(iii) Temporary magnet
(d) Solenoid	(iv) Uniform

(1) a-i, b-iii, c-ii, d-iv
(2) a-iii, b-ii, c-iv, d-i
(3) a-ii, b-iv, c-i, d-iii
(4) a-iv, b-i, c-iii, d-ii

12. A particle accelerates from rest at a constant rate for some time and attains a constant velocity of 8 ms^{-1}. After wards it decelerates with a constant rate and comes to rest. If the total time taken is 4 second, the distance travelled is

(1) 32 meter
(2) 16 meter
(3) 4 meter
(4) Insufficient data

13. The v-t graph shown here depicts the motion of A and B such that



(1) They collide when their velocity is 10 ms^{-1}
(2) Both A and B have zero acceleration
(3) Both A and B have non-zero acceleration
(4) Velocity of A exceeds beyond 10 ms^{-1}

14. A man is at rest in the middle of pond on perfectly smooth ice. He can get himself to the shore by makinguse of Newton's

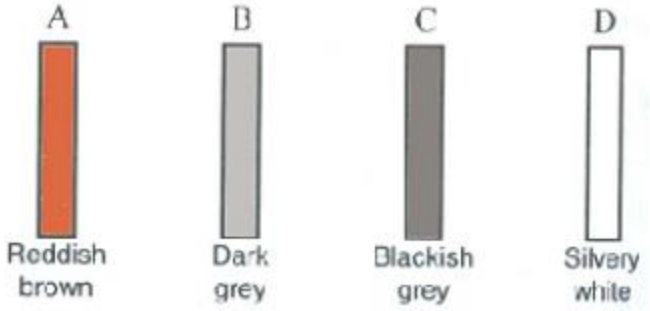
(1) Third law of motion
(2) Fourth
(3) First
(4) Second

15. Earth goes round the Sun with

(1) Same velocity
(2) Varying K.E.
(3) Same momentum
(4) Varying velocity

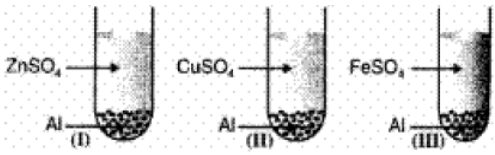
Chemistry

16. Four strips labeled A, B, C and D along with their corresponding colours are shown below. Which of thesecould be made up of aluminum?



(1) A
(2) B
(3) C
(4) D

17.



Obseravation	I	II	III
Solution after reaction	Colourless	Colourless	Colourless
Metal Deposited	Zn	Cu	Fe

Which of the following is correct conclusion?

(1) Al is more reactive than Cu and Fe butless reactive than Zn
(2) Al is more reactive than Cu but less reactive than Zn and Fe
(3) Al is more reactive than Zn and Cu butless reactive than Fe
(4) Al is more reactive than Zn, Cu, Fe

18. Fermentation of grapes is an example of

(1) Redox reaction
(2) Reversible change
(3) Chemical change
(4) Physical change

19. The raw materials that are required for the manufacturing of washing soda by Solvay process are:

(1) NH_4OH, $CaCO_3$, NaCl
(2) NaCl, $CaCO_3$, NH_3
(3) NaCl, NH_4OH, CaO
(4) NH_3, $CaCl_2$, $CaCO_3$

20. A liquid sample turned red litmus paper blue. This indicates that the liquid sample is that of

(1) An alcohol
(2) Distilled water
(3) Hydrochloric acid
(4) Sodium hydroxide solution

21. When carbon dioxide gas is passed through calcium hydroxide solution it forms

(1) Calcium carbonate
(2) Calcium
(3) Calcium bicarbonate
(4) Calcium chloride

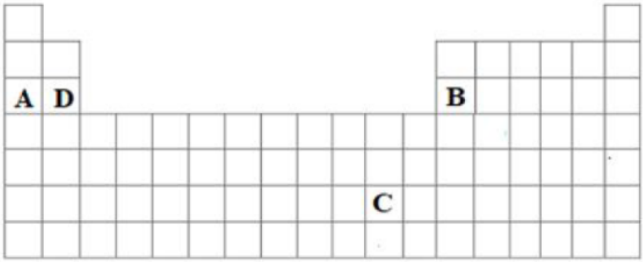
22. Statement A : Sulphuric acid is diprotic acid and phosphoric acid is triprotic acid.
Statement B : Chlor-alkali process is involved in the manufacturing of bleaching powder

(1) Neither statement A nor statement B is true
(2) Statement A is true, B is false
(3) Statement B is true, A is false
(4) Both statements A and B are true.

