PRINT

Qn No. 1 *Chapter Name:1. Vydhyuthapravahathinte Bhalangal*

Qn.
Q31.It is said that a fusewire of proper amperage should be used in an electrical circuit . why

Hint.
If amperage of fusewire is more than correct value, the cuircuit does not break even excess current flows through circuit. If amperage of fusewire is less, the circuit breaks when device is switched on

Marks :(2)

Hide Answer

Qn No. 2 *Chapter Name:1. Vydhyuthapravahathinte Bhalangal*

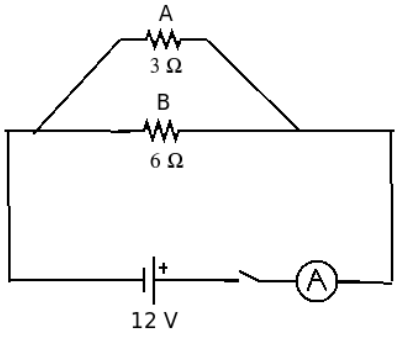
Qn..
An electric heater of resistance 230Ω is connected to 230V supply. Calculate the heat energy produced by it in 1 second.

Hint.H = V^2/R xt = (230 x230 / 230) x 1 = 230 J ***Marks :(2)***

Hide Answer

Qn No. 3 *Chapter Name:1. Vydhyuthapravahathinte Bhalangal*

Qn..
Analyse the given circuit diagram and answer the following questions.



1. **What will be the electric current through the resistance A ?**
2. **What will be the electric current through the resistance B ?**
3. **What will be the ammeter reading?**
4. **How should be the resistance wire be arranged to reduce the ammeter reading ?**

Hint..

1. **Current through A, I_1 = V/R = 12/3 = 4A**
2. **Current through B, I_2 = V/R = 12/6 = 2A**
3. **Ammeter Reading = I1 + I2 = 4 + 2 = 6 or**

1/R = 1/R1 + 1/R2 = 1/3 + 1/6 = 3/6

1. R = 6/3 = 2 ohm

I = V/R = 12/ 2 = 6 A

4. Connect the resistance in series

Effective resistance when connected in series = 3 + 6 = 9 ohm

Intensity of Electric Current I = 12 / 9 = 1.33 A

Marks :(4)

Hide Answer

Qn No. 4 ***Chapter Name:1. Vydhyuthapravahathinte Bhalangal***

Qn..
Nichrome is not used as filament in filament lamps. Why ?

Hint..Nichrome can only remain red hot and does not produce white light while heating.It ***Marks :(1)***

Hide Answer

Qn No. 5 ***Chapter Name:1. Vydhyuthapravahathinte Bhalangal***

Qn.
Ajith says that if we use tungsten as heating coil we will get light energy as well as heat energy. What is your response to his statement ?

Show Answer

Qn No. 6 ***Chapter Name:1. Vydhyuthapravahathinte Bhalangal***

Qn..
A filament Lamp designed to work at a potential difference 250V has power 100W. What will be the power of this lamp when connected to a 100V supply?

Hint..
We know ,power P = V2/R

R = V2/P = 250 x 250 /100 = 625 W

When connected to 100 V power supplay

Power P = V2/R

= 100 x 100 / 625 = 16 W

Marks :(3)

Hide Answer

Qn No. 7 *Chapter Name:1. Vydhyuthapravahathinte Bhalangal*

Qn.
A heating coil of 10000Ω resistance works in 250V supply.

1. **What is the current flowing in it ?**
2. **What is the power of heater ?**
3. **Will there be any difference in the temperature, If we reduce the length of the heating coil ? Why?**

Hint.
a) I = V/R = 250/1000 = .25 A

b) P = V^2 /R =250 x250 /1000 = 62.5 W

c) Yes, The resistance deccreases when length of the conductor decreases .So the power increases and the heat also increases

Marks :(4)

Hide Answer

Qn No. 8 *Chapter Name:1. Vydhyuthapravahathinte Bhalangal*

Qn..
Nowadays LED Lamps are widely used .

1. **Name any two parts of this lamp & write the working of it.**
2. **Name ant two instruments/tools used inthe making of LED Lamp.**

Hint.
(a).LED Chip board -L E D is connected

Heat sink- to absorb heat
Power supplay Board-Provides required DC to LED

Diffuser cup -Transmit light outside

Base Unit- Connect the LED to the holder

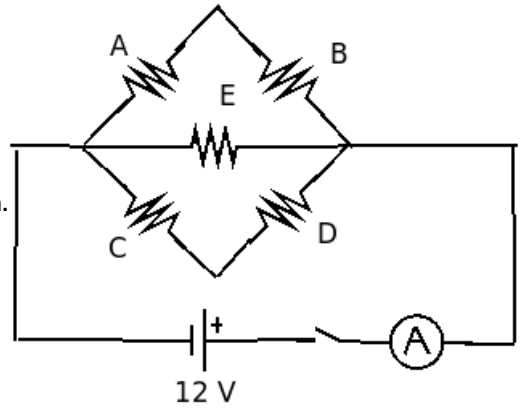
(b)Soldering Iron,player,Solder lead

Marks :(3)

Hide Answer

Qn No. 9 *Chapter Name:1. Vydhyuthapravahathinte Bhalangal*

Qn.



A,B,C,D & E are five 10Ω resistors connected in a circuit as in the given diagram.

1) Calculate the effective resistance of the circuit. 2

2)What is the electric current through the circuit. 2

Hint.

.Effective resistance of A and B R_1 =A+B=10+10=20 ohm

Effective resistance of c and D R_2 = C + D= 10 +10 = 20 ohm

Effective resistance in the circuit

1/R = 1/R1 + 1/R2 + 1/E = 1/20 + 1/20 + 1/10

=(1 + 1 + 2)/ 20 = 4 / 20

Effective resistance R = 20 /4 = 5 Ohm

b) Intensity of electric current I = V/R = 12/5 = 2.4 A

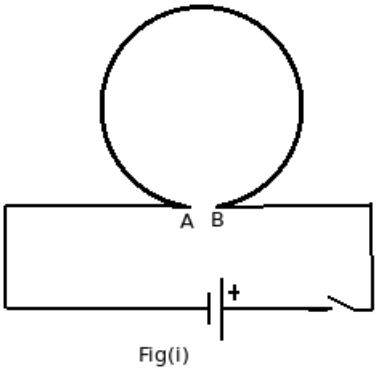
Marks :(4)

Hide Answer

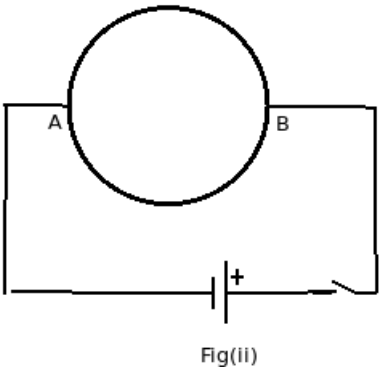
Qn No. 10 ***Chapter Name:1. Vydhyuthapravahathinte Bhalangal***

Qn..

