



PHYSICS

BOOKS - SELINA PHYSICS (ENGLISH)

SAMPLE PAPER 2012

Section I

1. Define 1 kgf.



[Watch Video Solution](#)

2. How is it related to the S.I. unit of force ?



[Watch Video Solution](#)

3. What are non-contact forces ?



[Watch Video Solution](#)

4. How does the distance of separation between two bodies affect the magnitude of the non-contact force between them ?



[Watch Video Solution](#)

5. A boy of mass 30 kg is sitting at a distance of 2 m from the middle of a see-saw. Where should a boy of mass 40 kg sit so as to balance the see-saw ?



[Watch Video Solution](#)

6. What is meant by the term 'moment of force' ?





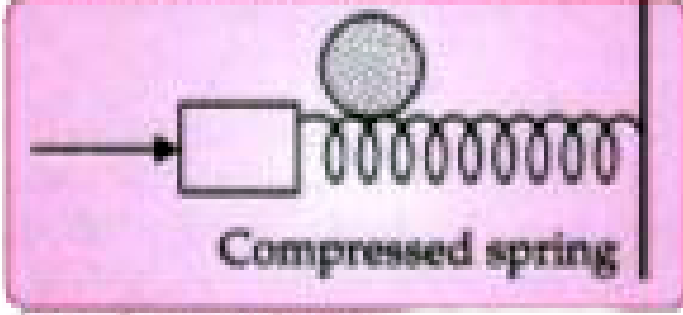
[Watch Video Solution](#)

7. If the moment of force is assigned a negative sign then will the turning tendency of the force be clockwise or anti-clockwise ?



[Watch Video Solution](#)

8. A ball is placed on a compressed spring. When the spring is released, the ball is observed to fly away.

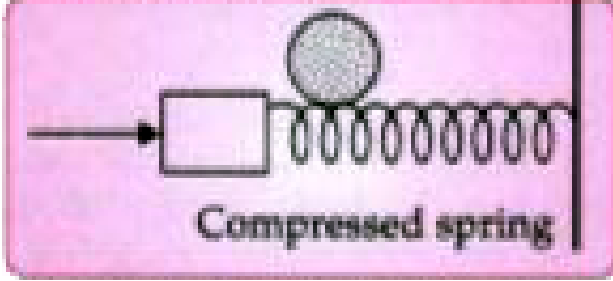


What form of energy does the compressed spring possess ?



[Watch Video Solution](#)

9. A ball is placed on a compressed spring. When the spring is released, the ball is observed to fly away.



Why does the ball fly away?

 [Watch Video Solution](#)

10. State the energy conversion taking place in a solar cell.

 [Watch Video Solution](#)

11. What is a solar cell? State two uses of solar cells. State whether solar cell produces a.c. or d.c. Give one disadvantage of using a solar cell.



Watch Video Solution

12. A body of mass 0.2 kg falls from a height of 10 m to a height of 6 m above the ground. Find the loss in potential energy taking place in the body.

$$[g = 10ms^{-2}]$$





[Watch Video Solution](#)

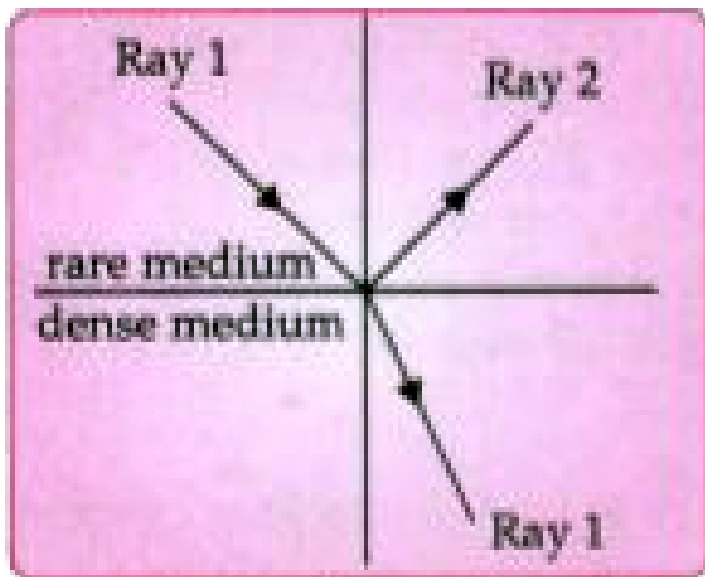
13. Define the term refractive index of a medium in terms of velocity of light.



