PHYSICS

BOOKS - SELINA PHYSICS (ENGLISH)

SAMPLE PAPER 2015

Section I

1. Rishi is surprised when he sees water boiling at $115^{\circ}C$ in a container. Give reasons as to why water can boil at the above temperature.

Watch Video Solution

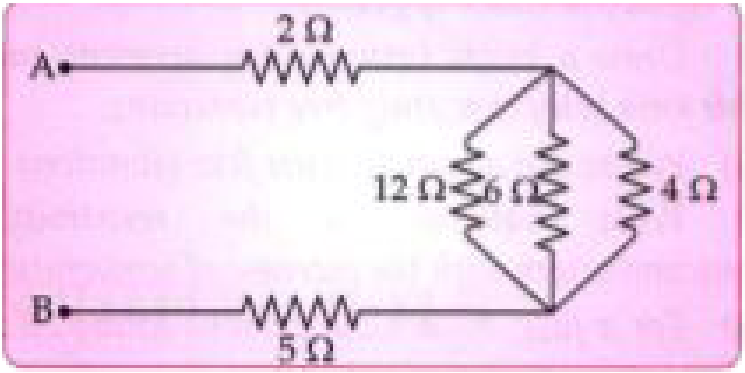
2. Why does a current carrying, freely suspended solenoid rest along a particular direction ?

Watch Video Solution

3. A freely suspended magnet rests in :

Watch Video Solution

4. Find the equivalent resistance between points A and B.



Watch Video Solution

5. Give two similarities between an A.C. generator and a D.C. motor.

Watch Video Solution

6. Why is a cathode ray tube evacuated to a low pressure ?

Watch Video Solution

7. What happens if the negative potential is changed on a grid ?

Watch Video Solution

Section Ii

1. Draw a simplified diagram of a lemon crusher, indicating direction of load and effort.

Watch Video Solution

2. Name the physical quantity measured in terms of horse power.

Watch Video Solution

3. A nut is opened by a wrench of length 20 cm. If the least force required is 2 N, find the moment of force needed to loosen the nut.

Watch Video Solution

4. Explain briefly why the work done by a fielder when he takes a catch in a cricket match is negative.

Watch Video Solution

5. A block and tackle system has V.R. = 5.

Draw a neat labelled diagram of a system indicating the direction of its load and effort.

Watch Video Solution

6. A block and tackle system has V.R. = 5.

Rohan exerts a pull of 150 kgf. What is the maximum load he can raise with this pulley system if its efficiency = 75% ?

Watch Video Solution

7. Where should an object be placed so that a real and inverted image of the same size as the object is obtained using a convex lens ?

A. f

B. 2f

C. f/2

D. centre

Answer: 2f

Watch Video Solution

8. (a) (i) *Where should an object be placed so that a real and inverted image of the same size as the object is obtained using a convex lens ?*

Draw a ray diagram to show the formation of the image as specified in the part a.

Watch Video Solution

9. Why does the Sun appear reddish early in the morning?

Watch Video Solution

10. Name the subjective property of light related to its wavelength.

Watch Video Solution

11. Jatin puts a pencil into a glass container having water and is surprised to see the pencil in a different state.

What change is observed in the appearance of the pencil?

Watch Video Solution

12. Jatin puts a pencil into a glass container having water and is surprised to see the pencil in a different state.

Name the phenomenon responsible for the change.

Watch Video Solution

13. Jatin puts a pencil into a glass container having water and is surprised to see the pencil in a different state.

Draw a ray diagram showing how the eyes saw the pencil.

Watch Video Solution

14. State the safe limit of sound level in terms of decibel for human hearing.

Watch Video Solution

15. Name the characteristic of sound in relation to its waveform.

Watch Video Solution

16. A person standing between two vertical cliffs and 480 m from the nearest cliff shouts. He hears the first echo after 3 s and the second echo 2 s later.

Calculate :

The speed of sound.

Watch Video Solution

17. A person standing between two vertical cliffs and 480 m from the nearest cliff shouts. He hears the first echo after 3 s and the second echo 2 s later.

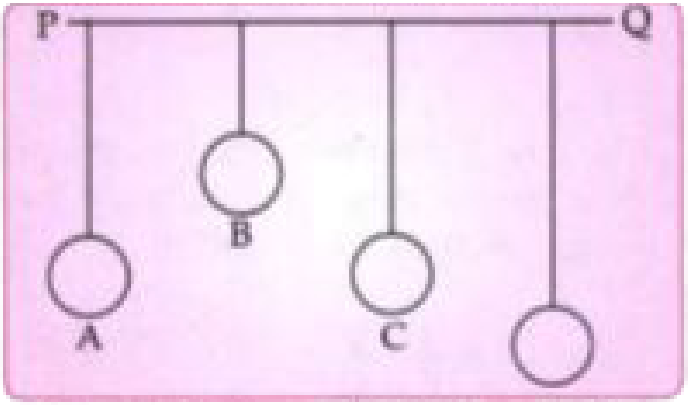
Calculate :

The distance of the other cliff from the person.