Resistance of a 20cm long conductor is 20Ω. The conductor is bent into circular loops and connected in the circuit as in the given diagrams, Calculate the resultant resistance in each case.



Fig(i)



Fig(ii)

Hint..

Fig (i) Effective resistance = 20 Ohms (1)

Fig(ii) two 10Resistances are connected as parallel so

Effective resistance, $1/R = 1/R_1 + 1/R_2 = 1/10 + 1/10$

=2/10 = 1/5

Effective resistance , R = 5 Ohm **(2)**

Marks :(4)

Hide Answer

Qn No. 11 ***Chapter Name:1. Vydhyuthapravahathinte Bhalangal***

Qn.
Power of a bulb which works in 220V is 100W. When the voltage in the circuit decreases the power becomes 25W, What will be the voltage at that time.?

.

Hint..
$P = V^2/R$

$R = V^2/P = 220 \times 220 / 100 = 484$ ohm

Voltage decreased $V^2 = 25 \times 484 = 12100$

V = 110 V

Marks :(2)

Hide Answer

Qn No. 12 ***Chapter Name:1. Vydhyuthapravahathinte Bhalangal***

Qn.

A	**B**
Heat Sink	**Converts AC to DC & suitable voltage is supplied.**
Diffuser Cup	**LEDs are fixed.**
Power supply board	**light emitting part.**
LED Chip Board.	**System to absorb heat energy produced.**

Hint.

A	**B**
Heat Sink	**System to absorb heat energy produced.**
Diffuser Cup	**light emitting part.**
Power supply board	**Converts AC to DC & suitable voltage is supplied.**
LED Chip Board.	**LEDs are fixed.**

4 x 1 = 4 ***Marks :(4)***

Hide Answer

Qn No. 13 *Chapter Name:1. Vydhyuthapravahathinte Bhalangal*

Qn..
Match the foll0wing related to LED Lamp .

Heat Sink Converts AC to DC & suitable voltage is supplied.

Diffuser Cup LEDs are fixed.

Power supply board light emitting part.

LED Chip Board. System to absorb heat energy produced. (4 x 1 =4)

Hint..

A	B
Heat sink	to absorb heat energy produced.
Diffuser Cup	.light emitting part.
Power supply board	Converts AC to DC & suitable voltage is supplied.
LED Chip Board.	LEDs are fixed

Marks :(4)

Hide Answer

Qn No. 14 *Chapter Name:1. Vydhyuthapravahathinte Bhalangal*

Qn..
LED Lamps save energy & are ecofriendly. Justify this statement.

(3)

Hint.
***As there is no filament, there is no loss of energy in the form of heat.**

*** Since there is no mercury and flourascent materials in it, it is not harmful to environment**

*** High longavity and can be reusable**

Marks :(3)

Hide Answer

Qn No. 15 *Chapter Name:1. Vydhyuthapravahathinte Bhalangal*

Qn..
Calculate the amount of heat energy produced when 1A current flows through a 1Ω resistance wire for 1 hour. (2)

Hint..

R = 1Ohm , I = 1 A , t = 1 h = 3600 s

H = I^2Rt

H = 1A x 1A x 1Ohm x 3600 s

= 3600 J

Marks :(2)

Hide Answer

Qn No. 16 ***Chapter Name:1. Vydhyuthapravahathinte Bhalangal***

Qn..

Calculate the highest resistance that can be made by using five 1Ω resistors ? (1)

What is the lowest resistance made by the same five 1 ohm resistors. ? (1)

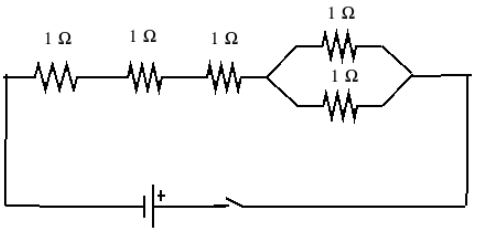
Draw a circuit in which these resistances are arranged inorder to get the effective resistance = 3 1/2 Ω. (2)

Hint..

1. **Effective resistance R = 1+1+1+1+1 = 5 ohm**
2. **Lowest effective resistace, 1/R= 1/1 +1 /1+ 1/1 + 1/1+1/1**

   R = 1/5ohm

3

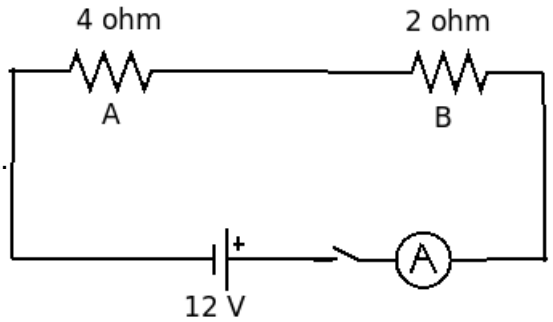


Marks :(4)

Hide Answer

Qn No. 17 ***Chapter Name:1. Vydhyuthapravahathinte Bhalangal***

Qn..



1. **Calculate the effective resistance in the above circuit. (1)**
2. **If the electric current is flowing for 10minutes , calculate the amount of heat energy produced.(1)**
3. **Calculate the heat energy produced in 10 minutes if these resistors are connected in parallel .(2)**

Hint..

a) $R=R_1+R_2$

=4+2=6 Ohm

b) H = V^2 /Rt = (12 x 12 /6)x 10 x 60

= 14400 J

c) effective resistanceR = R1R2 /R1+R2 = 4x2 / 4+2 = 8/6 = 4/3

Heat H = V^2 *Rt* = 12x12 /(4/3) x10 x 60 = 64800 J

Marks :(4)

Hide Answer

Qn No. 18 ***Chapter Name:1. Vydhyuthapravahathinte Bhalangal***

Qn..
An electrical device of power 440W is connected to 230V power supplay. Which among the following is the amperage of fuse to be used in this circuit ?