[Watch Video Solution](#)

14. A ray of light moves from a rare medium to a dense medium as shown in the diagram below. Write down the number of the ray

which represents the partially reflected ray.



[Watch Video Solution](#)

15. You are provided with a printed piece of paper. Using this paper how will you

differentiate between a convex lens and a concave lens ?



[Watch Video Solution](#)

16. A ray of light incident at an angle of incidence ' i ' passes through an equilateral glass prism such that the refracted ray inside the prism is parallel to its base and emerges from the prism at an angle of emergence ' e '.

How is the angle of emergence ' e ' related to the angle of incidence ' i ' ?



[Watch Video Solution](#)

17. A ray of light incident at an angle of incidence ' i ' passes through an equilateral glass prism such that the refracted ray inside the prism is parallel to its base and emerges from the prism at an angle of emergence ' e '.

What can you say about the value of the angle of deviation in such a situation ?



[Watch Video Solution](#)

18. What do you mean by dispersion of light?



Watch Video Solution

19. In the atmosphere which colour of light gets scattered the least ?



Watch Video Solution

20. Which characteristics of sound will change if there is a change in

its amplitude



[Watch Video Solution](#)

21. Which characteristics of sound will change if there is a change in its waveform.



[Watch Video Solution](#)

22. Name one factor which affects the frequency of sound emitted due to vibrations

in an air column.



[Watch Video Solution](#)

23. Name the unit used for measuring the sound level.



[Watch Video Solution](#)

24. An electrical appliance is rated at 1000 KVA, 220 V. If the appliance is operated for 2 hours, calculate the energy consumed by the

appliance in :

kWh



[Watch Video Solution](#)

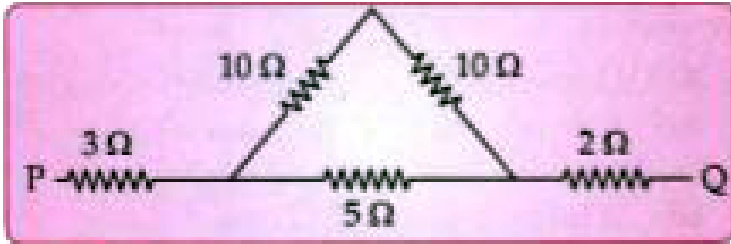
25. An electrical appliance is rated at 1000 KVA, 220 V. If the appliance is operated for 2 hours, calculate the energy consumed by the appliance in :

joule



[Watch Video Solution](#)

26. Calculate the equivalent resistance between P and Q from the following diagram:



[Watch Video Solution](#)

27. What is an a.c. generator or Dynamo used for ?



[Watch Video Solution](#)

28. Name the principle on which it works.



Watch Video Solution

29. Differentiate between heat capacity and specific heat capacity.



Watch Video Solution

30. A hot solid of mass 60 g at $100^{\circ}C$ is placed in 150 g of water at $20^{\circ}C$. The final

steady temperature recorded is $25^{\circ}C$.

Calculate the specific heat capacity of the solid. [Specific heat capacity of water = $4200 \text{ kg}^{-1} \text{ }^{\circ}C^{-1}$]



[Watch Video Solution](#)

31. What is the value of the speed of gamma radiations in air or vacuum ?



[Watch Video Solution](#)

32. Name a material which exhibits fluorescence when cathode rays fall on it.



Watch Video Solution

33. Give any two important sources of background radiation.



Watch Video Solution

Section II

1. Which of the following remains constant in uniform circular motion. Speed or Velocity or both ?



[Watch Video Solution](#)

2. Name the force required for circular motion.
State its direction.



[Watch Video Solution](#)

3. State the class of levers and the relative positions of load (L), effort (E) and fulcrum (F) in each of the following cases.

(1) A bottle opener

(2) Sugar tongs.



[Watch Video Solution](#)

4. Why is less effort needed to lift a load over an inclined plane as compared to lifting the load directly ?





[Watch Video Solution](#)

5. A moving body weighing 400 N possesses 500 J of kinetic energy. Calculate the velocity with which the body is moving.

$$(g = 10ms^{-2})$$



[Watch Video Solution](#)

6. Under what condition will a set of gears produce :

(1) a gain in speed

(2) a gain in torque.



