

Dr.K.K.R GOWTHAM EDUCATIONAL INSTITUTIONS :: A.P & T.S

Class: VIII- A1,A2

Marks: 100

Sub: Maths, Physics, Chemsitry

Time: 2 ½ Hrs

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**I. Objective type questions :** **50 × 2= 100 M**

**Maths**

1. The distance between the two parallel lines is 1 unit. Appoint A is chosen to ice between the lines at a distance d from one of them triangle ABC is equilateral with B on one line and C on the other parallel line. The length of the side of the equilateral triangle is [     ]  
a.  $\frac{2}{3} \sqrt{d^2+d+1}$      b.  $2\sqrt{\frac{d^2-d+1}{3}}$      c.  $2\sqrt{d^2-d+1}$      d.  $\sqrt{d^2-d+1}$
2. For a positive integer n, let  $f_n(\theta) = (\tan \theta/2) (1+\sec\theta) (1+\sec2\theta) (1+\sec4\theta) \dots (1+\sec2^n\theta)$  [     ]  
a.  $f_2\left(\frac{\pi}{16}\right)=1$      b.  $f_3\left(\frac{\pi}{32}\right)=1$      c.  $f_4\left(\frac{\pi}{64}\right)=1$      d.  $f_5\left(\frac{\pi}{128}\right)=1$
3.  $\tan^6\frac{\pi}{9} - 33\tan^4\frac{\pi}{9} + 27\tan^2\frac{\pi}{9}$  is equal to [     ]  
a. 0     b.  $\sqrt{3}$      c. 3     d. 9
4. The value of  $\cos \frac{\pi}{7} + \cos \frac{2\pi}{7} + \cos \frac{3\pi}{7} + \cos \frac{4\pi}{7} + \cos \frac{5\pi}{7} + \cos \frac{6\pi}{7} + \cos \frac{7\pi}{7}$  is [     ]  
a. 1     b. -1     c. 0     d. none of these
5. If  $A= \sin45^0+\cos45^0$  and  $B= \sin44^0+\cos44^0$  then [     ]  
a.  $A>B$      b.  $A<B$      c.  $A=B$      d. none of these
6. For triangle ABC,  $R= 5/2$  and  $r=1$ . Let I be the incentre of the triangle and D,E and F be the feet of the perpendiculars from I to BC, CA and AB respectively. The value of [     ]  
a.  $5/2$      b.  $5/4$      c.  $1/10$      d.  $1/5$
7. If a,b and c are the sides of a triangle, then the minimum value of  $\frac{2a}{b+c-a} + \frac{2b}{c+a-b} + \frac{2c}{a+b-c}$  is [     ]  
a. 3     b. 9     c. 6     d. 1
8. We are given b,c and  $\sin B$  such that B is acute and  $b < c \sin B$ . Then [     ]  
a. No triangle is possible     c. two triangles are possible  
b. One triangle is possible     d. a right angled triangle is possible

9. The value of  $\sum_{k=1}^{13} \frac{1}{\sin\left(\frac{\pi}{4} + \frac{(k-1)\pi}{6}\right)\left(\sin\frac{\pi}{4} + \frac{k\pi}{6}\right)}$  is equal to [     ]

- a.  $3-\sqrt{3}$       b.  $2(3-\sqrt{3})$       c.  $2(\sqrt{3}-1)$       d.  $2(2+\sqrt{3})$

10. If  $\cos(x-y) = 3 \cos(x+y)$  then  $\cot x \cdot \cot y$  [     ]

- a. 1      b. 2      c. 3      d. 4

11. Let  $x = \sin 1^\circ$ , then the value of the expression

$\frac{1}{\cos 0^\circ \cdot \cos 1^\circ} + \frac{1}{\cos 1^\circ \cdot \cos 2^\circ} + \frac{1}{\cos 2^\circ \cdot \cos 3^\circ} + \dots + \frac{1}{\cos 44^\circ \cdot \cos 45^\circ}$  is equal to [     ]