(a) 0.5A (b) 2A (c) 1.5A (d) 4A

(1)

Hint.
2A

Ampearage = wattage/voltage

=440/230

=1.9

so, ampearage =2A

Marks :(1)

Hide Answer

Qn No. 19 ***Chapter Name:1. Vydhyuthapravahathinte Bhalangal***

Qn.
The given experiment is based on heating effect of electric current

1. **Which device is used to change the intensity of current in the circuit? (1)**
2. **Nichrome is used to make the heating coil to change the temperature of water...Why do we use this material as heating element? (1)**
3. **If we double the length of the coil immersed in water, what will be the change in the heat energy produced ? (2)**

Hint.
a. Rheostat

b.nichrome , Nichrome has high resistivity and high melting point

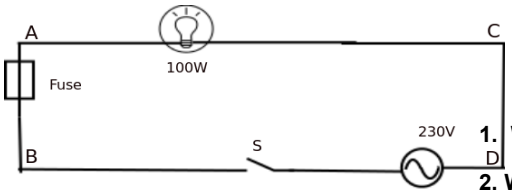
(c) When the length doubles thecurrent decreases to half .so heat also decreases to half

Marks :(4)

Hide Answer

Qn No. 20 *Chapter Name:1. Vydhyuthapravahathinte Bhalangal*

Qn.



1. When the swich is on calculate the current in the circuit (1)

2. What is the purpose of fuse in a circuit ? (1)

3. What is the ampearage of the fusewire that can be used in this circuit?(2)

Hint.

(a) P= V x I

I = P/V= 100/230 = 0.434

(b)fuse melts during Short circuit and overload

(c) Ampearage = 0.5A

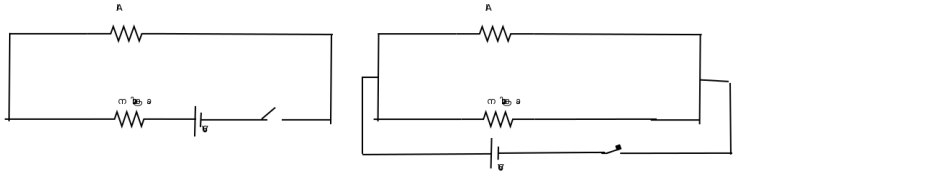
Marks :(4)

Hide Answer

Qn No. 21 *Chapter Name:1. Vydhyuthapravahathinte Bhalangal*

Qn.

Aluminium and Nichrome wires of same length and thickness are used in the given circuit.



1. In which circuit the current through Aluminium and Nichrome are the same? (1)

2. In which circuit, Nichrome wire gets heated more. Explain. (2)

Hint.

(a) a

(b) a

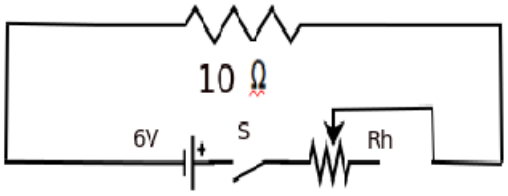
In circuit (a) the resistances are connected in series and the current is same .So nichrome wire having more resistance heats more

Marks :(3)

Hide Answer

Qn No. 22 *Chapter Name:1. Vydhyuthapravahathinte Bhalangal*

Qn.
Analyse the diagram and answer the following questions.



How is Rheostat and resistor connected in this circuit ?

If the Rheostat offers a Resistance of 50Ω, what is the current in the circuit ?

Hint.
a) Seriesconnection. (1)

b) Resistance in the circuit = 10 Ω + 50 Ω= 60 Ω

I = $\frac{v}{R}$**,.....½**

I = $\frac{6}{60}$ **=** $\frac{1}{10}$ **A or 0-1 A.....½**

c) H = I^2 **Rt .....½**

H= (I X V X t) = 0.1 * 6 * 300 = 180 J 1

H = 180 J .....½

or (3)

H= $\frac{v\,2t}{R}$**,** $\frac{6^2 \times 300}{60}$ **= 180 J**

Marks :(4)

Hide Answer

Qn No. 23 ***Chapter Name:1. Vydhyuthapravahathinte Bhalangal***

Qn.
If a bulb labelled as 100W/230V is connected to 115V power supply, What will be its Power ?

(100W. 25W, 12.5W, 50W) (1)

Hint.
P= 25W (1)

P = V^2/R

=(230 X230)/100 = 529 ohm

P = V^2/R

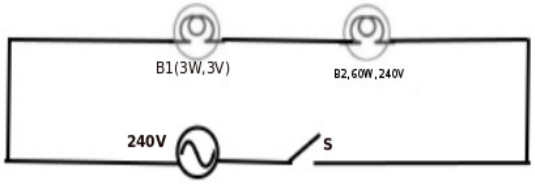
=(115 x 115)/529 =25W

Marks :(1)

Hide Answer

Qn No. 24 ***Chapter Name:1. Vydhyuthapravahathinte Bhalangal***

Qn.
Observe the given circuit Diagram.B1 is a torch bulb and B2 is an ordinary incandascent bulb.



1. **Among B1 and B2 Which which one have higher resistance ?**
2. **If we switch on the circuit as arranged in diagram, Whetherboth the the bulbs will glow or not glow**
3. **What happens if we switch on the circuitafter replacing B2 with another B1. Explain.**

Hint.
a) B2 ..... ½

R = V^2/ P.....½

b) Glows (1)

c) Resistance decreases ,current increases....(.1)

So the bulbs in the circuit fuses.....(1)

Marks :(4)

Hide Answer

Qn No. 25 ***Chapter Name:1. Vydhyuthapravahathinte Bhalangal***

Qn.
a) Write two disadvantages of incandescent lamps? (1)

b) What is the arrangement/facility provided to increase the life of such bulbs.(2)

c) How does the oxidation of filament reduced in such lamps? (1)

Hint.
a) A portion of electric energy is loses as heat

Forms shadow

Short life time

b)
Vaporisation can be reduced by filling some inert gas at low pressure inside the bulb. Nitrogen is usually used for this purpose (1)

c)In order to avoid oxidation of tungsten, the bulb is evacuated.

