PERIODIC TEST-2
(2019-2020)
10th Physical Science
Principles of Evaluation
### Section-I

$$(12 \times \tfrac{1}{2} = 6 \, Marks)$$

1. 540 cal/g
2. A-q, B-p, C-r
3. c) During the refraction,colour of the light changes
4. a), b) and c)
5. Accommodation
6. Aufbau principle
7. Both statements are corrects
8. c) $CaCl_2$
9. C)
10. Right hand rule/Right hand thumb rule
11. Flux
12. Hexagonal

Section-II

(8x1=8Marks)

13. The angel of incidence at which the light ray, travelling from denser to rarer medium, grazes the interface is called critical angle

14.

fig-14
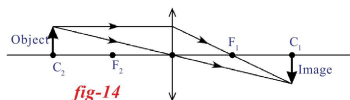
15. $\frac{1}{f} = (n-1)\left(\frac{1}{R1} - \frac{1}{R2}\right)$

16. -1,0,+1,

17. The physical and chemical properties of the elements are the periodic functions of their electronic configuration(OR) The properties of the elements are periodic functions of their atomic numbers

18. Picture on a television screen is due to motion of the electrons reaching the screen. These electrons are affected by magnetic field of bar magnet

19. Furnace is used to carry out pyrochemical process in metallurgy

20. In period, atomic radius decreases from left to right
   In group, atomic radius increases from top to bottom.

Section-III

(8x2=16 Marks)

21. 0^0 C(Ice)---------→0^0C(Water)--------→75^0C(Water)
         Q_1=mL=10x80=800 cal
         Q_2=mS(T_2-T_1)=10x1x(75-0)=750 cal
          Q=Q_1+Q_2=800+750=1550 cal

22. Distilled water consists of H_3O^+ and OH^- ions.The concentration of both H_3O^+ and OH^- are same.Hence they do not form as ions,so distilled water can be treated as a neutral solution and do not conduct electricity

23. 1) What type of image formed when the object is placed between Optic centre and focus?
   2) How does the lens behaves if it is kept in carbon diasulphide?
   3) How does air bubbles in water behaves?
   4) If lens is placed in greater refractive index of the medium than that of lens. How the lens behaves?
      (NOTE: write any two questions related given subject)

24. On a hot day ,due to rise in the temperature water vapour enters into atmosphere which leads to abundant presence of water molecules in the atmosphere. These water molecules scatter the colours of other frequencies(Other than blue).All such colours of other frequencies reach your eye and sky appears white.

25. 1) Esters are used in making artificial perfumes 2) Esters are used as flavoring agents

26.
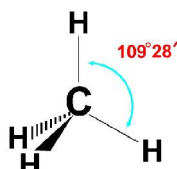
27. Electric shock is a combined effect of potential difference, electric current and resistance of the human body. When current flows through human body, resistance of a body gradually changes. Aa long as current flow continues inside the body, resistance too decreases. This is called "electric shock"

28. Hund's rule: Electron pairing in orbitals starts only when all available empty orbitals of the same energy are singly Occupied(OR) Electron pairing takes place only after all the available degenerate orbitals are occupied by one electron each

   Explination: The E.C of carbon atom(Z=6) is $1s^2 2s^2 2p^2$

   The first four electrons go into 1s and 2s orbitals
   The next two electrons go into $2p_x$ and $2p_y$ orbitals
   But, they do not pair in $2p_x$ orbital
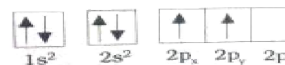
Section-IV

(5x4=20Marks)

29. **Aim:** The rate of evaporation of liquid depends on its surface area and vapour already present in surrounding air

   Apparatus: Two dishes of different surface area and water

   Procedure (1): 1) Take two dishes of different surface area
   2) Pour equal amounts of water in the both dishes
   3) Keep aside for 2 to 3 hours
   4) Observe them after sometime. Dish with more surface area has less quantity of water than the dish having less surface area

