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Devi Balika Vidyalaya - Colombo

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First Term Test - 2012

Science - Part I

Grade 11

1 1/2 hours

Name :

Index No. :

01) Followings are some characteristics of a wave.

- A) Medium is necessary to travel
- B) Speed is equal to the speed of light
- C) Both longitudinal & transverse forms are present

The features of mechanical waves are

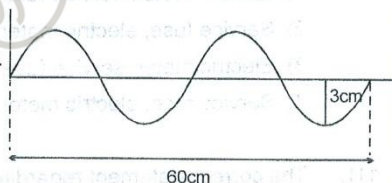
- 1. Only A
- 2. Only B
- 3. Only A & C
- 4. Only A & B

02) What is the correct effect to increase the loudness of a note in a violine is

- 1. Using a very thin string
- 2. Plucking the string strongly
- 3. Increasing the tension of the string
- 4. Decreasing the length of the string

03) Which answer shows the correct wave length and the amplitude of the given wave respectively.

- 1. 60 cm, 3 cm
- 2. 15 cm, 3 cm
- 3. 3 cm, 30 cm
- 4. 30 cm, 3 cm



04) An instance of using parabolic mirrors is

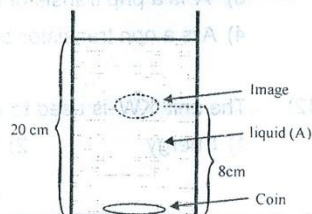
- 1. As side mirrors of vehicles
- 2. In vehicle head lamps
- 3. To construct telescopes
- 4. To observe cavities of teeth by dentists

05) Three types of waves are produced in an earth quake. Which answer contains the features of secondary waves in it.

- A) A transverse wave
 - B) Travel through the interior of the earth
 - C) Travel along the surface.
- 1. BC
 - 2. AC
 - 3. AB
 - 4. ABC

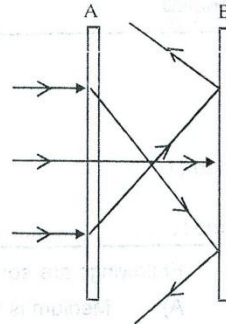
06) The diagram shows the image of a coin dipped in a liquid. The refractive index of the liquid is

- 1) 1.6
- 2) 0.4
- 3) 2.5
- 4) 0.6



07) The incorrect statement about the images formed by a convex lens is

- 1) Image is formed on focus when the object is at infinity
- 2) Always form real images
- 3) Image formed on $2F$ when the object is on $2F$
- 4) Often formed inverted images.



08) To make the paths of light rays according to the diagram

- 1) A is a concave lens & B is convex lens
- 2) A is a convex lens & B is a plane mirror
- 3) A is a convex lens & B is a convex mirror
- 4) A is a concave lens & B is a convex lens

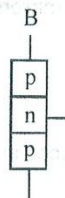
09) Upright final images, make the identifications easy when using optical instruments. The correct step can be used for that is.

- 1) Keeping the object upright when observing by compound microscope
- 2) Keeping the object inverted when capturing photos from a camera
- 3) Keeping the slide inverted in slide projector
- 4) Keeping the object inverted in over head projector

10) The correct order of main components of a domestic circuit.

- 1) Electric meter, service fuse, main switch, trip switch, distribution box
- 2) Service fuse, electric meter, main switch, trip switch, distribution box
- 3) Electric meter, service fuse, trip switch, main switch, distribution box
- 4) Service fuse, electric meter, trip switch, main switch, distribution box

11) The correct statement regarding the diagrams of A & B



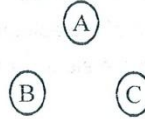
- 1) 'A' shows a pnp transistor according to diagram B
- 2) 'A' shows a npn transistor according to diagram B
- 3) 'A' is a pnp transistor but no relationship between A & B
- 4) A is a npn transistor but no relationship between A & B