Marks :(4)

Hide Answer

Qn No. 26 *Chapter Name:1. Vydhyuthapravahathinte Bhalangal*

Qn.
When excess electric current flows through the circuit, fuse wire melts & breaks the circuit.

a)Whether heat energy is produced when allowed amount of current flows in the circuit ? If yes why doesn't the fuse wire break? (2)

b)Why does fuse wire melt when excess electric current flows through the circuit ?(2)

Hint.
a)Yes heat is produsedWhen current is flowing through the fuse wire small quantity of heat is producing but that heat is transmitting to the surrowndings.That heat is not enough to melt the fuse wire

b) When more current is flowing more heat is genarated. Due to that heat ,fuse wire melts

Marks :(2)

Hide Answer

Qn No. 27 *Chapter Name:1. Vydhyuthapravahathinte Bhalangal*

Qn.
Find the relation in the first then complete the second pair

a) Bulb : Light effect

Safety Fuse : ..... (1)

b) Nichrome : High Melting Point

Fuse wire: ..... (1)

Hint.
a) Heating effect

b)Low melting point

Marks :(2)

Hide Answer

Qn No. 28 *Chapter Name:1. Vydhyuthapravahathinte Bhalangal*

Qn.
a) Name any to electrical heating devices. (1)

b) Name the constituent metal in the alloy used to make the heating coil of a heating appliance. (1)

c)Calculate the heat energy produced when 1A current flows through 100Ω resistance wire for 1hour. (2)

Hint.
a) Soldering iron,Electric water heater,Electric oven

b- Ni,Cr, Mn,Fe

c -

R = 100 ohm

I = 1A

t = 1h

t = 3600 s

H = I^2Rt

H= 1x1 x100 x3600

= 360000J

Marks :(3)

Hide Answer

Qn No. 29 ***Chapter Name:1. Vydhyuthapravahathinte Bhalangal***

Qn.
Heat energy produced in a current carrying conductor is equal to the product of square of current through the conductor, Resistance of the conductor and the time for which the current flows.

a)Which law is stated above ? (1)

b)If we increase the current 10 times, what will be the increase in the heat energy produced ? (1)

c)If double the resistance of the conducter what will be the change in the heat energy produced ? (2)

Hint.

a -Joule's law ---------- (1) b. H = I^2Rt

H = $(10*I)^2Rt$

H = 100 I^2Rt H= 100H

= V/2R

= I/2

=H/2

താപം പകുതിയായി കുറയുന്നു

c. I = V/R

Marks :(3)

Hide Answer

Qn No. 30 ***Chapter Name:1. Vydhyuthapravahathinte Bhalangal***

Qn.
Find the relation and complete the following.

Electrical energy →Heat energy → Heating effect → Electric Stove

Electrical energy →Chemical energy → Chemical effect → ..... (1)

Hint.
Storage battery

Marks :(1)

Hide Answer

Qn No. 31 *Chapter Name:1. Vydhyuthapravahathinte Bhalangal*

Qn.
A and B are two electrical devices,

Device A	Device B
230V	230V
1000W	50W

1. **If both the devices are workingfor the same time which among will produce more electrical Energy ? (1)**
2. **Which device has more resistance ? Justify your answer? (2)**

Hint.
a) device A.....½

b) device B .....½

R = $\frac{v^2}{P}$, $\frac{230^2}{500}$, $\frac{230^2}{1000}$.....1

When the resistance increases the power decreases.....(1)

Marks :(3)

Hide Answer

Qn No. 32 *Chapter Name:1. Vydhyuthapravahathinte Bhalangal*

Qn.
Find the correct answer from the following.

The device works on the heating effect of electric current (1)

(fan, LED, Fuse, CFL)

Hint.
Fuse (1)

Marks :(1)

Hide Answer

Qn No. 33 *Chapter Name:1. Vydhyuthapravahathinte Bhalangal*

Qn.
240V power supply is maintained in household circuits

1. **Find the resistance of heating coil of an electric iron if 2A current is flowing through it. (2)**
2. **How much electrical energy is consumed when this device works for 5 minutes. ? (2)**

Hint.

R = $\frac{v}{I}$ ..... ½, **a) R = $\frac{240}{2}$ = 120Ω 1**

b) Electrical energy = I^2Rt ; ..... ½ OR

Electrical energy = $V \times I \times T$

= $240 \times 2 \times 300$ J.....1½

= 144000 J

Marks :(3)

Hide Answer

Qn No. 34 ***Chapter Name:1. Vydhyuthapravahathinte Bhalangal***

Qn.
Match suitably :

A	B	C
Heater	Voice coil	Light effect
Bulb	Heating Coil	Electromagnetic Induction
Microphone	Armature	Chemical effect
	Filament	Heat Effect

Hint.
A

Match suitably :

A	B	C
Heater	Heating Coil	Heat Effect
Bulb	Filament	Light effect
Microphone	Voice coil	Electromagnetic Induction
	Armature	

3 x1 =3

Marks :(3)

Hide Answer

Qn No. 35 ***Chapter Name:1. Vydhyuthapravahathinte Bhalangal***

Qn.
The cautionary measures are given while the fuse wire is included in the circuit.

