PLAT EXAM DWITIYA

Incubated at ROLTA INCUBATION CENTER MANIT BHOPAL

Sponsored by Vijay convent Higher Secondary school

MM-216 **11^{th}-12th** **Time-2.0 hour**

Maths

[1]Find the range of function $f(x)= 2x^2-3x-7$ for x€[1,3]
a)[-8,2] b) [-65/8, Infinity] c) [-65/8,20] d) None of these

[2] If sin a = 3/5 and cos b = 5/13 then find sin (a+b)

a) 63/65 b) -33/65 c) 3/13 d) Both a and b

[3]If n arithmetic mean is Inserted between 20 and 80 such that the 1^{st} mean ratio to the last mean is 1:3 find n?

a) 12 b) 13 c) 11 d) 10

[4] Find the area of triangle ABC if the length of medium AD is. Angle BAD = 30° angle ABE= 60° Is BE is another medium.

a) 24.63 b) 25 c) 39.21 d) 23.43

[5] Find the value of $\tan^{-1}(9) + \tan^{-1}(5/4)$

a) 3.926 b) 2.35 c) 6.92 d) 4.6

[6] Asymptote passes through the center of ……..

a) Parabola b) Circle c) ellipse d)hyperbola

[7] Consider that triangle ABC has side a,b, and c units Where a= $3^{1/2}+1$, b= $3^{1/2}-1$ & angle c = 60° . Find the length of side c.

a) √6 b) 2.5 c) 3.1 d) 4.2

[8]The ratio of the height of the cone of maximum volume inscribed in a sphere to its radius is ……..

a)3/4 b)4/3 c)1/2 d)2/3

[9]Find the area of the region bounded by the two parabolas $y = x^2$ and $y^2 = x$.
a) 0.333 b) 0.667 c) 1.3 d) 1

[10] The total number of positive integral solutions for x, y, z such that x* y * z = 24, is _____.

a) 60 b) 40 c)25 d) 30

[11]A and B walk around a circular track. They start at 8 a.m. from the same point in opposite directions. A and B walk at a speed of 2 rounds per hour and 3 rounds per hour respectively. How many times shall they cross each other before 9.30 a.m.?

(a) 5 (b) 6 (c) 7 (d) 8

(12). The value $\int_0^1 x^3\sqrt{1+3x^4}\,dx$ is
a) 7/10 b) 1/3. c) 5/10 d) ½

(13). If A={1,2,3,4,5} and B= {2,3,6,7} then the number of elements in the set (AXB)$\cap$(BXA) is equal to
a) 4. b) 5 c) 10 d) 20

(14). If $\sqrt{x/y} + \sqrt{y/x} = 6$ then value of dy/dx is

a) 17x-y/x-17y b) 17x+y/x+17y c) x-17y/17x-y d) x-17y/17x+y

(15) A Ray of light through B(3,2) is reflected at the point A (0,x)on the y axis and passes through C(4,3) Then x is
a) 7/11. b) 13/7 c) 17/7 d) 8/11

(16) 4 Prizes are to be distributed among 6 students the number of ways of distributing the prizes if a student cannot receive all the prizes is

a)16^3 -16. b) 1290 c) 11 d) 26

(17) The ratio of sums of m and n terms of an AP is m2:n2 then the ratio of the mth and nth terms is

a) 2m+1:2n-1 b) m:n c) 2m-1:2n-1 d)2n+1:2m-1

(18) The solution of $6x/4x-1 < 1/2$ is

a) $x<-1/8$ b)$-1/8<x<1/4$ c)$x<-1/8$ and $x>1/4$ d) $x>1/8$

CHEMISTRY

[1]An electron of excited hydrogen atom falls from 5th energy level to the second energy level in which of the following region the spectrum line will be observed and is a part of which series of the atomic spectrum?