Watch Video Solution

7. What is meant by the term 'critical angle'?



Watch Video Solution

8. How is it related to the refractive index of the medium ?



Watch Video Solution

9. A tank of water is viewed normally from above.

(a) State how does the depth of the tank appear to change.

(b) Draw a labelled ray diagram to explain your answer.



Watch Video Solution

10. A ray of light PQ is incident normally on the hypotenuse of a right angled prism ABC as shown in the diagram given below:

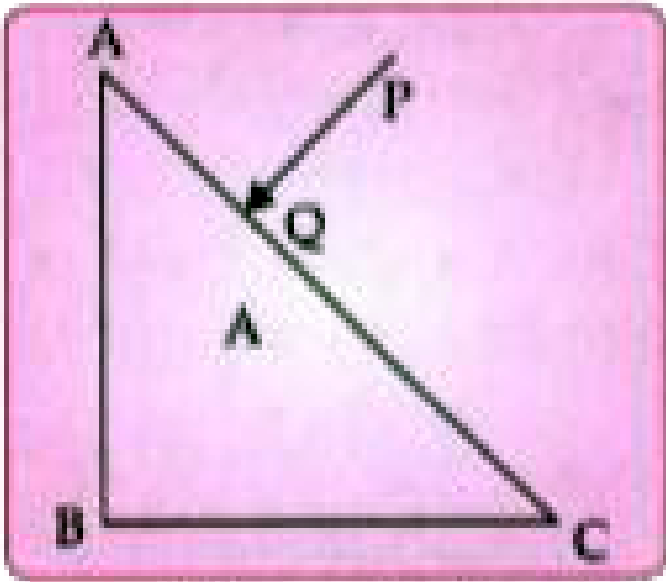
Copy the diagram and complete the path of the ray PQ till it emerges from the prism.



Watch Video Solution

11. A ray of light PQ is incident normally on the hypotenuse of a right angled prism ABC as shown in the diagram given below:

What is the value of the angle of deviation of the ray ?



[Watch Video Solution](#)

12. A ray of light PQ is incident normally on the hypotenuse of a right angled prism ABC as

shown in the diagram given below:

Name an instrument where this action of the prism is used.



[Watch Video Solution](#)

13. A converging lens is used to obtain an image of an object placed in front of it. The inverted image is formed between F_2 and $2F_2$ of the lens.

Where is the object placed ?



[Watch Video Solution](#)

14. A converging lens is used to obtain an image of an object placed in front of it. The inverted image is formed between F_2 and $2F_2$ of the lens.

Draw a ray diagram to illustrate the formation of the image obtained.



Watch Video Solution

15. What is meant by Resonance ?



Watch Video Solution

16. State two ways in which Resonance differs from Forced vibrations.



Watch Video Solution

17. A man standing between two cliffs produces a sound and hears two successive echoes at intervals of 3 s and 4 s respectively. Calculate the distance between the two cliffs.

The speed of sound in the air is 330m.s^{-1} .



[Watch Video Solution](#)

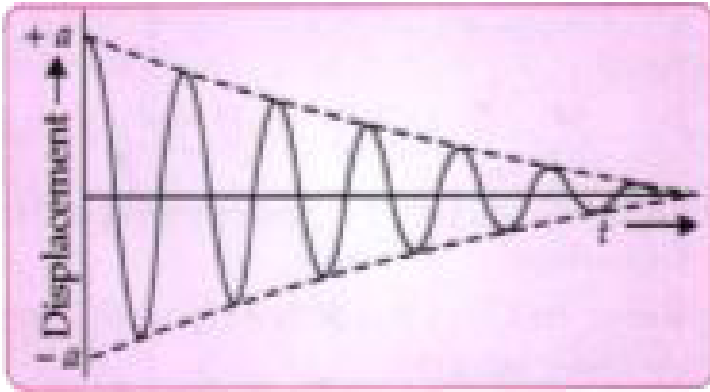
18. Why will an echo not be heard when the distance between the source of sound and the reflecting surface is 10 m ?