23. $2Fe_2O_3 + 3C \rightarrow 4Fe + 3CO$ In the above reaction 'C' acts as**:**

(1) Dehydrating agent
(2) Reducing agent
(3) Oxidising agent
(4) Catalyst

24. The position of four metals A, B, C and D in the modern periodic table as shown below



Which of the following metals is present in the anode mud during the electrolytic refining of copper?

(1) D
(2) C
(3) A
(4) B

25. A student adds one big iron nail each in four test tubes containing solution of zinc sulphate, aluminium sulphate, copper sulphate and iron sulphate. A reddish brown coating was observed only on the surface of iron nail which was added in the solution of**:**

(1) Aluminium sulphate
(2) copper sulphate
(3) Iron sulphate
(4) Zinc sulphate

26. Which of the following nuclei are isotopes? ${}^{226}_{88}A, {}^{228}_{87}B, {}^{228}_{88}C, {}^{228}_{90}D$

(1) ${}^{226}_{88}A, {}^{228}_{88}C$
(2) ${}^{228}_{87}B, {}^{228}_{88}C$
(3) Both ${}^{228}_{87}B, {}^{228}_{88}C$ and ${}^{228}_{88}C, {}^{228}_{90}D$
(4) ${}^{228}_{88}C, {}^{228}_{90}D$

27. Balancing a chemical reaction follows

(1) Law of Multiple proportions
(2) Law of Conservation of mass
(3) Law of definite proportions
(4) Law of Reciprocal proportions

28. The drying agent used for ammonia gas is

(1) P_2O_5
(2) Slaked lime
(3) Quick lime
(4) conc. H_2SO_4

29. 10 ml of freshly prepared iron sulphate solution was taken in each of four test tubes. Strips of copper, iron, zinc and aluminium were introduced, each metal in a different test tube. A black residue was obtained in two of them. The right pair of metals forming the precipitates is:

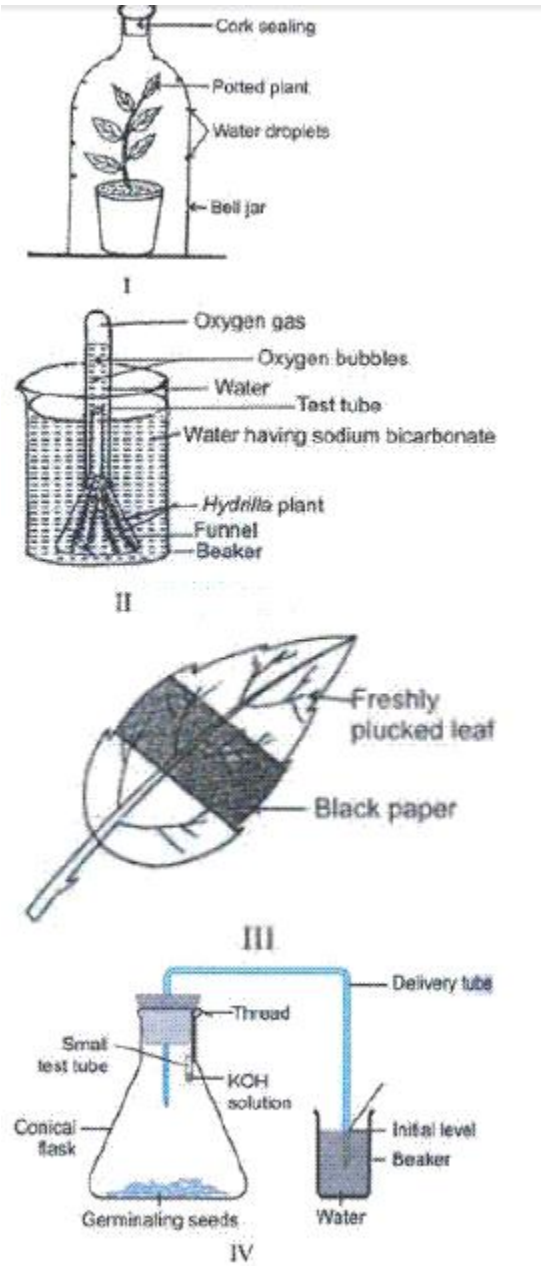
(1) iron and aluminium
(2) copper and zinc
(3) zinc and aluminium
(4) aluminium and copper

30. NaCl and Na_2SO_4 belong to the family of

(1) chloride salts
(2) neutral salts
(3) sodium salts
(4) sulphate salts

Biology

31.