- a. X      b.  $1/x$       c.  $\frac{\sqrt{2}}{x}$       d.  $\frac{x}{\sqrt{2}}$

12.  $\frac{2}{\sqrt{2 + \sqrt{2 + \sqrt{2 + 2 \cos 8\theta}}}}$   $(0 < \theta < \frac{\pi}{8})$  [     ]

- a.  $\cos \theta$       b.  $\sec \theta$       c.  $-\sec \theta$       d.  $\tan \theta$

13. If  $\cos x + \cos y = 4/2$ ,  $\cos x - \cos y = 2/7$  then  $14 \tan\left(\frac{x-y}{2}\right) + 5 \cot\left(\frac{x+y}{2}\right) =$  [     ]

- a. 0      b. 1      c. 2      d. 4

14. If  $\tan \theta = b/9$  then  $\sqrt{\frac{a+b}{a-b}} + \sqrt{\frac{a-b}{a+b}} =$  [     ]

- a.  $\frac{2 \sin \theta}{\sqrt{2 \sin 2\theta}}$       b.  $\frac{2 \cos \theta}{\sqrt{\cos 2\theta}}$       c.  $\frac{2 \cos \theta}{\sqrt{\sin 2\theta}}$       d.  $\frac{2 \sin \theta}{\sqrt{\cos 2\theta}}$

15. If  $x+y+z=xyz$  then  $\sum \frac{2x}{1-x^2} =$  [     ]

- a.  $\pi\left(\frac{2x}{1+x}\right)$       b.  $\pi\left(\frac{2x}{1-x^2}\right)$       c.  $\pi\left(\frac{1+x^2}{2}\right)$       d.  $\pi(1-x^2)$

16. If  $\sqrt{1+\sin A} + \sqrt{1-\sin A} = 2 \sin \frac{A}{2}$  then  $\frac{A}{2} \in$  [     ]

- a.  $\left(2n\pi + \frac{\pi}{4}, 2n\pi + \frac{3\pi}{4}\right)$       c.  $\left(2n\pi - \frac{\pi}{2}, 2n\pi + \frac{\pi}{2}\right)$   
 b.  $\left(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{\pi}{4}\right)$       d.  $\left(2n\pi + \frac{\pi}{4}, 2n\pi + \frac{5\pi}{4}\right)$

17.  $\frac{1}{\cos \alpha + \cos 3\alpha} + \frac{1}{\cos \alpha + \cos 5\alpha} + \dots + \frac{1}{\cos \alpha + \cos(2n+1)\alpha} =$  [     ]

- a.  $\operatorname{Cosec} \alpha (\tan(n+1)\alpha - \tan \alpha)$       c.  $\frac{1}{2} \operatorname{sec} \alpha (\tan(n+1)\alpha - \tan \alpha)$   
 b.  $\operatorname{Sec} \alpha (\tan(n+1)\alpha - \tan \alpha)$       d.  $\frac{1}{2} \operatorname{cosec} \alpha (\tan(n+1)\alpha - \tan \alpha)$

18. If  $\tan A + \tan B + \tan C = 6$ ,  $\tan A \tan B = 2$  then triangle is [     ]

a. Right angled triangle

c. obtuse triangle

b. Equilateral triangle

d. a cute angled triangle

19.If angles A,B,C are in AP then  $2\cos\left(\frac{A-C}{2}\right) =$  [      ]

a.  $\frac{a+c}{\sqrt{a^2-ac+c^2}}$

b.  $\frac{a+c}{\sqrt{a^2+ac+c^2}}$

c.  $\frac{a+c}{\sqrt{a^2-ac-c^2}}$

d.  $\frac{a+c}{\sqrt{a^2+2ac-c^2}}$

20.In a triangle ABC, if  $\cot A = (x^3+x^2+x)^{1/2}$ ,  $\cot B = (x+x^{-1}+1)^{1/2}$  and  $\cot C = (x^{-3}+x^{-2}+x^{-1})^{-1/2}$  then the triangle is [      ]