[Watch Video Solution](#)

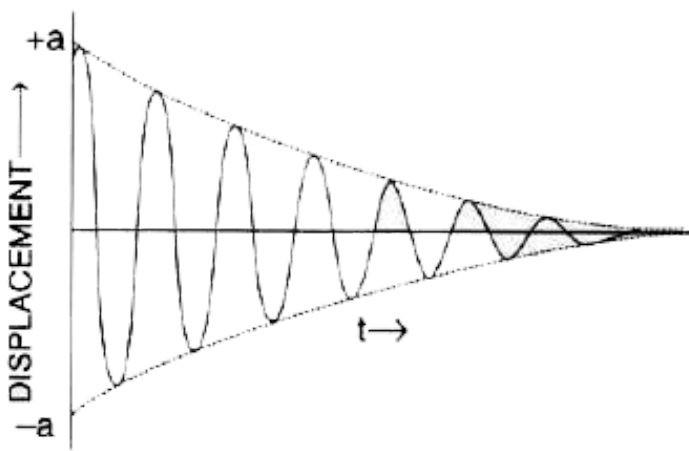
19. The diagram below shows the displacement-time graph for a vibrating body. Name the type of vibrations produced by the

vibrating body.



[Watch Video Solution](#)

20. The diagram in Fig. shows the displacement time graph of a vibrating body.

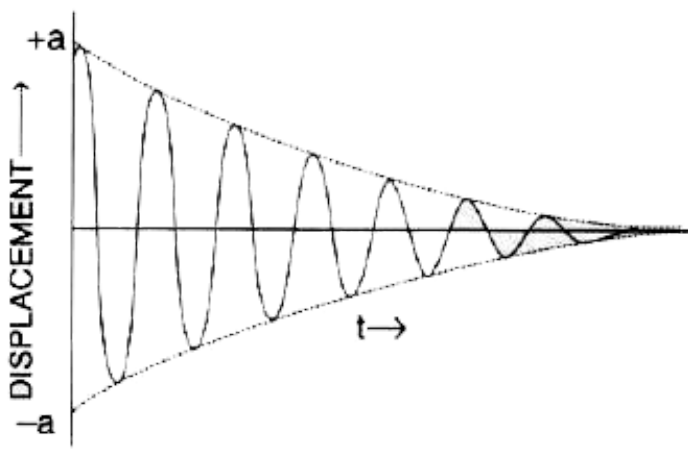


Give one example of such vibrations.



[Watch Video Solution](#)

21. The diagram in Fig. shows the displacement time graph of a vibrating body.

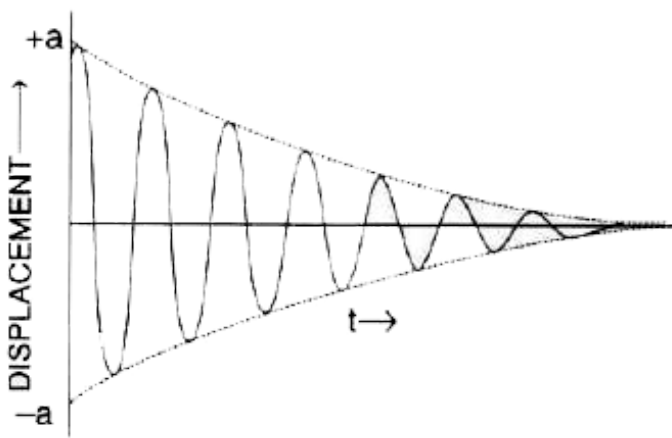


Why is the amplitude of vibrations gradually decreasing ?



[Watch Video Solution](#)

22. The diagram in Fig. shows the displacement time graph of a vibrating body.



What happens to the vibrations of the body after some time?



[Watch Video Solution](#)

23. A cell is sending current in an external circuit. How does the terminal voltage compare with the e.m.f. of the cell ?



[Watch Video Solution](#)

24. What is the role of fuse, used in series with any electrical appliance? Why should a fuse with defined rating not be replaced by one with a larger rating?



[Watch Video Solution](#)

25. What are the characteristic properties of fuse wire ?



 [Watch Video Solution](#)

26. Write an expression for the electrical energy spent in the flow of current through an electrical appliances in terms of I , R and t .