   Conclusion: This shows evaporation increases with increasing of surface area

   Procedure (2): 1) Take two dishes of equal surface area containing water
   2) This experiment should be conducted on more humidity day and less humidity day
   3) We may observe that evaporation is less on more humidity day due to more vapour in the air

   Conclusion: Hence the rate of evaporation depends upon vapour already present in surrounding air

   (OR)

   Aim: To verify sin i/sin r is a constant

   Materials required: Pro circle, scale, small black printed plank, a semi circular glass disc of thickness nearly 2 cm, pencil and laser light

   Preparation of Pro Circle: 1)Take a wooden plank which is covered with white chart
   2) Draw two perpendicular lines, passing through the middle of the paper as shown in the figure
   3) Let the intersecting point be O.
   4) Mark one line as NN which is normal to the another line marked as MM
   5) Here MM represents the line drawn along the interface of two media and NN represents the normal drawn to this line at O
   6) Take a protractor and place it along NN in such a way that its centre coincides with O as shown in figure
   7) Then mark the angles from 0 to 90 on both sides of the line NN
   8) Repeat the same on the other side of the line NN
   9) The angles should be represented on circular line.
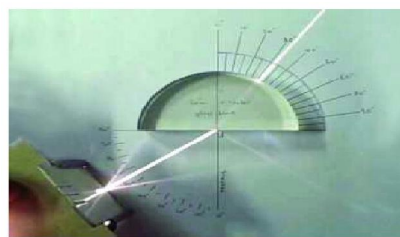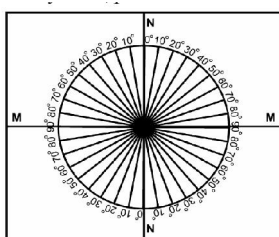
   Procedure: 10) Now place a semi-circular glass disc so that its diameter coincides with the interface line (MM) and its center coincides with the point O
   11)Take the laser light and send it along NN in such a way that the laser propagates from air to glass through the interface at point O and observe the way of laser light coming from other side of disc
   12) There is no deviation
   13) Send laser light along a line which makes 15 with NN and see that it must pass through point O
   14) Measeure its corresponding angle of refraction
   15) Repeat this experiment with angles of $20^0, 30^0, 40^0, 50^0$ and 60^0, note the corresponding angles of refraction

i	r	sin i	sin r	sin i/sin r

From the above table we observe that sin i/sin r is constant

30. 1) Tooth decay starts when the pH of the mouth is lower than 5.5.
    2) Tooth enamel, made of calcium phosphate is the hardest substance in the body
    3) It does not dissolve in water, but is corroded when the pH in the mouth is below 5.5
    4) Bacteria present in the mouth produces acids by degradation of sugar and food particles remaining in the mouth
    Preventions: 1) Clean the mouth after eating food.
    2) Using tooth paste, which are generally basic neutralize the excess acid and prevent tooth decay

(OR)

Esterification	Saponification
Esterification is the reaction in which a carboxylic acid combines with an alcohol in the presence of little conc.Sulphuric acid to form an ester. These ester so formed are pleasant smelling	Saponification is defined as the hydrolysis of an oil under basic conditions leading to the formation of sodium salt of carboxylic acid and glycerol
This is a reversible reaction.	This is irreversible reaction
This is an example for dehydration reaction	This reaction is an example for hydrolysis
This is used to prepare different types of esters	It is used to prepare soaps or glycerol from long chain esters

(Note:Write any four differences)

