SRIGAYATRI EDUCATIONAL INSTITUTIONS

INDIA

BRIDGE COURSE MPC | **Date: 27-06-2020**

Time: 1 Hours | **WEEK END EXAM -02** | **Max. Marks: 100**

This question paper contains 50 multiple choice questions. Each question has 4 options (A), (2), (3) and (4) for its answer, out of which **ONLY ONE** option can be correct.

Marking scheme: **+2** for correct answer, 0 if not attempted and 0 if not correct (no negative marking).

MATHEMATICS & APTITUDE

1. **Value of $\sqrt{32+\sqrt{960}}$ is**

1. $\sqrt{5}+\sqrt{3}$ 2. $\sqrt{20}+2\sqrt{3}$ 3. $\sqrt{20}-\sqrt{3}$ 4. $\sqrt{5}+2\sqrt{3}$

2. **If $x_1 < x_2$ and x_1, x_2 are the roots of $x^2 - 26x + 120 = 0$ then the value of $\sqrt{x_1+\sqrt{x_2}}$ =**

1. $\sqrt{5}+1$ 2. $\sqrt{5}+2$ 3. $\sqrt{3}+\sqrt{2}$ 4. $\sqrt{5}+\sqrt{3}$

3. **If $x=\sqrt[3]{9}, y=\sqrt[4]{11}, z=\sqrt[6]{17}$ then**

1. $x > y > z$ 2. $y > z > x$ 3. $z > y > x$ 4. $x < y < z$

4. **Smallest among $\sqrt[3]{4}, \sqrt[4]{5}, \sqrt[4]{6}, \sqrt[3]{8}$ is**

1. $\sqrt[3]{4}$ 2. $\sqrt[4]{5}$ 3. $\sqrt[4]{6}$ 4. $\sqrt[3]{8}$

5. **If $a=\sqrt{14}+\sqrt{18}, b=\sqrt{15}+\sqrt{17}$ then**

1. $a > b$ 2. $a < b$ 3. $a = b$ 4. None of these

6. **Rationalizing factor of $\sqrt[3]{16}+\sqrt[3]{4}+1$ is**

1. $\sqrt[3]{4}+1$ 2. $\sqrt[3]{4}-1$ 3. $\sqrt[3]{2}+1$ 4. $\sqrt[3]{2}-1$

7. **If $1 \le a \le 2$, then the value of $\sqrt{a+2\sqrt{a-1}}-\sqrt{a-2\sqrt{a-1}}$ is**

1. $2\sqrt{a-1}$ 2. $\sqrt{a-1}$ 3. $\sqrt{a+1}$ 4. $1/2\sqrt{a-1}$

8. **If $x = 3 + 3^{1/3} + 3^{2/3}$ then the value of $x^3 - 9x^2 + 18x - 12$ =**

1. 1 2. 0 3. 8 4. $3\sqrt{3}$

9. **Value of $\sqrt{6+\sqrt{6+\sqrt{6+-----+to\infty}}}$ is**

1. 3 2. 2 3. 1 4. ± 3

10. **Fourth root of $17 + 12\sqrt{2}$ is**

1. $3+\sqrt{2}$ 2. $\sqrt{2}+1$ 3. $1+\sqrt{3}$ 4. $2+\sqrt{3}$

11. **Positive square root of $6 - \sqrt{12} - \sqrt{24} - \sqrt{8}$ is**

1. $-1+\sqrt{3}+\sqrt{2}$ 2. $1-\sqrt{3}+\sqrt{2}$ 3. $1+\sqrt{3}-\sqrt{2}$ 4. $1+\sqrt{3}+\sqrt{2}$

12. **If $x=\frac{\sqrt{2}+1}{\sqrt{2}-1}, y=\frac{\sqrt{2}-1}{\sqrt{2}+1}$ then the value of $x^2 - xy + y^2$ =**

1. 35 2. 34 3. 33 4. 36

13. **If $x = 2 + \sqrt{3}$, $y = 2 - \sqrt{3}$ then the value of $7x^2 + 11xy + 7y^2$ =**

1. $11+56\sqrt{3}$ 2. $-11+56\sqrt{3}$ 3. $-11-56\sqrt{3}$ 4. $11-56\sqrt{3}$

14. **Value of $\frac{1}{\sqrt{15+4\sqrt{14}}}+\frac{2}{\sqrt{12-2\sqrt{35}}}-\frac{3}{\sqrt{13-4\sqrt{10}}}$ is**

1. 0 2. 1 3. $2\sqrt{5}$ 4. $2\sqrt{7}$

15. **Value of $\frac{1}{1+\sqrt{2}}+\frac{1}{\sqrt{2}+\sqrt{3}}+\frac{1}{\sqrt{3}+\sqrt{4}}+-------$ to 99 terms =**