Watch Video Solution

18. In the diagram below, A, B, C, D are four pendulums suspended from the same elastic

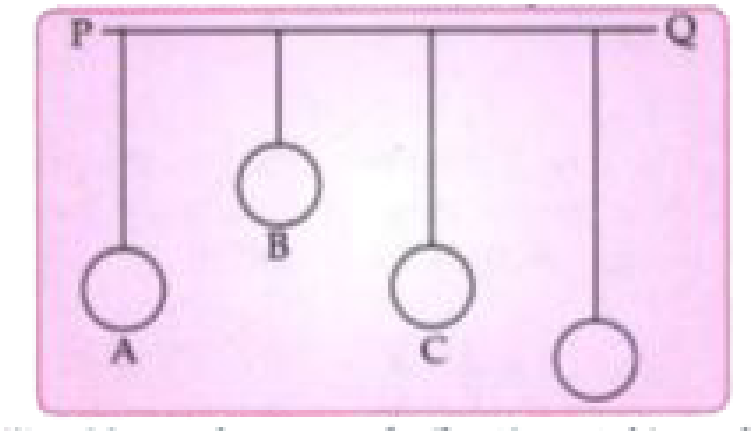
string PQ. The length of A and Care equal to each other while the length of pendulum B is smaller than that of D. Pendulum A is set into a mode of vibrations.



Name the type of vibrations taking place in pendulums B and D?

Watch Video Solution

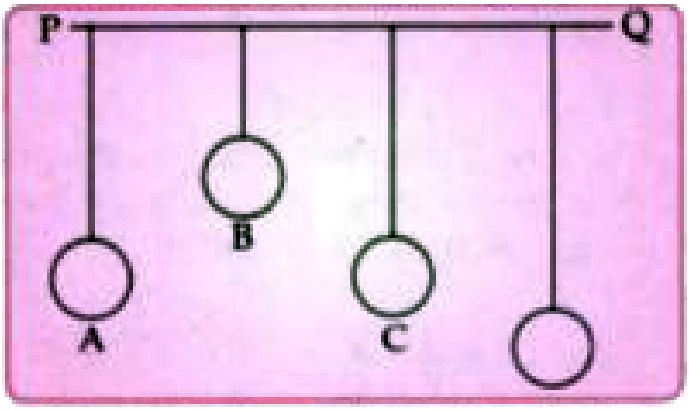
19. In the diagram below, A, B, C, D are four pendulums suspended from the same elastic string PQ. The length of A and Care equal to each other while the length of pendulum B is smaller than that of D. Pendulum A is set into a mode of vibrations.



What is the state of pendulum C?

Watch Video Solution

20. In the diagram below, A, B, C, D are four pendulums suspended from the same elastic string PQ. The length of A and Care equal to each other while the length of pendulum B is smaller than that of D. Pendulum A is set into a mode of vibrations.



State the reason for the type of vibrations in pendulums B and C.

Watch Video Solution

21. Name the device used to increase the voltage at a generating station.

Watch Video Solution

22. At what frequency is A.C. supplied to residential houses ?

Watch Video Solution

23. Name the wire in a household electrical circuit to which the switch is connected.

Watch Video Solution

24. The relationship between the potential difference and the current in a conductor is stated in the form of a law.

Name the law.

Watch Video Solution

25. The relationship between the potential difference and the current in a conductor is stated in the form of a law.

What does the slope of V-I graph for a conductor represent?

Watch Video Solution

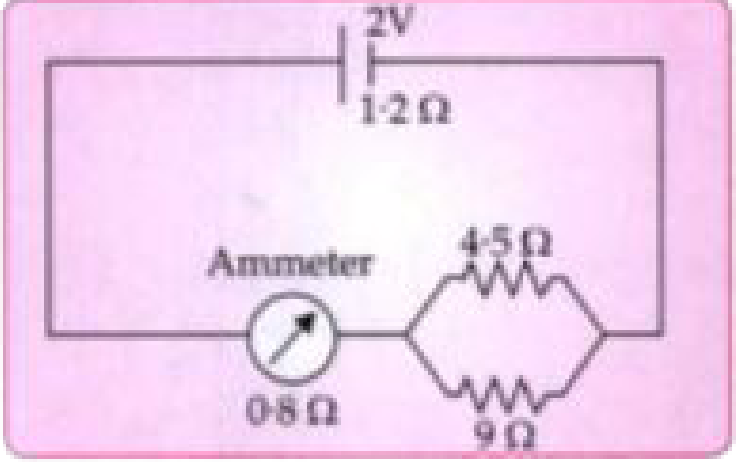
26. The relationship between the potential difference and the current in a conductor is

stated in the form of a law.

Name the material used for making the connecting wire.