a. Isosceles

b. obtuse angled

c. right angled d. none

### Physics

21. \_\_\_\_\_ forces can move a stationary body or they can stop a moving body

(a)balanced

(b)centripetal

(c)unbalanced

(d)centrifugal

22.when we talk of a force acting on a body it usually means

(a)electrical force

(b)balanced force

(c)unbalanced force

(d)nuclear force

23.when a running car stops suddenly,the passengers are jerked\_\_\_\_\_

(a)move backward

(b)move forward

(c)rise upwards

(d)remain unaffected

24.which of the following has largest inertia

(a)a pen

(b)a pin

(c)your loaded school bag

(d)your physics book

25.The apparent weight of a freely falling body is

(a)zero

(b)increased

(c)decreased

(d)constant

26.A car accelerates on a horizontal road due to the force exerted by

(a)the engine of the car

(b)the driver of the car

(c)the earth

(d)the road

27. Frames moving uniformly with respect to an inertial frame are.

- (a) inertial frames      (b) non inertial frames      (c) both      (d) none.

28. Find the magnitude of momentum of a body of mass 10kg moving with a velocity of 5m/s.

- (a) 40kgm/s      (b) 30kgm/s      (c) 50kgm/s      (d) 60kgm/s

29. A constant force acts on a body of mass 10kg and produces in it an acceleration of  $0.2\text{m/s}^2$ . Calculate the magnitude of force acting on the body.

- (a) 1N      (b) 2N      (c) 3N      (d) 4N

30. A 6kg ball strikes a vertical wall with a velocity 34m/s and rebounds with a velocity of 26m/s. The impulse is.

- (a) 60Ns      (b) 180Ns      (c) 48Ns      (d) 360Ns

31. A uniform rope of length  $L$  resting on a smooth horizontal floor is pulled at one end by a force  $F$ . Find the tension in the rope at a distance  $L/4$  from the end where the force is applied.

- (a)  $F$       (b)  $F/2$       (c)  $F/4$       (d)  $3F/4$

32. A 60kg man is inside a lift which is moving up with an acceleration of  $2.45\text{m/s}^2$ . Find the apparent percentage change in his weight.

- (a) 25% increases      (b) 25% decreases      (c) 15% increases      (d) 15% decreases.

33. The apparent weight of a mass in a lift moving up is 80kg when its weight in the stationary lift is 60kg. If the same lift now moves up with same retardation, the weight of the mass will be.

- (a) 2kg      (b) 3kg      (c) 4kg      (d) 8kg.

34. A man of mass 50kg is standing on a weighing machine kept on a floor of an elevator which is moving down with constant speed 1m/s. Find the reading of the weighing machine.

- (a) 54kg      (b) 36kg      (c) 40kg      (d) 50kg.

35. A constant force acts on a body of mass 50gm at rest for 2s. if the body moves through 27m during that time, impulse of the force is.

- (a) 1.35kgm/s    (b) 13.5Ns    (c) 135Ns    (d) 2.7kgm/s

### Chemistry

36. Amongst  $\text{H}_2\text{O}$ ,  $\text{H}_2\text{S}$ ,  $\text{H}_2\text{Se}$ , &  $\text{H}_2\text{Te}$  the one with the highest boiling point is [    ]

- a.  $\text{H}_2\text{O}$     b.  $\text{H}_2\text{Te}$     c.  $\text{H}_2\text{S}$     d.  $\text{H}_2\text{Se}$

37. Arrange the following compounds in order of increasing dipole moment, toluene (I) m-dichlorobenzene (II), O-dichlorobenzene (III), p-dichlorobenzene (IV) [    ]

- a.  $\text{I} < \text{IV} < \text{II} < \text{III}$     c.  $\text{IV} < \text{I} < \text{III} < \text{II}$   
b.  $\text{IV} < \text{I} < \text{II} < \text{III}$     d.  $\text{IV} < \text{II} < \text{I} < \text{III}$

38. The number and type of bonds between two carbon atoms in  $\text{CaC}_2$  are [    ]

- a. One sigma ( $\sigma$ ) and one Pi ( $\pi$ ) bonds  
b. One sigma ( $\sigma$ ) and two Pi ( $\pi$ ) bonds  
c. One sigma ( $\sigma$ ) and one half Pi ( $\pi$ ) bonds  
d. One sigma ( $\sigma$ ) bond only.