[Watch Video Solution](#)

27. At what voltage is the alternating current supplied to our houses ?



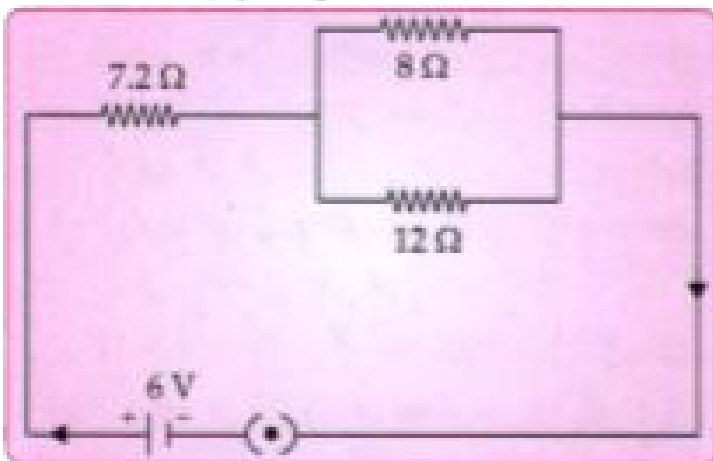
[Watch Video Solution](#)

28. How should the electric lamps in a building be connected ?



Watch Video Solution

29. Three resistors are connected to a 6 V battery as shown in the figure given below :



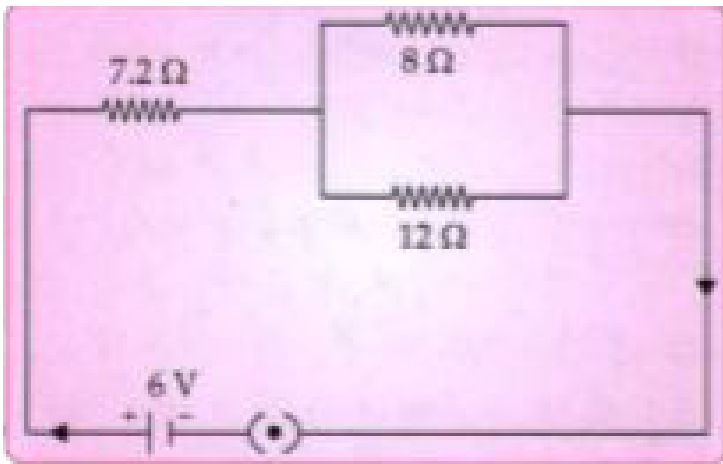
Calculate :

the equivalent resistance of the circuit.



[Watch Video Solution](#)

30. Three resistors are connected to a 6 V battery as shown in the figure given below :

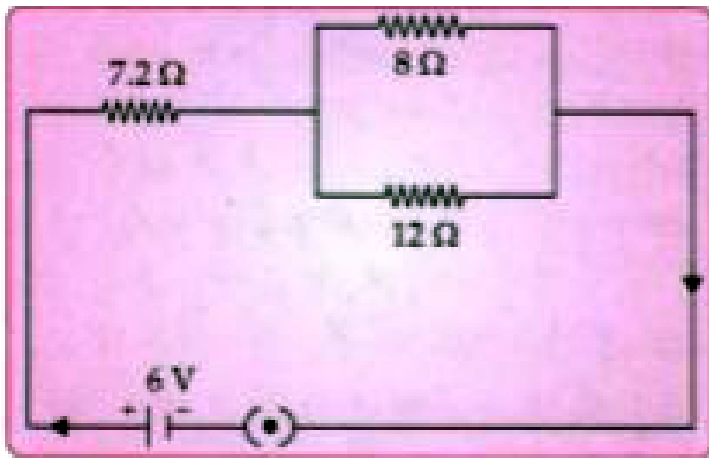


Calculate :

total current in the circuit.

 [Watch Video Solution](#)

31. Three resistors are connected to a 6 V battery as shown in the figure given below :



Calculate :

potential difference across the 7.2Ω resistor.



[Watch Video Solution](#)

32. Write an expression for the heat energy liberated by a hot body.



[Watch Video Solution](#)

33. Some heat is provided to a body to raise its temperature by $25^{\circ}C$. What will be the

corresponding rise in temperature of the body as shown on the Kelvin scale ?



[Watch Video Solution](#)

34. What happens to the average kinetic energy of the molecules as ice melts at $0^{\circ}C$?



[Watch Video Solution](#)

35. A piece of ice at $0^{\circ}C$ is heated at a constant rate and its temperature recorded at

regular intervals till steam is formed at $100^{\circ}C$

. Draw a temperature-time graph to represent the change in phase. Label the different parts of your graph.