12) The unit 'KW' is used to measure

- 1) Energy
- 2) Voltage
- 3) Work
- 4) Power

- 13) Following diagram shows the structure of three cable wire used in plug base circuits. The cable, A, B, C, respectively are

- 1) A - Earth, B - Live, C - Neutral
- 2) A - Neutral, B - Live, C - Earth
- 3) A - Earth, B - Neutral, C - Live
- 4) A - Neutral, B - Live, C - Earth



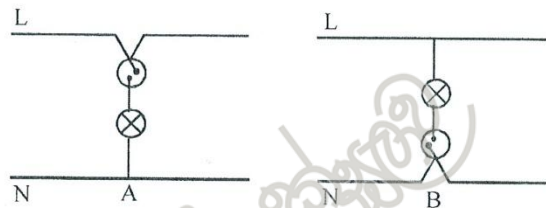
- 14) 60 W and 240 V marked on an electric bulb. The amount of current flows in it is.

- 1) 6 A
- 2) $\frac{1}{4}$ A
- 3) 0.66 A
- 4) $\frac{1}{3}$ A

- 15) Two equipments that could be used to reflect light rays by 90° easily are.

1. Plane mirror & convex mirror
2. Convex mirror & convex lens
3. Plane mirror & Prism
4. Convex lens & Prism

- 16) A & B in the diagram below show two methods of fixing bulb in a house wiring circuit which statements below is correct.

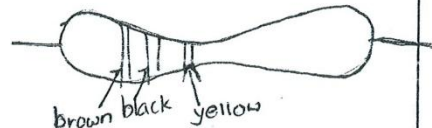


1. A is correct, Bulb does not illuminate in B
 2. B is correct. Bulb does not illuminate in A
 3. A is correct. It is safe for the user.
 4. B is correct. It is safe for the user.
- 17) Which statement below clarifies the function of an ordinary bicycle dynamo
1. Rotation of a coil in a magnetic field
 2. Rotation of a magnetic field in a coil
 3. Rotation of both magnet & the coil
 4. Rotation of a magnet in a magnetic field

- 18) The value of the above resistor is

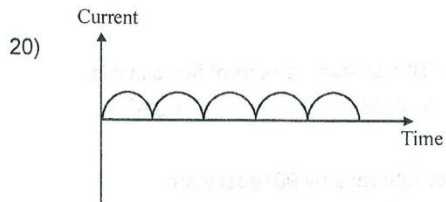
(Black = 0 Brown = 1 yellow = 4)

1. 104Ω
2. $10\,000 \Omega$
3. 401Ω
4. $100\,000 \Omega$



19) The purpose of using a trip switch to a domestic electric circuit is

1. for the protection of the main switch
2. for the protection of the electric meter
3. for the protection of the appliance,
4. To avoid heating the electric cable



The number of rectifying diodes needed to get an above type current shows in the graphs is.

1. 1
2. 2
3. 3
4. 4



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Science - Part II

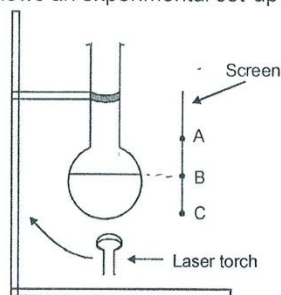
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01) A) Following diagram shows an experimental set-up used in a laboratory.