1. **Fuse wire should not extend out of the carrier base.**
2. **Edges of the fuse wire should be fixed firmly.**

3. Fuse wire should be connected in parallel to the circuit.

1. Which statement among the above is correct ? (1)

2. Rewrite the wrong statement after necessary corrections. (1)

Hint.
(a) (i) , (ii)..... ½+ ½

(b) Fuse should connect in series with the circuit (1)

Marks :(2)

Hide Answer

Qn No. 36 ***Chapter Name:1. Vydhyuthapravahathinte Bhalangal***

Qn.
In an electric heater 800 W , 400V is labelled .

a)What does it mean? (1)

b)If it is working in 200V power supply calculate the current through the device.Find the power in this situation? (2)

Hint.
a) In 400 V power supply the power is 800W.....1

b) R = $\frac{v^2}{P}$ = 200 Ω.....1

P = $\frac{v^2}{R}$ = $\frac{200^2}{200}$ = 200w 1

I = . $\frac{v}{R}$ = 200/200= 1 A 1

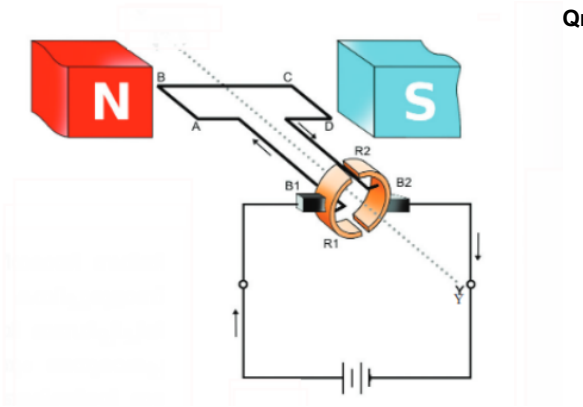
Marks :(3)

Hide Answer

PRINT

Qn No. 1 *Chapter Name:2. vydhuthkanthika phalam*

Qn.



Picture of an electric motor is given

a) After observing the figure write down the parts represented by N,S,R1,R2,B1,B2,ABCD (2)

b) If current is flown as shown in diagram, what will be the direction of rotation of armature? (1)

c) What is the function of split ring commutator in electric motors ? (1)

Hint.
Hints:

a) N-S Field magnet.

R1,R2 split rings

B1,B2 brushes

ABCD armature

b) anticlockwise

c) To maintain rotation of armature the direction of flow of current in armature must be changed continuesely. Split ring commutator helps to change the direction of current after each half rotation.

Marks :(4)

Hide Answer

Qn No. 2 ***Chapter Name:2. vydhuthkanthika phalam***

Qn.
From the given list identify the correct statements related to Fleming's left hand rule

a) Thumb indicates the direction of force

b) forefinger indicates direction of current

c) Centre finger indicates direction magnetic field

d) other fingers that hold the conductor shows the direction of magnetic field

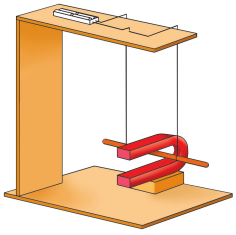
Hint.
Hint: Thumb indicates the direction of force

Marks :(1)

Hide Answer

Qn No. 3 *Chapter Name:2. vydhuthkanthika phalam*

Qn.
A conductor is hung freely in between the poles of a 'U' shaped magnet as shown in figure. Observe it and answer the following questions.



a) What happens to the conductor when electric current is passed through it?

b) Explain the reason behind this.

c) Which law helps you to explain this ?

Hint.
Hint:

a) conductor moves

b) a conductor kept in a magnetic field experience a force when electric current is passed through it.

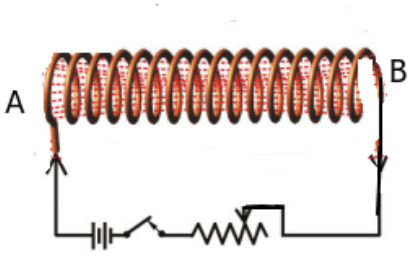
c) Fleming's left hand rule

Marks :(3)

Hide Answer

Qn No. 4 *Chapter Name:2. vydhuthkanthika phalam*

Qn.
Observe the diagram and answer the following questions



a) If the end A of the solenoid is wound in anticlockwise direction, which pole will be generated at that end?

b) After reversing the current through solenoid,if south pole of a bar magnet is brought near A , will it attract ? Explain

Hint.
a) North pole

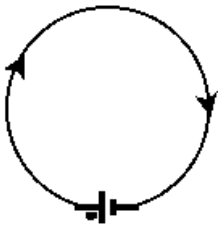
b) Repules. When current is reverses the end A becomes North pole.

Marks :(3)

Hide Answer

Qn No. 5 ***Chapter Name:2. vydhuthkanthika phalam***

Qn.
....



Hint.
a) Inward to the plane

b)Right hand thumb rule

c)Repels. Direction of current is clockwise - South pole.(Same poles repels)

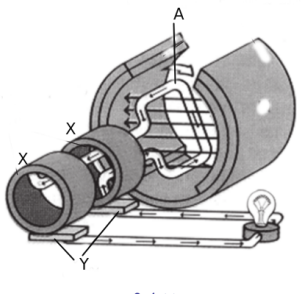
Marks :(3)

Hide Answer

PRINT

Qn No. 1 *Chapter Name:3. Vydhutha Kanthika Preranom*

Qn.
The figure of a generator is given below.



a)What do the parts X , A represent in the figure.

b)What is the energy change occurs in such a device

c)What is the use of part Y in the figure

Hint.
a) X-slip ring, A-armature

b)Mechanical energy changes to electrical energy

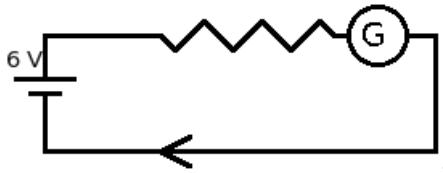
c) supply electrical energy to external circuit

Marks :(3)

Hide Answer

Qn No. 2 *Chapter Name:3. Vydhutha Kanthika Preranom*

Qn.
The figure shows a resister, galvanometer connected to a 6V battery .



a)In what way the instruments got connected in the circuit.

b)in which direction does the galvanometer needle deflects.

c)If the battery is replaced by an AC source, what change may be observed in the deflection of galvanometer needle? Why?

Hint.
a) series combination

b) single direction only

c) direction revrses continuously

Marks :(4)

Hide Answer

Qn No. 3 *Chapter Name:3. Vydhutha Kanthika Preranom*

Qn.
In our country the frequency of AC produced for transmission is 50Hz.

a)What does it mean by frequency of an AC?

b)In one second, how many times the direction of emf change?