a)Visible, Balmer b)Ultraviolet, Lyman c)Infrared, Paschen d) Infrared,Brackett

(2) The number of radial nodes and the angular nodes for d orbital can be represented as

a) (n-2) radial nodes + 1 angular node= (n-1)total nodes

b) (n-1)radial nodes+ 1 angular node= (n-1)total nodes

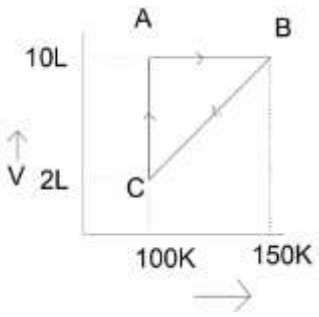
c)(n-3)radial nodes+ 2 angular nodes =(n-l-1)total nodes

d) (n-3)radial nodes+2 angular nodes=(n-1)total nodes

3) Which arrangement represents the correct order of the electron gain enthalpy?

a)O<S<F<CL b)Cl<F<S<O c) S<O<Cl<F. d)F<CL<O<S

4) Consider the given diagram for one mole of gas X and answer the following question-



The process A-B represent

a)Isobaric change b)Isothermal change c)Adiabatic change d)Isochoric change

5) Which of the following properties of hydrogen is incorrect

a)Like halogens hydrogen exist as a diatomic gas

b)As halogen hydrogen exists - 1 oxidation number state in its compound with metal

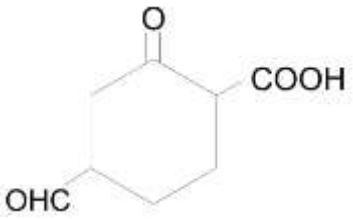
c)Like halogens, hydrogen is liberated at the cathode

d)The ionization energy of hydrogen is quite close to halogens

6) Which among the following is kinetically inert to the water

a)Na b)Be c)Ca d)K

7) The correct IUPAC name of the compound is



a) 4-formly-2-oxocyclohexane carboxylic acid

b)4-carboxy-2- oxocyclohexanal

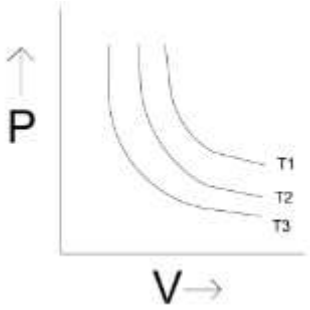
c)4-carboxy-1-formylcyclohexanone

d) 2- carboxy-5-formyl-1-oxocyclohexane

8) The density of the solution prepared by dissolving 120 grams of urea (molecular mass 16u)in 1000 grams of water is 1.15 gram/ml the molarity of the solution is

a)1.78 M b)1.02M c)2.05M d)0.50M

9) The graph of P versus V is given as a given temperature



The correct relationship is

a)T1>T2>T3 b)T1<T2<T3 c)T1=T2=T3 d)T2>T1>T3

10) The oxidation of the central atom in the complex $[Co(NH_3)_4ClNO_2]$

a) +2 b) +3 c) +1 d) o

11) Match column one with column to and mark the appropriate choice

S.N	COLUMN-1	S.N	COLUMN-2
A.	Troposphere	1.	Prevent UV rays coming to earth
B .	Stratosphere	2.	Ionization of gases
C.	Mesosphere	3.	Maintenance of heat balance
D.	Thermosphere	4.	Non-propagation of sound waves

a)A-2 , B-4 , C-3 , D-1 b)A-4, B-2 , C-1, D-3

c)A-3, B-1 ,C-4 ,D-2 d)A-1, B-3, C-2 ,D-4

12) Balancing $aK_2Cr_2O_7 + bKCl + CH_2SO_4 \longrightarrow xCrO_2Cl_2 + yKHSO_4 + zH2O$