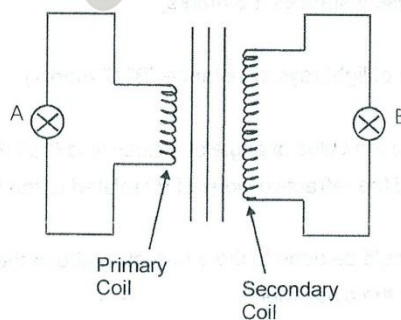


- i) A light spot can be observed on the screen in the instances of A,B,C, when the laser torch taken to the direction mentioned in the diagram. State the behaviour of the beam of light in those instances. (3 marks)
 - ii) Draw the formation of light rays in instance "B" (2 marks)
 - iii) In the instance A the Sin value of angle of incidence is 0.38 the sin value of angle of refraction is 0.5 find the refractive index of air related to the liquid. (3 marks)
 - iv) State a change should be done to the air which is above the liquid, when this experiment done in the class room.
- B)
- i) Draw a ray diagram to show the formation of the image when the object is kept in between F and 2 F of a convex lens. Write the feature of the image. (5 marks)
 - ii) Above instance is used in a certain optical instrument. Name that optical instrument (1 mark)
 - iii) What is the name of the lens of that optical instrument which makes an image same as question (1 mark)

- iv) State 2 features of the final image of the optical instrument you mentioned in question (1 mark)
- v) A technician is using a simple microscope to repair watches. What is the type of lens used in that simple microscope. (1 mark)
- vi) Draw a ray diagram to show the formation of the image of that instrument and write the features of that image. (3 marks)

(20 marks)

- 02) Following diagram shows a transformer. It has 120 turns in its primary coil & 30 turns in the secondary coil. Two equal bulbs with very low voltage are connected to these coils.

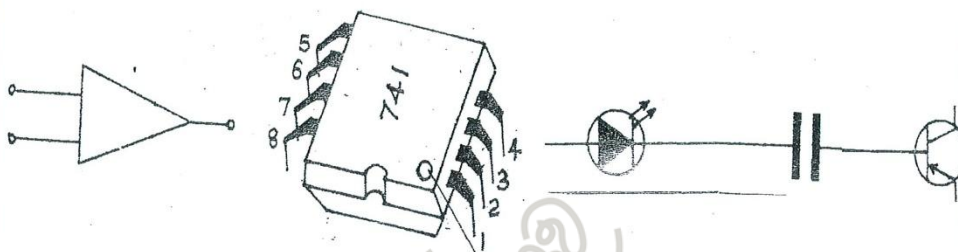


- i) Bulb, A & B were lighted when a strong magnet moves above the transformer. Which bulb glows most ?
- ii) What is reason of the difference in the brightness of two bulb
- iii) a) State the law that can be used 'For making a current when moving a magnet'
- b) Name an instrument made according to that principal
- iv) What is the type of the above transformer
- v) When 12 V alternating voltage is supplied to the primary coil what will be the voltage of the secondary coil
- vi) A current is not produced in secondary coil when a direct current is supplied to the primary coil. Stat a strategy can be used to obtain a current from this.

- 03) Knowledge about waves is very important in day to day life/
- A)
- What are the 2 types of mechanical wave,
 - What is the main difference between above two types of wave,
 - What are the affecting factors of the speed of a wave.
 - A tuning fork of 256 Hz produce a wave with 20 cm wave length. Find the distance travelled by that wave in one second.
 - How that above produced wave travel in the air.
- B)
- What are the main characteristics of a note
 - a toy violin was made by Piumi. she wanted to increase the pitch of it. State 3 method, to do it.

04) Followings are some part of electronic equipment.

- i) Name the followings



- ii) To which direction the current flows in the following junction diode.



- iii) Draw 2 suitable circuits using standard symbols to show that the current flows only to one direction through a rectified diode (use 2 bulbs of 1.5 V, rectifier diode, 2 bulbs of 2.5 v and a switch)

B) 6 V and 0.5 A marked on a bycle lamp of Sampath's which is connected to a bycle dynamo of 6 V. 4.5 V and 0.2 A marked on his torch bulb.

- If the brightness of the bulb will differ when changing the speed of peddling the bycle ? Give reasons for your answer
- What will be the observation in the brightness replaced if Sampath change the bulb of his bycle and the bulb of with his forch bulb
- What is the main difference between the current produced by the dynamo and the dry cell.
- What is the law that can be used to find the direction of the current produce by the dynamo ?