Watch Video Solution

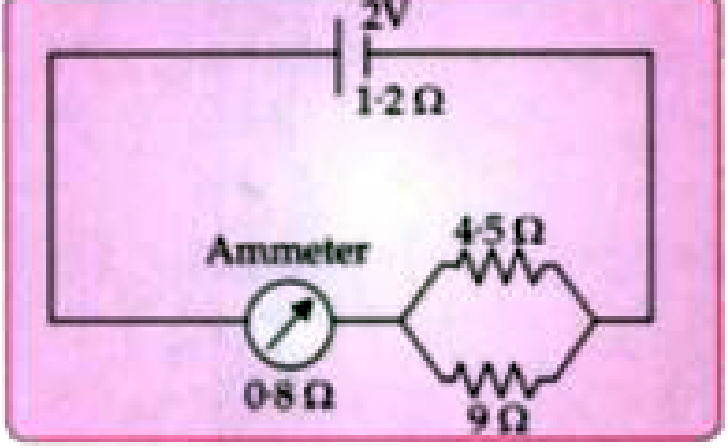
27. A cell of emf 2 V and internal resistance 1.2Ω is connected with an ammeter of resistance 0.8Ω and two resistors of 4.5Ω and 9Ω as shown in the diagram below:



What would be the reading on the Ammeter ?

Watch Video Solution

28. A cell of emf 2 V and internal resistance 1.2Ω is connected with an ammeter of resistance 0.8Ω and two resistors of 4.5Ω and 9Ω as shown in the diagram below:



What is the potential difference across the terminals of the cell ?

Watch Video Solution

29. Name a gas caused by the Greenhouse effect.

Watch Video Solution

30. Which property of water makes it an effective coolant ?

A. latent heat

B. specific heat

C. melting point

D. boiling point

Answer: specific heat

 Watch Video Solution

31. Water in lakes and ponds do not freeze at once in cold countries. Give a reason in support of your answer.

Watch Video Solution

32. What is the principle of Calorimetry?

Watch Video Solution

33. Name the law on which this principle is based.

Watch Video Solution

34. State the effect of an increase of impurities on the melting point of ice.

Watch Video Solution

35. A refrigerator converts 100 g of water at $20^\circ C$ to ice at $-10^\circ C$ in 35 minutes.

Calculate the average rate of heat extraction in terms of watts.

Given : Specific heat capacity of ice = $2.1Jg^{-1}\circ C^{-1}$

Specific heat capacity of water = $4.2Jg^{-1}\circ C^{-1}$

Specific Latent heat of fusion of ice = $336Jg^{-1}$

Watch Video Solution

36. Thermionic emissions are related to

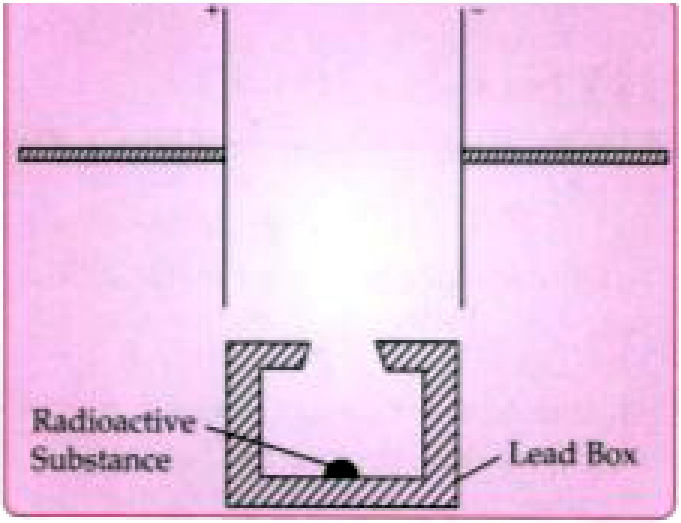
Watch Video Solution

37. Name the unit in which the work function of a metal is expressed.

Watch Video Solution

38. Complete the diagram by drawing the deflection of radioactive radiations in an

electric field.



Watch Video Solution

39. Mention two important precautions that should be taken while handling radioactive materials

Watch Video Solution

40. An atomic nucleus A is composed of 84 protons and 128 neutrons. The nucleus A emits and alpha particle and is transformed into a nucleus B.

(i) What is the composition of B ?

(ii) The nucleus B emits a beta particle and is transformed into a nucleus C. What is the composition of C?

(iii) What is mass number of the nucleus A ?

(iv) Does the composition of C change if it emits gamma radiations ?

Watch Video Solution

41. An atomic nucleus A is composed of 84 protons and 128 neutrons. The nucleus A emits and alpha particle and is transformed into a nucleus B.

(i) What is the composition of B ?

(ii) The nucleus B emits a beta particle and is transformed into a nucleus C. What is the

composition of C?

(iii) What is mass number of the nucleus A ?

(iv) Does the composition of C change if it emits gamma radiations ?

Watch Video Solution

42. An atomic nucleus A is composed of 84 protons and 128 neutrons.

Does the composition of nucleus C change if it emits gamma radiations ?

Watch Video Solution