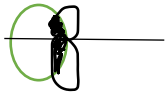
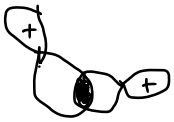
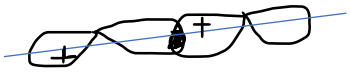
a)a=2, b=4 ,c=6 and x=2 ,y =6, z=3

b)a=4, b=2, c=6,and x=6,y=2,z=3

c)a=6,b=4,c=2 and x=6 y=3 z=6

d)a=1,b=4,c=6 and x=2 y=6and z=3

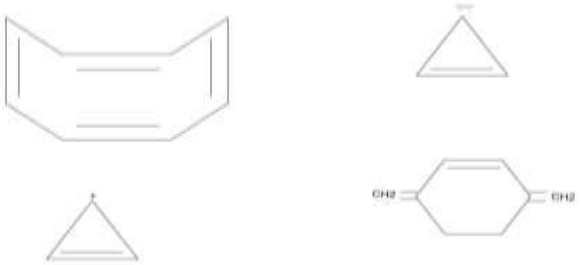
13) Which of the following orbital overlapping is not possible according to VBT

a)  b)  C  d) all of these

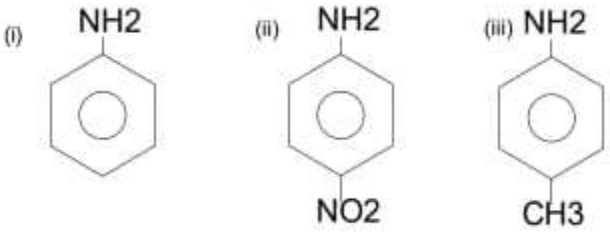
14)The compound which reacts faster with Lucas regent at room temperature is

a) butan-1-ol b)butan-2-ol c) 2-methyl propane-1-ol d) 2-methyl propane-2-ol

15) Which of the following is aromatic in nature?

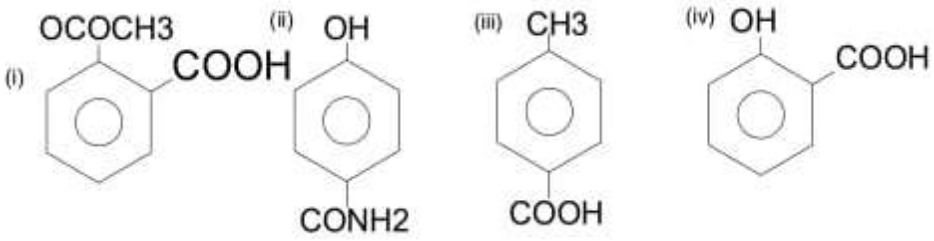


16) the correct increasing order of the basic strength for the following compound is



a)II<III<I b)III<I<II c)III<II<I d) II<I<III

17)Which of the following product is Analgesic.



18) Which of the following is not an ore of magnesium

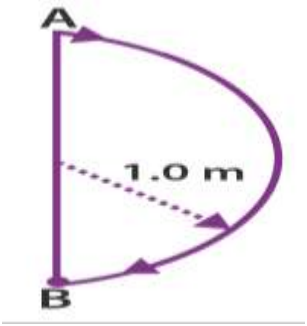
1)Carnallite 2)Magnesite 3)Dolomite 4)Gypsum

PHYSICS

[1] A copper wire is stretched to make it 0.5% longer. The percentage change in its electrical resistance if its volume remains unchanged is

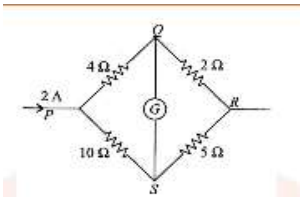
(a) 5% (b) 2% (c) 1% (d) 6%

[2] In 1.0 sec a particle goes from point A to point B, moving in a semicircle of radius 1.0 m as shown in the figure. The magnitude of the average velocity is



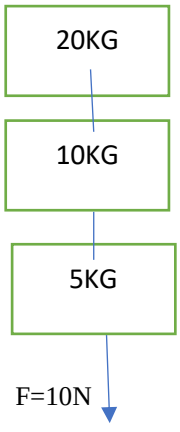
a)3.14 m/sec b)2.0 m/sec c) 1.0 m/sec d)zero

[3] Find the current flowing in 2-ohm resistance if 2A is passing from P point



a)10/7 b)3/10 c) 6/10 d) 7/3

[4]Find the net force acting downward when 10-newton external force is applied on a 5kg block



a)355N b) 340N c)45N d) 35N

[5] The ratio of maximum acceleration to maximum velocity in a simple harmonic motion is 10 s^{-1}. At, t = 0 the displacement is 5 m. What is the maximum acceleration? The initial phase is $\pi/4$