Hint.
a) number of cycles in one second

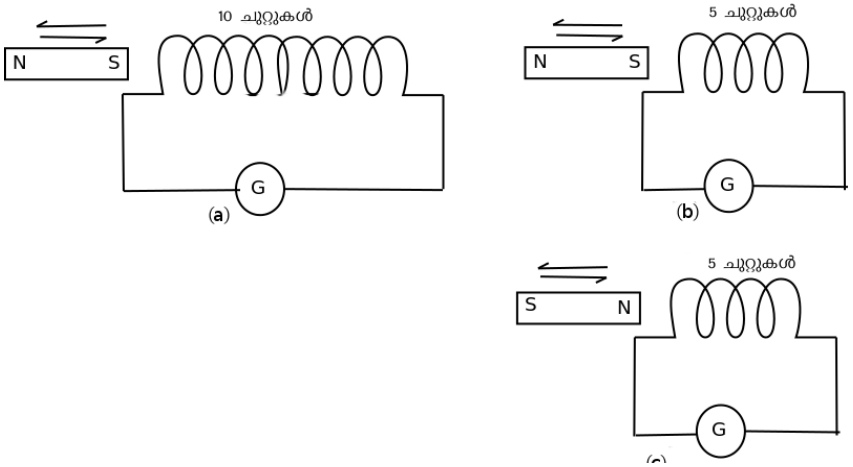
b) 50 times

Marks :(3)

Hide Answer

Qn No. 4 ***Chapter Name:3. Vydhutha Kanthika Preranom***

Qn.
Observe the figures a,b,c given below and answer the questions (Solenoid,Bar magnet and galvanometer)



a)In which solenoid the intensity of current is more?

b)What will be the change in deflection of the galvanometer if the magnet in b &c circuits get into the solenoid.

Hint.
a)a

b)galvanometer needle in circuit b deflects in opposite direction to deflection of galvenometer needle in circuit c

Marks :(1)

Hide Answer

Qn No. 5 ***Chapter Name:3. Vydhutha Kanthika Preranom***

Qn.
An armature coil of an AC generator when moved in the magnetic field, induced current is produced.

a)Which is the law that helps to find the direction of current.

b)As per the law what does the fore finger represent?

Hint.
a) Flemings right hand rule

b) Magnetic field

Marks :(2)

Hide Answer

Qn No. 6 ***Chapter Name:3. Vydhutha Kanthika Preranom***

Qn.
Whenever change occurs to the magnetic flux connected to a closed circuit, a current is induced.

a) What is this phenomenon known as?

b)Name an instrument that works based on this principle.

Hint.
a) electromagnetic induction

b) Microphone/generator

Marks :(2)

Hide Answer

Qn No. 7 ***Chapter Name:3. Vydhutha Kanthika Preranom***

Qn.
Find out the correct statement/statements from those given below.

a)when a magnet is moved close to a solenoid, the magnetic flux linked with the solenoid will decrease.

b)when a magnet is moved close to a solenoid, the magnetic linked with the solenoid will increase.

c)when a magnet is moved close to a solenoid, the magnetic flux linked with the solenoid remains the same

Hint.
when a magnet is moved close to a solenoid, the magnetic linked with the solenoid will increase.

Marks :(1)

Hide Answer

Qn No. 8 ***Chapter Name:3. Vydhutha Kanthika Preranom***

Qn.
The figure given below shows an instrument that changes sound energy into electrical energy.

a)Name the parts A and B in the figure?

b)In such an instrument, explain how the sound energy is changed into electrical energy?

Hint.
a. A-Diphram, B-Voice coil

b. When sound signal falls on diaphram it vibrates.This causes voices coil to vibrate placed in magnetic field. Flux linked with the voice col changes and electrical signals are produced

Marks :(3)

Hide Answer

Qn No. 9 ***Chapter Name:3. Vydhutha Kanthika Preranom***

Qn.
Some relations regarding transformers are given below.Among these select and write down the one that relates to step up transformersSome relations regarding transformers are given below.Among these select and write down the one that relates to step up transformers

a) $V_s > V_p$

b) $I_s < I_p$

c)) $I_s > I_p$

d) $V_p > V_s$

Hint.
a, b

Marks :(1)

Hide Answer

Qn No. 10 ***Chapter Name:3. Vydhutha Kanthika Preranom***

Qn.
Correct error in the underlined part of the following statements if any

a)To complete one cycle of an AC, an armature needed to rotate 360^0.

b) if frequency of an AC is 50Hz, the armature completes 25 cycles per second

c)In an AC generator, current reverses direction in each half rotation

Hint.
b) AC of frequency is 50Hz has 50 cycles per second

c) In an AC generator, electric current flows in one direction for the first half rotation and reverses direction in the next half

Marks :(2)

Hide Answer

Qn No. 11 ***Chapter Name:3. Vydhutha Kanthika Preranom***

Qn.
A transformer has 10000 turns and 240V , 0.2A in the primary coil. If the current through secondary coil is 0.4A.

a)What kind of transformer is this?

b)Find out the voltage and number of turns in the secondary coil.

c)Calculate maximum power in the secondary coil of this transformer.

Hint.
b) Vp x Ip = Vs x Is , Vs = 240 x 0.2 / 0.4 = 120 V

Vs/Vp = Ns/Np 120/240 = Ns/ 10000 Ns = 120 x 10000 / 240 = 50000 nos

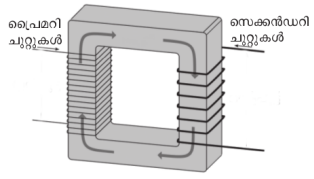
c) P = VI = 240 x 0.2 = 48 W

Marks :(4)

Hide Answer

Qn No. 12 ***Chapter Name:3. Vydhutha Kanthika Preranom***

Qn.
Given below is the figure of a transformer



a)What kind of transformer is shown here?

b)why thick coil is used in the secondary of the transformer.

Hint.
a. stepdown transformer

b. secondary current increases

Marks :(2)

Hide Answer

Qn No. 13 ***Chapter Name:3. Vydhutha Kanthika Preranom***

Qn.
the figures of the two stages of an armature that rotates in a magnetic field is shown below .

a)Select the figure in which plane of the armature coil comes parallel to the magnetic field.

b)identify the stage where emf induced is maximum.

c)Compare the stages (i), (ii) and explain change in the magnitude of emf.

Hint.
a. fig b

b. fig b

c. stage1- No flux variation and emf=0

stage 2- Fulx variation is maximum.so emf is maximum

Marks :(3)

Hide Answer

Qn No. 14 *Chapter Name:3. Vydhutha Kanthika Preranom*

Qn.
Name the electronic components given below.

b) If each of these is connected to an AC circuit, which circuit has more power loss?Why?