Watch Video Solution

36. 40 g of ice at $0^{\circ}C$ is used to bring down the temperature of a certain mass of water at $60^{\circ}C$ to $10^{\circ}C$. Find the mass of water used.

[Specific heat capacity of water = 4200

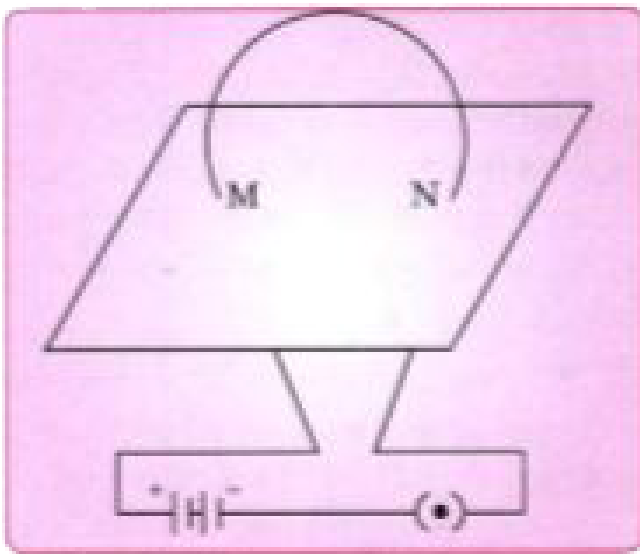
$Jkg^{-1}^{\circ}C^{-1}$]

[Specific latent heat of fusion of ice = $336 \times 10^3 \text{ Jkg}^{-1}$]



[Watch Video Solution](#)

37. The diagram below shows a current carrying loop or a circular coil passing through a sheet of cardboard at the points M and N. The sheet of cardboard is sprinkled uniformly with iron filings.

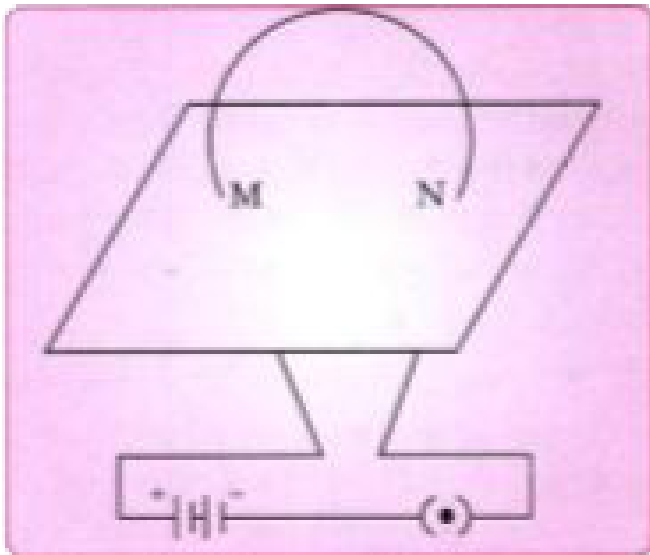


Copy the diagram and draw an arrow on the circular coil to show the direction of current flowing through it.



Watch Video Solution

38. The diagram below shows a current carrying loop or a circular coil passing through a sheet of cardboard at the points M and N. The sheet of cardboard is sprinkled uniformly with iron filings.



Draw the pattern of arrangement of the iron

filings when current is passed through the loop.



Watch Video Solution

39. Draw a simplified labelled diagram of a hot cathode ray tube.



Watch Video Solution

40. Name a common device where a hot cathode ray tube is used.



[Watch Video Solution](#)

41. A certain nucleus X has a mass number 14 and atomic number 6. The nucleus X changes to ${}_7Y^{14}$ after the loss of a particle.

Name the particle emitted.



[Watch Video Solution](#)

42. A certain nucleus X has a mass number 14 and atomic number 6. The nucleus X changes

to ${}_7Y^{14}$ after the loss of a particle.

Represent this change in the form of an equation.



[Watch Video Solution](#)

43. A certain nucleus X has a mass number 14 and atomic number 6. The nucleus X changes to ${}_7Y^{14}$ after the loss of a particle.

A radioactive substance is oxidized. What change would you expect to take place in the

nature of its radioactivity ? Give a reason for your answer.



Watch Video Solution