39. The molecule which has zero dipole moment is [    ]

- a.  $\text{CH}_2\text{Cl}_2$     b.  $\text{BF}_3$     c.  $\text{NF}_3$     d.  $\text{ClO}_2$

40. Element X is strongly electropositive and element Y is strongly electronegative. Both are univalent the compound formed would be [    ]

- a.  $\text{X}^+ \text{Y}^-$     b.  $\text{X}^- \text{Y}^+$     c.  $\text{X}-\text{Y}$     d.  $\text{X} \rightarrow \text{Y}$

41. Which of the following compound is covalent [    ]

- a.  $\text{H}_2$     b.  $\text{CaO}$     c.  $\text{KCl}$     d.  $\text{Na}_2\text{S}$

42. The total number of electrons that take part in forming the bonds in  $\text{N}_2$  is [    ]

- a. 2    b. 4    c. 6    d. 10

43. The compound which contains both Ionic and covalent bonds is [    ]

- a.  $\text{CH}_4$     b.  $\text{H}_2$     c.  $\text{KCN}$     d.  $\text{KCl}$

44. The correct statement for the molecule  $\text{CsI}_3$  is [    ]

- a. It is a covalent molecule    c. it contains  $\text{Cs}^{+3}$  and  $\text{I}^-$  ions  
b. It contains  $\text{Cs}^+$  and  $\text{I}_3^-$  ions    d. it contains  $\text{Cs}^+$ ,  $\text{I}^-$  and  $\text{I}_2$  molecule

45. The species having pyramidal shape is [    ]

- a.  $\text{SO}_3$                       b.  $\text{BrF}_3$                       c.  $\text{SiO}_3^{2-}$                       d.  $\text{OSF}_2$

46. Which of the following are isoelectronic and isostructural  $\text{NO}_3^-$ ,  $\text{CO}_3^{2-}$ ,  $\text{ClO}_3^-$ ,  $\text{SO}_3$

- a.  $\text{NO}_3^-$ ,  $\text{CO}_3^{2-}$                       b.  $\text{SO}_3$ ,  $\text{NO}_3^-$                       c.  $\text{ClO}_3^-$ ,  $\text{CO}_3^{2-}$                       d.  $\text{CO}_3^{2-}$ ,  $\text{SO}_3$

47. Specify the coordination geometry around and hybridization of N and B atoms in 1:1 complex of  $\text{BF}_3$  and  $\text{NH}_3$  [      ]

- a. N: tetrahedral,  $\text{SP}^3$ ;                      B: tetrahedral,  $\text{SP}^3$   
b. N: pyramidal,  $\text{SP}^3$ ;                      B: pyramidal,  $\text{SP}^3$   
c. N: pyramidal,  $\text{SP}^3$ ;                      B: planar,  $\text{SP}^2$   
d. N: pyramidal,  $\text{SP}^3$ ;                      B: tetrahedral,  $\text{SP}^3$

48. Which of the following molecule is planar? [      ]

- a.  $\text{NF}_3$                       b.  $\text{NCl}_3$                       c.  $\text{PH}_3$                       d.  $\text{BCl}_3$

49. The maximum number of possible hydrogen bonds that water molecule can form

- a. 2                      b. 4                      c. 3                      d. 1

50. Among the following linear molecule is [      ]

- a.  $\text{CO}_2$                       b.  $\text{NO}_2$                       c.  $\text{SO}_2$                       d.  $\text{ClO}_2$