Hint.
a. i-resistor, ii-Inductor

b. circuit containing resistor. A resistor causes wastage of energy in the form of heat

Marks :(3)

Hide Answer

Qn No. 15 *Chapter Name:3. Vydhutha Kanthika Preranom*

Qn.
Given below is the picture of a transformer.

a)If 12V DC is given as input, how much is the output voltage.

b)If 12V AC is given as the input, what would be the out put voltage.

c)At this juncture what is the voltage in one coil of the secondary.

Hint.
a. 0 V

b. Vs/Vp = Ns/Np

Vs = (Ns/Np) * Vp = (2000/100) * 12 = 240 V

c. Vs = Ns * e

e = Vs/Ns , 240/2000 = 0.12 V

Marks :(3)

Hide Answer

Qn No. 16 *Chapter Name:3. Vydhutha Kanthika Preranom*

Qn.
Find out the odd one and Justify your answer.

Microphone, loud speaker, Transformer, Generator,

Hint.
loud speaker. All other devices works based on electromagnetic induction

Marks :(1)

Hide Answer

Qn No. 17 *Chapter Name:3. Vydhutha Kanthika Preranom*

Qn.
By increasing diameter of conductors, transmission loss could be reduced.

a) What are the difficulties that arises if thick wires used as transmission lines

b)Suggest another method to reduce transmission loss.

Hint.
a. if thickness increses , weight increases, more supporting beams are required and expense increases

b. decrease current by increasing volage

Marks :(3)

Hide Answer

Qn No. 18 *Chapter Name:3. Vydhutha Kanthika Preranom*

Qn.
Identify the relation in the first pair and complete the following

Electro magnetic induction: Moving coil microphone

Mutual Induction :.....

Hint.
transformer

Marks :(1)

Hide Answer

Qn No. 19 *Chapter Name:3. Vydhutha Kanthika Preranom*

Qn.
The number of turns in the primary of a transformer is two times greater than that in the secondary, then

a)identify the type of transformer?

b) If 50V is given to the primary, What will be the voltage obtained in the secondary?

c)If the current in its primary coil is 4A What will be the current in the secondary?

Hint.
a.step up transformer

b. 50 x 2 = 100 V

c. Vp Ip = Vs Is

50 x 4 = 100 x Is

Is = 200 /100 = 2 A

Marks :(4)

Hide Answer

Qn No. 20 *Chapter Name:3. Vydhutha Kanthika Preranom*

Qn.
.Find out the relation and fill in the blanks

Generator:	**Armature**	**Induced emf**
Moving coil microphone	**.....**	**Induced emf**

Hint.voice coil

Marks :(1)

Hide Answer

Qn No. 21 *Chapter Name:3. Vydhutha Kanthika Preranom*

Qn.
Select and write down the correct statements regarding a step down transformer from those given below.

a)current is same in primary and secondary.

b)Power is same in primary and secondary.

c)as compared to the secondary coil current Primary coil current is less

d)Current in the secondary is less than the current in the primary.

Hint.
b)Power is same in primary and secondary.

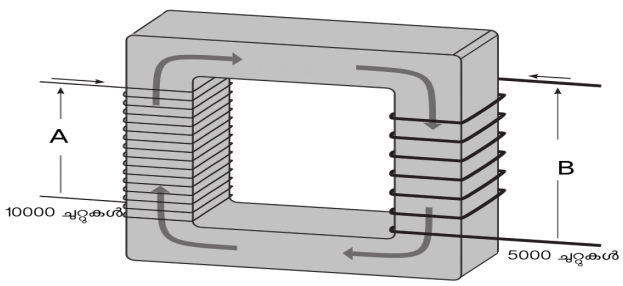
c. Primary current is less than secondary current

Marks :(2)

Hide Answer

Qn No. 22 *Chapter Name:3. Vydhutha Kanthika Preranom*

Qn.



a) which instrument is shown above? What is its working principle?

b)When 100V AC is applied at A ,the current was 2A. Calculate the Voltage and current received at B.

Hint.
a. transformer, mutual induction

b.Vs/Vp = Ns/Np Vs/100 = 5000/10000 Vs = 50 V

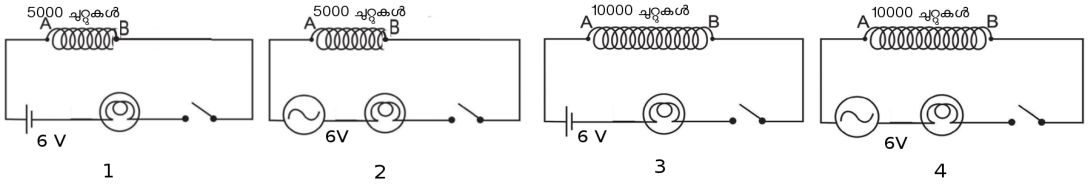
P= V I = 100 x 2 = 200 W , input power=output power

Marks :(4)

Hide Answer

Qn No. 23 ***Chapter Name:3. Vydhutha Kanthika Preranom***

Qn.



The figure shows copper coils of same thickness and different turns arranged in four circuits. If all the bulbs are of same power answer the following questions analysing each figure.

a)If all the circuits are kept on ,which bulb in the circuit glows with least intensity. Justify your answer.

b)If a soft iron core of the same size is inserted in each of the coils, which among the circuits shows most change in the intensity of light..

Hint.
a. circuit 4

Self induction is more if number of tuns id more. So back emf increases.

b. circuit4 , if iron core is inserted self induction again increases

Marks :(3)

Hide Answer

Qn No. 24 ***Chapter Name:3. Vydhutha Kanthika Preranom***

Qn.
Identify the relationship between the terms in the first pair and fill up the second pair accordingly

Generator : armature

moving coil microphone : .....

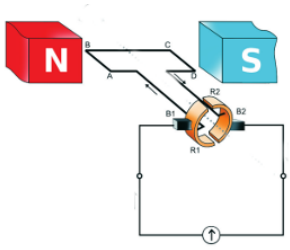
Hint.
voice coil

Marks :(1)

Hide Answer

Qn No. 25 *Chapter Name:3. Vydhutha Kanthika Preranom*

Qn.
The figure of a DC generator is given below.



a)What is the structural deference of DC generator and AC generator.

b)Compare the energy change taking place in an electric motor and a DC generator.

c) Though the current produced in a DC generator is AC, DC is received in the output. How?