Four students use the experimental set-up shown above. The set-up that would show that "carbon dioxideis given out during respiration" is

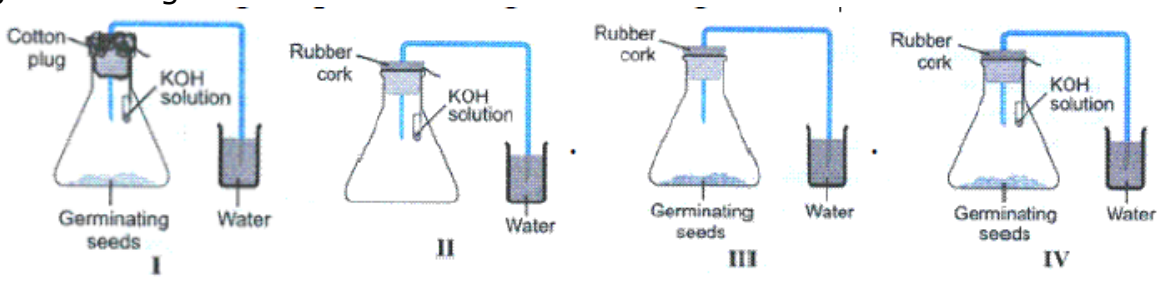
(1) IV

(2) II

(3) III

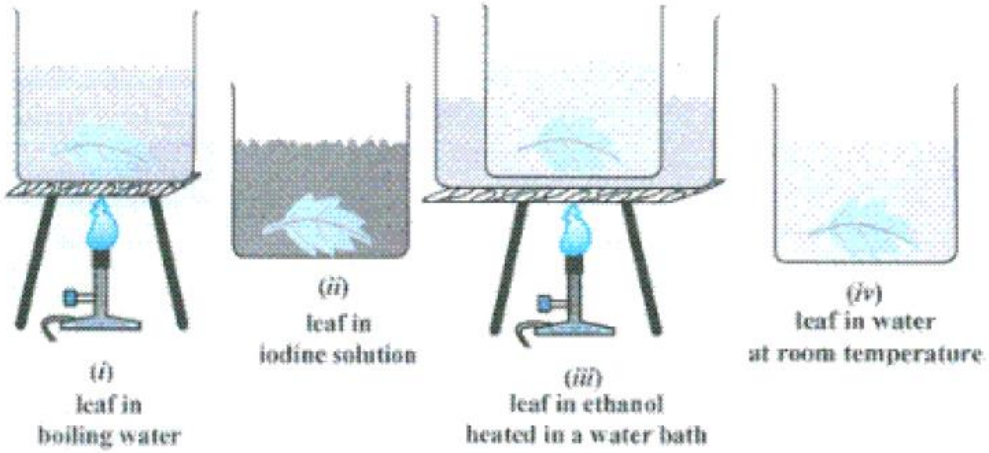
(4) I

32. Out of the four experimental set-up shown below, which one will demonstrate the evolution of carbondioxide during respiration of germinating seeds ?



(1) III
(2) II
(3) IV
(4) I

33. A student performed the starch test on a leaf. Some steps involved are shown below.



The correct sequence of steps should be

(1) (i), (iii), (iv), (ii)
(2) (iv), (iii), (ii), (i)
(3) (i), (ii), (iii), (iv)
(4) (ii), (iii), (iv), (i)

34. Which hormone cause uterine contraction that leads to labour pain?

(1) vasopressin
(2) thyroxin
(3) Estrogen
(4) Progesterone

35. Diabetes mellitus is caused by deficiency of hormone

(1) Glucagon
(2) Insulin
(3) Thyroxin
(4) Adrenaline

36. Adrenal can be called as the stress managing glands of the body.The above statement is

(1) False
(2) Partially true
(3) True
(4) Partially false

37. **Statement A** : Estrogen is responsible for bringing changes in appearance seen in boys at the time of puberty.
Statement B : Plasmodium divides into many daughter cells by regeneration.

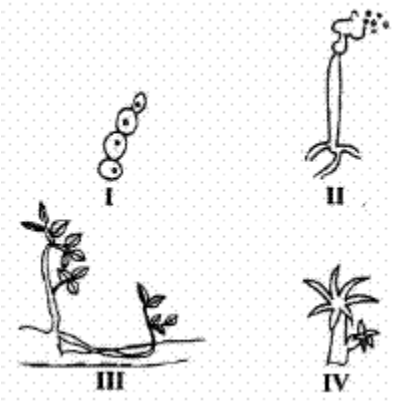
(1) Both are true
(2) A is true and B is false
(3) B is true and A is false
(4) Both are false

38. Match the following with correct response
(i) Development of embryo inside uterus
(ii) Attachment of embryo with the uterus
(iii) Arrangement of ovules inside ovary
(iv) Act of giving birth to a baby