(a) $500\sqrt{2}$ m/s^2 (b) 500 m/s^2 (c) $750\sqrt{2}$ m/s^2 (d) 750 m/s^2

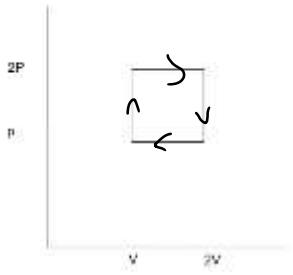
[6] The height at which the acceleration due to gravity becomes g/9 (where g = the acceleration due to gravity on the surface of the earth) in terms of R, the radius of the earth, is

(a) R/2 (b) R/3 (c) 2R (d) 3R

[7] In Monoatomic, diatomic, and triatomic total degree of freedom will?

a) 3,6, and 9 respectively b) 6,3, and 9 respectively c) 9,3, and 6 d) all have the same

[8] Find the work done in a given cyclic process of thermodynamics.



a)P_0V_0 b)-P_0V_0 c) $2P_0V_0$ d) $-4P_0V_0$

[9] What is the magnetic field at point p due to an infinitely long wire having a current of 10 A, also comment about the magnetic line of forces.

a) $10u_0/2\pi r$, circular b) $5u_0/\pi r$, perpendicular

c)$10u_0/4\pi r$,circular d) $5u_0/4\pi r$,circular

[10] Three charges +Q, q, +Q are placed respectively, at distances 0, d/2, and d from the origin, on the x-axis. If the net force experienced by +Q placed at x = 0 is zero, then the value of q is

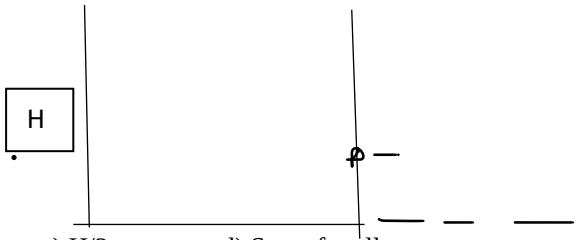
(a) +Q/4 (b) –Q/2 (c) +Q/2 (d) –Q/4

[11] A concave mirror for face viewing has a focal length of 0.4 m. The distance at which you hold the mirror from your face in order to see your image upright(erect image) with a magnification of 5 is

(a) 0.16 m (b) 1.60 m (c) 0.32 m (d) 0.24 m

[12] At what height should we hole so that the range of flowing water is maximum?

c



a) H/3 b) H/4 c) H/2 d) Same for all

[13] During peddling of a bicycle, the force of friction exerted by the ground on the two wheels is such that it acts

(a) in the backward direction on the front wheel and in the forward direction on the rear wheel

(b) in the forward direction on the front wheel and in the backward direction on the rear wheel

(c) in the backward direction on both, the front and the rear wheels

(d) in the forward direction on both, the front and the rear wheels.

[14] Two bodies of mass 1kg and 3 kg have position vectors $i^+2j^+k^$ and

$-3i^-2j^+k^$ respectively. The magnitude of the position vector of center of mass of this system will be similar to the magnitude of the vector :

a) $i^+2j^+k^$ b) $-3i^-2j^+k^$ c) $-2i^+2k^$ d) $2i^-j^+2k^$

[15] The electronic velocity in the 4th Bohr's orbit of hydrogen is V . The velocity of the electron in the first orbit would be;

a)4V b) 16V c)V/4 d)V/16

[16]Dimensional formula of power.

a)$M^2L^2T^{-2}$ b)ML^2T^{-3} c)M^2LT^{-2} d)MLT^{-2}

[17] The amount of work done in stretching a spring from a stretched length of 10 cm to a stretched length of 20 cm is-

a)Equal to work done in stretching it from 20 cm to 30 cm

b) less than the work done in stretching it from 20 cm to 30 cm

c) more than the work done in stretching it from 20 cm to 30 cm

d)equal to the work done in stretching from 0 to 10 cm

[18] Which of the following is dimensionally correct?

