VELAMMAL NEET & IIT ACADEMY

CLASS: X to XI **SCHOLARSHIP EXAM** **DATE: ..... 20___**

MATHEMATICS

1. If $sec\,A\,tan\,B + tan\,A\,sec\,B = 91$ then the value of $(sec\,A\,sec\,B + tan\,A\,tan\,B)^2 - 91^2 =$

   1) 0 2) 1 3) 2 4) 3

2. If $\frac{\sin^4 x}{2} + \frac{\cos^4 x}{3} = \frac{1}{5}$ then $\tan^2 x =$

   1) 0 2) $\frac{1}{3}$ 3) $\frac{2}{3}$ 4) 1

3. If $\sec^4\theta + \sec^2\theta = 10 + \tan^4\theta + \tan^2\theta$ then $\sin^2\theta =$

   1) $\frac{2}{3}$ 2) $\frac{3}{4}$ 3) $\frac{4}{5}$ 4) $\frac{5}{6}$

4. If $\frac{\sin(750^\circ)\sin(-660^\circ)\tan(1050^\circ)\sec(-420^\circ)}{\sin(450^\circ)\cos(510^\circ)\cos ec(315^\circ)\cos(225^\circ)} =$

   1) $\frac{1}{\sqrt{3}}$ 2) $\frac{2}{\sqrt{3}}$ 3) $\frac{3}{\sqrt{3}}$ 4) $\frac{4}{\sqrt{3}}$

5. Let AP be a diameter of a circle of radius r and PT be the tangent to the circle at the point P such that the line AT intersects the circle at B. If PT=8 units and BT=4 units then $2r$ is equal to

   1) $4\sqrt{3}$ units 2) 4 units 3) $\frac{4}{\sqrt{3}}$ units 4) $8\sqrt{3}$ units

PHYSICS

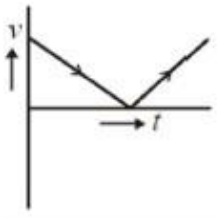
31. A boy stretches a stone against the rubber tape of a catapult or 'gulel' through a distance of 25 cm before leaving it. The tape returns to its normal position accelerating the stone over the stretched length. The stone leaves it with a velocity of 2.5 ms^{-1}. Assuming the acceleration to be constant while the stone was being pushed by the tape, its magnitude is

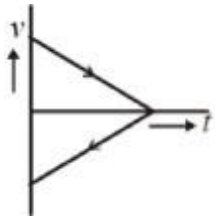
    1) 6.5 ms^{-2} 2) 2.5ms^{-2} 3) 12.5ms^{-2} 4) 10ms^{-2}

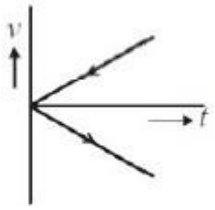
32. A vehicle is moving with a velocity of 36 kmph. On seeing red light, it decelerates at 2ms^{-2}. If the reflex time of the driver is 0.4 s, then the distance travelled by the vehicle before coming to a stop is

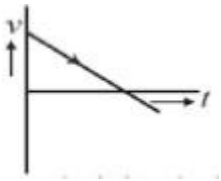
    1) 25 m 2) 29 m 3) 35m 4) 39 m

33. A ball is thrown vertically upwards with a certain velocity. Which of the following graphs represent speed versus time graph and velocity versus time graph respectively?

i) 

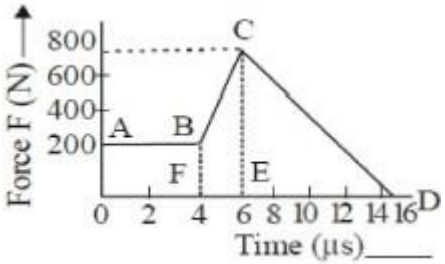
ii) 

iii) 

iv) 

1) i and ii 2) i and iv 3) iv and i 4) ii and iv

34. The magnitude of force (in N) acting on a body varies with time (in micro second) as shown. AB, BC and CD are straight line segments. The magnitude of the total impulse of the force on the body from t= 2μ s to 16μ s is



1) 5×10^{-3} NS 2) 5.4×10^{-3} NS 3) 5.4×10^{-5} NS 4) 5×10^{-4} NS

35. Assertion(A): The sail boat does not move when a fan is switched on, in the same boat.

Reason (R): Internal forces do not cause the motion of (boat and fan) system.

1) Both A and R are true and R explains A

2) Both A and R are true bur R do not explain A

3) A is true but R is false

4) A is false but R is true

CHEMISTRY

51. A sample of copper sulphate penta hydrate contains 3.782 g of copper. How many grams of oxygen are in this sample (At : wt of Cu is 63.5)

1) 0.952 g 2) 3.809 g 3) 4.761 g 4) 8.576 g

52. What is the total number of atoms present in 25.0 mg of camphor $C_{10}H_{16}O$

1) 9.89×10^{19} 2) 6.02×10^{20} 3) 9.89×10^{20} 4) 2.67×10^{21}

53. $3BaCl_2 + 2\,Na_3PO_4 \rightarrow Ba_3\left(PO_4\right)_2 + 6\,NaCl.$ Maximum amount of $Ba_3\left(PO_4\right)_2$ formed when 2 moles of each of Na_3PO_4 and $BaCl_2$ react is

1) 4 mole 2) 1 mole 3) $\frac{2}{3}$ *mole* 4) $\frac{1}{3}$ *mole*

54. The mass of $CaCO_3$ that is required to react with 25 m.l of 0.75 M HCl is

1) 0.94 g 2) 9.4 g 3) 0.094 g 4) 0.49 g

55. How many years it would take to spend Avagadro's number of rupees at the rate of 10- Lakhs rupees per second.

1) 1×10^{20} 2) 1.5×10^{15} 3) 1.9×10^{10} 4) 6×10^{23}

BIOLOGY

71. Which of the following have high risk of HIV infection?

a) Drug addicts who take drugs orally

b) People with repeated blood transfusions

c) Children born to HIV infected mother

d) People with multiple sexual partners

e) People eating restaurant foods

1) all except e 2) a,b,d 3) b,c,d 4) all the above

72. Menstrual periods may become irregular in a married woman of 25 years old when

1) She follows periodic obstinence method of contraception

2) she is under OCP medication

3) she is subjected to tubectomy

4) her husband is drug addict

73. Which of the following is not a product of light reaction?

1) O_2 2) ATP, $NADPH_2$

3) High Energy electrons 4) Sugars

74. In eye donation, which one of the following parts of donor's eye is utilized?

1) Iris. 2) Lens 3) Cornea 4) Retina

75. Match the following

LIST-1	LIST-2
A. Villi	I.Heart
B. Myocardium	II.Henle's loop
C. Nephron	III. Lungs
D. Alveoli	IV. Digestion
	V. Surface area increase.

1) A- V, B-I, C-II, D-III 2) A- IV, B-I, C-II, D-III

3) A- I, B-II, C-III, D-V 4) A- V, B-II, C-I, D-III