(A) Implantation
(B) Parturition
(C) Placentation
(D) Gestation

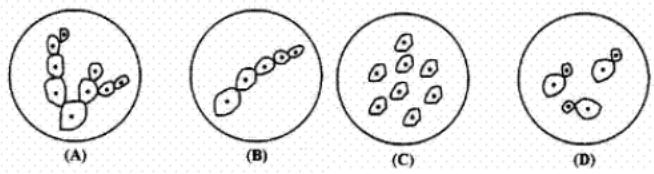
(1) i-A, ii-C, iii-B, iv-D
(2) i-C, ii-B, iii-D, iv-A
(3) i-D, ii-A, iii-C, iv-B
(4) i-B, ii-D, iii-A, iv-C

39. Two of the following four figures that illustrate budding are



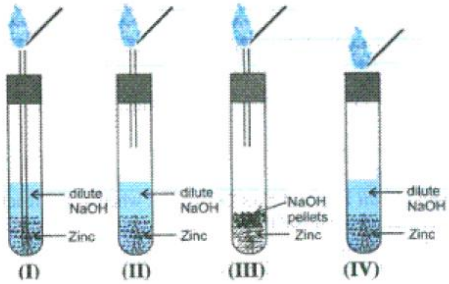
(1) I and III
(2) II and IV
(3) I and IV
(4) I and II

40. The following are the sketches made by some students. The sketch not illustrative of budding in yeast is :



(1) B
(2) D
(3) C
(4) A

41. Which one of the following set ups is the most appropriate for the evolution of hydrogen gas and its identification?



(1) II
(2) I
(3) IV
(4) II

42. The basic nature of sodium hydroxide (NaOH) is due to the presence of _____ in solution.

(1) Hydrogen ions
(2) Sodium ions
(3) Chloride ions
(4) Hydroxide ions

43. A bud of petunias become reddish purple after first shower of rain because

(1) No plausible reason
(2) The first shower of rain is acidic
(3) First shower causes buds to blossom
(4) First shower of the rain is basic

44. Plant growth regulators are produced at the
A. Companion cells of phloem
B. Tip of growing root
C. Tip of growing shoot
D. Parenchymatous cells

(1) A and B
(2) All of these
(3) B and C
(4) C and D

45. The gland located in the kidney is

(1) Thymus
(2) Pancreas
(3) Adrenalin
(4) Liver

Mathematics

46. If $m^2 - 1$ is divisible by 8, then 'm' is

(1) An odd integer
(2) A natural numbe
(3) An even integer
(4) A whole number

47. The least number n so that 5^n is divisible by 3, where n is:

(1) A whole number
(2) A real number
(3) A natural number
(4) No natural number

48. If α and β are zeros of $x^2 + 5x + 8$, then the value of $(\alpha + \beta)$is

(1) –8
(2) 8
(3) 5
(4) –5

49. If the product of two of the zeroes of the polynomial $2x^3 - 9x^2 + 13x - 6$ is 2, then the third zero of the polynomial is

(1) –3/2
(2) 2
(3) –2
(4) 3/2

50. 4 chairs and 3 tables cost Rs.2100 and 5 chairs and 2 tables costs Rs1750. The cost of a chair is

(1) Rs.500
(2) Rs.350
(3) Rs.250
(4) Rs.150

51. The value of 'k' so that the system of linear equations kx – y – 2 = 0 and 6x – 2y – 3 = 0 have no solution is

(1) k = – 4
(2) k = 4
(3) k = 3
(4) k = – 3

52. If $\Delta ABC \sim \Delta PQR$ such that AB = 1.2 cm, PQ = 1.4 cm, then $\frac{ar(\Delta ABC)}{ar(\Delta PQR)}$ is

(1) 3/7
(2) 6/7
(3) 36/49
(4) 9/49

53. If a ladder is placed in such a way that its foot is at a distance of 12 m from the wall and its top reaches a window 9 m above the ground, then the length of the ladder is _____

(1) 15 m
(2) 24 m
(3) 18 m
(4) 21 m

54. A plane is observed to be approaching the airport. It is at a distance of 12 km from the point of observation and makes an angle of elevation of 30° there. Its height above the ground is