1. 9 2. 10 3. $1+\sqrt{99}$ 4. $\sqrt{99}-1$

16. In a given code SISTER is coded as 535301. UNCLE as 84670 and BOY as 129. How is RUSTIC written in that code?

1) 633185 2) 185336 3) 363815 4) 581363

17. In a certain code BODE is written as @ $ * ? and EAT is written as ? • £
How can DEBATE be written in that code?

1) ? * @ * £ • 2) * ? @ • £ ? 3) * ? @ * £ ? 4) Cannot be determined
5) None of these

18. In a game played by two people there were initially N match sticks kept on the table. A move in the game consists of a player removing either one or two matchsticks from the table. The one who takes the last matchstick loses. Players make moves alternately. The player who will make the first move is A. The other player is B.

The largest value of N (less than 50) that ensures a win for B is?

1) 48 2) 49 3) 47 4) 46

19. In a game played by two people there were initially N match sticks kept on the table. A move in the game consists of a player removing minimum one and maximum 5 matchsticks from the table. The one who takes the last matchstick wins. Players make moves alternately. The player who will make the first move is A. The other player is B.

The largest value of N (less than 50) that ensures a win for B is?

1) 48 2) 45 3) 47 4) 46

20. 82, 249, 1250, ?

1) 7456 2) 6583 3) 8757 4) 3423

PHYSICS

21. If $y = 4x^3 + 3x^2 - 2$ then $\frac{dy}{dx} =$

1) $12x^2 + 6x - 2$ 2) $12x^2$ 3) $12x^2 - 6x + 12$ 4) $12x^2 + 6x$

22. $\frac{d}{dx}(\cos x) =$

1) sinx 2) - sinx 3) cosx 4) -cosx

23. $\int_0^2 x^4 dx =$

1) 5.4 2) 4.6 3) 6.4 4) 7.2

24. The displacement of a body is given by $\overline{S} = 4t + 3$ then its velocity is

1) 3 ms^{-1} 2) 7 ms^{-1} 3) 4 ms^{-1} 4) 0

25. The SI units of acceleration

1) ms^{-1} 2) ms^{-2} 3) ms^2 4) ms

26. $y = \frac{x^2 - 1}{x^2 + 1}$ **then** $\frac{dy}{dx} =$

1) $\frac{x^2 - 1}{4x}$ 2) $\frac{4x}{\left(x^2 + 1\right)^2}$ 3) $\frac{4x}{\left(x^2 + 1\right)}$ 4) $\frac{4x}{\left(x^2 - 1\right)^2}$

27. The speed of body 72 kmph then its speed in m/s

1) $10ms^{-1}$ 2) $20ms^{-1}$ 3) $4ms^{-1}$ 4) $15ms^{-1}$

28. $\int dx =$

1) 1 2) 0 3) logx 4) x

29. **The displacement of a body is $x = 4x^3 + 2x$ find its acceleration at x= 2m**
1) 36 2) 24 3) 48 4) 50

30. **The acceleration of a body is $a = 4x^2 + 3x$ its displacement is**
1) $\frac{x^4}{3} + \frac{x^3}{2}$ 2) $\frac{x^4}{3} - \frac{x^3}{2}$ 3) $\frac{x^4}{3} - \frac{x^2}{2}$ 4) $\frac{x^4}{4} - \frac{x^2}{3}$

31. **A body states from rest covers a distance of 120m in 4sec its acceleration**
1) $10ms^{-2}$ 2) $8\ ms^{-2}$ 3) $15\ ms^{-2}$ 4) $15\ ms^{-2}$

32. **Two bodies A and B starts from rest, after 8 sec body a covers 64m and body B gets velocity 64 m/s if a_A and a_B are acceleration of A and B then**
1) $a_A > a_B$ 2) $a_A < a_B$ 3) $a_A = a_B$ 4) None

33. **In unifilm motion**
1) v = constant 2) a = 0 3) both 4) None

34. **A Bullet tired into a wooden block with speed 200 m/s so that it penetrates a distance of 4 cm before coming to rest, then its relation**
1) 5×10^3 2) 5×10^4 3) 5×10^5 4) 5×10^2

35. **Two cars A and B separated by 100 km. Car A is moving with constant speed and car B moving with 40 kmph. It they more opposite to each other what is the time constant at which they meet**
1) 1 hour 2) 0.3 hour 3) 1.5 hour 4) 2 hour

CHEMISTRY

36. **A chemical equation is balanced according to the law of**
1) multiple proportions 2) constant proportions
3) reciprocal proportions 4) conservation of mass