a)pressure = energy/ volume b)pressure = energy/area

c)pressure = force/ volume d)Pressure = Momentum/ volume

BIOLOGY

Q.1- When the sympathetic nerve supply to hurt is cut off, the heartbeat rate will

a)increase b)decrease c)show no change (d)None of these

Q.2- parasympathetic nervous system increases the activity of

(a) Gut, iris, urinary bladder b)Heart, adrenal gland, sweat gland

(c) the lacrimal gland, sweat gland, and arrector pili (d). Heart, Lacrimal gland, pancreas

Q.3- find out the correct matching pair from the following

(a) hyperglycemia-glucagon b)calcitonin-parathyroid

c)Vitamin D – Cretinish d)Thyroxine – rickets

Q.4- a hormone responsible for normal sleep-wake cycle is

(a) epinephrine (b) Gastrin (c) melatonin (d). Insulin\

Q.5- find out the incorrect matching pair from the following

a) World diabetes day - 14th November

b) Iodine deficiency disorder day - 21st October

c) World animal day - 3rd October

d)World forest day - 22 March

Q.6- the function of our visceral organ is controlled by

a) Sympathetic and semetic neural system

b) Sympathetic and parasympathetic neural system

c)Central and somatic nerves system

d)None of these

Q.7- find out the incorrect matching pair from the following

I. Myology. Study of massage

II. Osteology study of joints

III. Kinesiology study of body movements

IV. Arthrology Study of skeleton

(a) (i). (iii) (b) (ii). (iv) (c) (iv) only (d). (i) only

Q.8- which one of the following is a matching pair

a) Lub sharp closure of AV valves at the beginning of ventricular systole

b) Dup- sudden opening of semilunar valves at the beginning of ventricular diastole

c) Pulsation of the radial artery was in blood vessels

d) Initiation of the heartbeat Purkinje fibers

Q.9- Breathing is controlled by-

(a) lungs (b) trachea (c) Medulla (d). Intercostal muscles

Q.10- the largest alga is

(a) fucus (b) macrocytic (c) laminaria (d). Sargassum

Q.11- which one of the most abundant proteins in the animal world-

(a) Trypsin (b) hemoglobin (c) Collagen (d). Insulin

Q.12- match the following and choose the correct option

I. Adipose tissue. Nose

II. Stratified epithelium. Blood

III. Hyaline cartilage. Skin

IV. Fluid connective tissue. Fat storage

a) I-A , II- B , III-C , IV-D
b) I-D , II- C , III-A , IV-B
c) I-C , II- A , III-D , IV-B
d) I-B , II- A , III-D , IV-C

Q.13- consider the following four statements and whether they are correct or wrong

a) The sporophyte in liverworts is more elaborate than that is mosses
b) Salvinia is heterosporous
c) The life cycle in all seed-bearing plants is diplomatic
d) In pinus male and female cones are born on different trees

The two wrong statements together are

a) Statements (b) and (c)
b) Statements (a) and (b)
c) Statements (a) and (c)
d) Statements (a) and (d)

Q.14- flagellate cell are absent, pyrenoid are present

(a) green algae (b) brown algae (c) Red algae (d). Blue green algae

Q.15- which one of the following pairs is correctly matched?

a) Streamlined body - aquatic adaptation
b) Excessive perspiration - xeric adaptation
c) Parasitism - Intraspecific relationship
d) Uricotellism - aquatic habitat

Q.16- Guanine is 10% in DNA thymine would be

(a) 20% (b) 40% (c) 80% (d). 10%

Q.17- choose the incorrect option

a) BSI - botanical survey of India
b) IBWL - Indian botanical for wildlife
c) NWAP - National wildlife action plan
d) WPSI - wildlife preservation society of India

18- match the following and choose the correct option

a) Leaves - anti transpiration
b) Seed - transpiration
c) Roots - negative osmotic potential
d) Aspirin - Inhibition
e) Plasmolysed cell - Absorption

Answer key – YouTube Physics Lover Aman Kumar

Website – Physicsloveraman.com

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