(1) 10 km
(2) 12 km
(3) 6 km
(4) None of these

55. The wickets taken by a bowler in 10 cricket matches are 2, 6, 4, 5, 0, 3, 1, 3, 2, 3. The mode of the data is

(1) 1
(2) 2
(3) 4
(4) 3

56. The number of zeroes of a cubic polynomial is

(1) at most 3
(2) 3
(3) at least 3
(4) 2

57. If $a - b$, a and $a + b$ are zeroes of the polynomial $x^3 - 3x^2 + x + 1$, then the value of $a + b$ is

(1) $-1-\sqrt{2}$
(2) 3
(3) $-1+\sqrt{2}$
(4) $1 \pm \sqrt{2}$

58. The pair of linear equations ax + by = c and px + qy = r has a unique solution then

(1) $aq \neq bp$

(2) aq = bp

(3) ap = bq

(4) $ap \neq bq$

59. Ritu can row downstream 20 km in 2 hours and upstream 4 km in 2 hours. The speed of the current is

(1) 12 km/hr

(2) 6 km/hr

(3) 4 km/hr

(4) 8 km/hr

60. If ΔABC ~ ΔDEF, If BC = 3 cm, EF = 4 cm, ar (ΔABC) = 54 cm^2, then ar (ΔDEF) is equal to?

(1) $108cm^2$

(2) $96cm^2$

(3) $48cm^2$

(4) $100cm^2$

61. $(\sec\theta + \cos\theta)(\sec\theta - \cos\theta) =$

(1) $\tan^2\theta + \cos^2\theta$

(2) $\tan^2\theta - \cos^2\theta$

(3) $\tan^2\theta + \sin^2\theta$

(4) $\tan^2\theta - \sin^2\theta$

62. $\sqrt{\frac{1+\sin\theta}{1-\sin\theta}} =$

(1) *tan θ − sec θ*

(2) *−sec θ − tan θ*

(3) *sec θ + tan θ*

(4) *sec θ - tan θ*

63. The marks obtained by 9 students in Mathematics are 59, 46, 30, 23, 27, 40, 52, 35 and 29. The median of the data is

(1) 29
(2) 35
(3) 40
(4) 30

64. The times, in seconds, taken by 75 athletes to run a 500m race are tabulated as below:

Class	65-85	85-105	105-125	125-145	145-165	165-185	185-205
Frequency	4	5	18	20	17	7	4

The number of athletes who completed the race in less than 125 seconds is

(1) 20
(2) 17
(3) 18
(4) 27

65. If x = α and y = β is the solution of the equations x − y = 2 and x + y = 4, then

(1) $\alpha = 1$ and $\beta = 3$
(2) $\alpha = 3$ and $\beta = -1$
(3) $\alpha = 3$ and $\beta = 1$
(4) $\alpha = -3$ and $\beta = 1$

Mental Ability

66. A large cube is formed from the material obtained by melting three smaller cubes of sides 3 cm, 4 cm and 5 cm. What is the ratio of the total surface area of the smaller cubes to the large cube?

(1) 2 : 1
(2) 3 : 2
(3) 25 : 18
(4) 27 : 20

67. Rahul told Anand, 'Yesterday I defeated the only brother of the daughter of my grandmother.' Whom did Rahul defeat ?

(1) Son
(2) Father
(3) Brother
(4) Father-in-law

68. When Amy saw Manish, he recalled, "He is the son of the father of my daughter." Who is Manish?

(1) Brother-in-law
(2) Brother
(3) Uncle
(4) Nephew

69. A sum of Rs. 1,000 is borrowed at a certain rate of interest. After 4 months, Rs. 500 is again borrowed, but this time at a rate of interest that is thrice the original rate. At the end of the year, the total interest on both the amounts is Rs. 100. What is the original rate per annum?

(1) 3.33%
(2) 5%
(3) 8%
(4) 10%

70. When seen through a mirror, a clock shows 8:30. The correct time is

(1) 2:30
(2) 3:30
(3) 5:30
(4) 8:30

71. By looking in a mirror, it appears that it is 6:30 in the clock.What is the real time?

(1) 6:30
(2) 5:30
(3) 6:00
(4) 5:30

72. Arun facing East, he turns 90^{o} clockwise then again turns 45^{o} clockwise. Now 'Arun' is facing which direction.

(1) South-West
(2) North-East
(3) North-West
(4) East

73. Akhilesh introduces Dhruv as the son of the only brother of his father's wife. How is Dhruv related to Akhilesh?

(1) Cousin
(2) Son
(3) Maternal uncle
(4) Son in law

74. Average marks of a candidate in 6 subjects is 52. His marks in 5 subjects are 60, 48, 36, 55 and 51. Find his marks in his 6^{th} subject.

(1) 48
(2) 62
(3) 58
(4) 52

75. By looking in a mirror, it appears that it is 6:30 in the clock. What is the real time?

(1) 6:30
(2) 5:30
(3) 6:00
(4) 5:30

❑ ❑ ❑