37. **Which of the following is isoelectronic with Neon (Atomic number of Ne = 10)**
1) O^{2-} 2) F^+ 3) Mg 4) Na

38. **How many of the following formulae is / are not correct ?**
Na_2CO_3, $BaCl_2$, K_2MnO_4, SrI_2,$Cr(SO_4)_3$, $KHCO_3$, H_3PO_4, As_2O_3, SIh_4
1) 5 2) 6 3) 9 4) 4

39. **Which of the following is correctly matched ?**
1) $SO_2 + water \rightarrow sulphuric\ acid$ 2) $CO_2 + water \rightarrow Carbonic\ acid$
3) $BaO_2 + water \rightarrow Boric\ acid$ 4) $CaO + water \rightarrow Calcium carbonate$

40. **If in the following species number of acids = P; Number of bases = Q; Number of Salts = R**
$\frac{P+Q}{R} =$
$Ca(OH)_2, Ba(NO_3)_2, ZnSO_4, HI, NH_4F, Al(OH)_3, CuCrO_4, HCN, H_3AsO_4$
1) 1.5 2) 1.0 3) 2.5 4) 1.25

41. **Identify the false statement**
1) Carbon dioxide is an elementary gas.
2) I hit and trail method, a balky formula is selected first for balancing a chemical equation
3) Reactions which are accompanied by the absorption of energy are endothermic reactions

4) $N_2 + 3H_2 \rightarrow 2NH_3$ is an example of combination reactions

42. Which of the following reaction is not a neutralization reaction ?

1) $CaO_{(s)} + CO_{2(g)} \rightarrow CaCO_3$

2) $2NaOH_{(aq)} + H_2CO_{3(aq)} \rightarrow Na_2CO_{3(aq)} + 2H_2O_{(l)}$

3) $CuSO_{4(aq)} + Zn_{(s)} \rightarrow ZnSO_{4(aq)} + Cu_{(s)}$

4) $2NH_{3(aq)} + H_3PO_{4(aq)} \rightarrow (NH_4)_3 PO_4$

43. If formula of a metal sulphate is MSO_4 (M = metal) what is formula of metal carbonate ?

1) $MHCO_3$ 2) MCO_3 3) M_2CO_3 4) $M_2(CO_3)_3$

44. Which of the following has maximum number of unpaired d electrons ?

1) Ni^{3+} 2) Cu^{+} 3) Zn^{2+} 4) Fe^{2+}

45. The two electrons occupying the same orbital can be distinguished by

1) Principal quantum number 2) Azimuthal quantum number

3) Magnetic quantum number 4) Spin quantum number

46. The number of d electrons in Nickel (Z = 28) is equal to that of the

1) S and P electrons in F^- 2) P electrons in Ar(z = 18)

3) P electrons in Ni^{2+} 4) Total number of electrons in nitrogen (Z = 7)

47. The electronic configuration of an element "X" is , $1s^2 2s^2 2p^6 3s^2 3p^6 4s^1 3d^5$ **element 'X' is**

1) Copper 2) Manganese 3) Chromium 4) Cobalt

48. The maximum number of electrons in a subshell is given by expression

1) $4l + 2$ 2) $4l - 2$ 3) $2l + 1$ 4) $2n^2$

49. The magnetic quantum number for valence electron of sodium atom is

1) 3 2) 2 3) 1 4) zero

50. For how many of the following elements differentiating electron i.e., last electron enters d subshell ?

Chromium (z= 24), Manganese (Z = 25) , Iron (Z = 26), Copper (Z = 29), Calcium (Z = 20), Sodium (Z = 11) , Scandium (Z = 21), Nitrogen (Z = 7)

1) 8 2) 7 3) 5 4) 6

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KEY SHEET

MATHEMATICS & APTITUDE

1) **2**	2) **1**	3) **1**	4) **2**	5) **2**	6) **2**	7) **1**	8) **2**	9) **1**	10) **2**
11) **2**	12) **3**	13) **1**	14) **1**	15) **4**	16) **2**	17) **2**	18) **2**	19) **1**	20) **3**

PHYSICS

21) **4**	22) **2**	23) **3**	24) **4**	25) **2**	26) **2**	27) **2**	28) **4**	29) **3**	30) **1**
31) **4**	32) **2**	33) **3**	34) **3**	35) **1**					

CHEMISTRY

36) **4**	37) **1**	38) **2**	39) **2**	40) **4**	41) **1**	42) **3**	43) **2**	44) **4**	45) **4**
46) **3**	47) **3**	48) **1**	49) **4**	50) **3**					