31. In series connection of resistors there is only one path for the flow of current in the circuit.Hence, the current in the circuit is equal to I
    According to Ohms law
    $V_1=IR_1$; $V_2=IR_2$; $V_3=IR_3$
    Let R be the equivalent resistance of the combination of resistors in series.
    Also $V=IR_{eq}$
    $V= V_1+V_2+V_3$
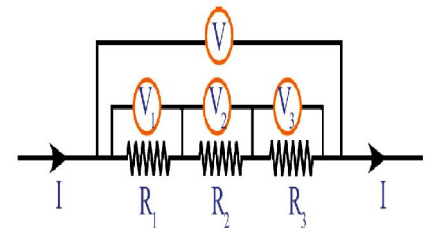 $IR_{eq}=IR_1+IR_2+IR_3$
    $IR_{eq}=I (R_1+R_2+R_3)$
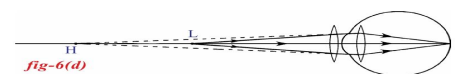 $R_{eq}=R_1+ R_2+ R_3$
    The sum of individual resistances is equal to their equivalent resistance when the resistors are connected in series

(OR)

Hypermetropia

1) A person with hypermetropia can see distant objects clearly but cannot see objects at near distances.This is also known as far sightedness
2) Eye lens can form a clear image on the retina when any object is placed beyond near point
3) To correct the defect of hypermetropia, we need to use a lens which forms an image of an object beyond near point at H, when the object is between H and L.This is possible only when a double convex lens is used
4) The image acts like an object for the eye lens.Hence final image due to eye is formed at retina.
    Here   object distance(u)= -25 cm.
    Image distance(v)= Distance of the near point= -d.
    f is the focal length of bi-convex lens
    We know $\frac{1}{f} = \frac{1}{v} - \frac{1}{u} = \frac{1}{-d} - \frac{1}{-25} = \frac{d-25}{25d}$
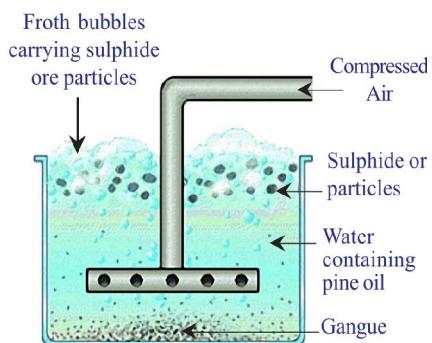
5) If d>25, then f ne comes positive. It indicates that we need to used biconvex lens

32. a) 3rd period
    b) 17or VII A group
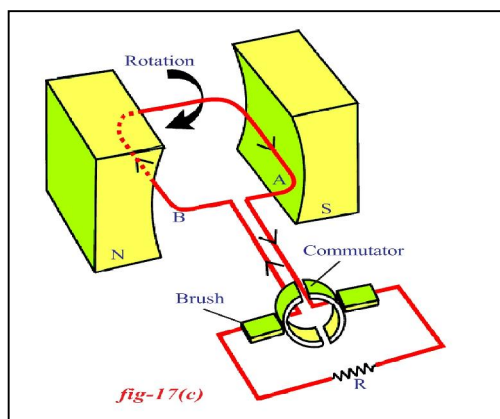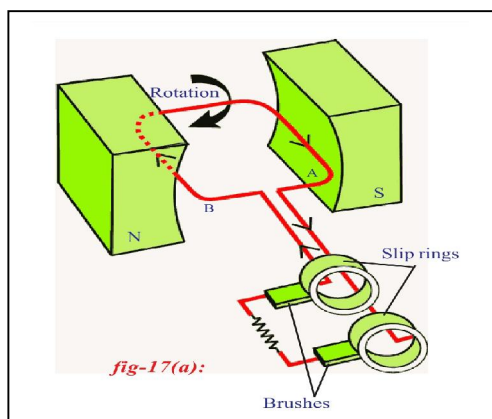   c) Halogen family
    d) Non-metal

(OR)

Molecule	Hybridisation	Shape	Bond angle	No.of lone pair of electrons
H_2O	sp^3	V-shape	$104^0 31^1$	2
NH_3	sp^3	Pyramidal	$107^0 28^1$	1
$BeCl_2$	sp	Linear	180^0	0
BF_3	sp^2	Trigonal planar	120^0	0

33. Froth Floatation

(OR)

Generator

(OR)

(**Note:** Draw AC generator/DC generator)