Hint.
a)Slip rings used in Ac generator and Split rings used in DC generator

b) Motor: Electrical energy changes to mechanical energy

DC generator: Mechanical energy changes to electrical energy

c) the direction of elecric current changes in each half rotation.The brushes connected to external circuit always comes in contact with armature which moves in the same direction. So direction of external current does not change

Marks :(4)

Hide Answer

Qn No. 26 *Chapter Name:3. Vydhutha Kanthika Preranom*

Qn.
identify the relation in the first pair and complete the second pair.

Generator	**Mechanical energy is changed in to electrical energy**
Moving coil microphone	**.....**

Hint.sound energy changes to electrical energy ***Marks :(1)***

Hide Answer

Qn No. 27 *Chapter Name:3. Vydhutha Kanthika Preranom*

Qn.
The current in the primary of a step up transformer that has no energy loss is.....

[More, Less, equal]

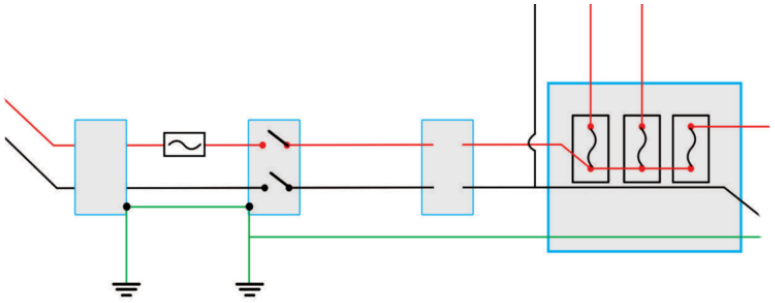
Hint.
More

Marks :(1)

Hide Answer

Qn No. 28 ***Chapter Name:3. Vydhutha Kanthika Preranom***

Qn.
First part of a house hold circuit is shown in the figure



a)Draw the diagram as it is, and label all instruments.

b) Complete the circuits after drawing with the inclusion of two lambs , one fan, one three pin plug for a newly build room.

b) draw the circuit diagram which includes two lambs , one fan and a three pin plug

Hint.
a. Main fuse, watthourmeter, lbeling of instruments

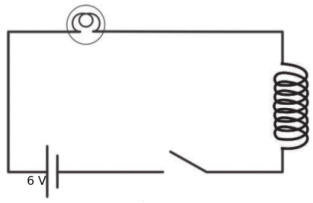
b. copy the figure and introduce instruments

Marks :(4)

Hide Answer

Qn No. 29 ***Chapter Name:3. Vydhutha Kanthika Preranom***

Qn.
Observe the figure and answer the questions given.



a)If 6V AC is used instead of DC in this circuit then brightness of the bulb decreases. Name the phenomenon that causes this decrease of brightness ?

b)What change may occur if a soft iron core is inserted to the coil?

Hint.
Self induction.Defenition of self induction

Marks :(2)

Hide Answer

PRINT

Qn No. 1 *Chapter Name:4 .prakasaprethipathanam*

Qn.Write down two uses of convex lens.

Hint.
Rear view mirror

reflectors in street light

or any other correct answer

Marks :(2)

Hide Answer

Qn No. 2 *Chapter Name:4 .prakasaprethipathanam*

Qn.Why convex mirror is used as rear view mirror?

Hint.Large field of view ***Marks :(2)***

Hide Answer

Qn No. 3 *Chapter Name:4 .prakasaprethipathanam*

Qn.

```
Which mirror have least field of view?
```

Hint.Concave mirror ***Marks :(1)***

Hide Answer

Qn No. 4 *Chapter Name:4 .prakasaprethipathanam*

Qn.
A motorbike rider sees the image of a car in the rear view mirror diminished 1/6 of its original size. If the real distance between the car and bike is 30cm. Calculate it's radius of curvature.

Marks :(2)

Hint.

u= - 30m, V=?, R =?

$m = \frac{-v}{u}$

v = -mu

$v = \frac{-1}{6}$ x -30 m

v =5 m

$\frac{1}{f} = \frac{1}{u} + \frac{1}{v}$

$\frac{1}{f} = \frac{1}{5m} + \frac{1}{-30}$

$\frac{1}{f} = \frac{1x6}{5m\,x6} + \frac{1}{-30}$

$\frac{1}{f} = \frac{6-1}{30\,m}$

$\frac{1}{f} = \frac{5}{30\,m}$

$f = \frac{30m}{5}$

f= 6 m

R=2f

R=2 x 6 m

R= 12 m

Hide Answer

Qn No. 5 *Chapter Name:4 .prakasaprethipathanam*

Qn.
An object is placed 30cm away from a spherical mirror. It's magnification is found to be -1.

a) Write the peculiarities of the image.

b) Which mirror is used here?

c)If the object is placed 10cm away from the mirror, what change will occur to the nature of image formed?

d) Justify your conclusions.

Hint.
Hints:-

a)Real inverted, same size of the object.

b)Concave mirror

c) Image is erect, Virtual and diminished.

d)Since the magnification is one object is at C. So r = 30cm, f = 15cm

If the object is 20cm away, it will be between f and P. So an erect, large, real image will be formed on the other side of the mirror.

Marks :(4)

Hide Answer

Qn No. 6 *Chapter Name:4 .prakasaprethipathanam*

Qn.
Image is not visible on a rough wooden block. But when the surface is polished an image can be seen. Why?

Hint.
Hints: Irregular reflection occurs on a rough surface. So no image can be seen. On a polished surface regular reflection takes place. So image is visible.

Marks :(1)

Hide Answer

Qn No. 7 *Chapter Name:4 .prakasaprethipathanam*

Qn.
Find out the relation between the given pair and complete the second pair.

M = - V/ u

1/f : .....

Hint.
Hints: 1/f = 1/u + 1/V

Marks :(1)

Hide Answer

Qn No. 8 *Chapter Name:4 .prakasaprethipathanam*

Qn.
Curved surface of a rubber ball of diameter 24cm is converted to a reflecting surface by completely covering using an aluminium foil.

a) Where will the image be formed if the object is placed at a distance of 24cm away form the centre r of the ball.

b) Is the image real or virtual?

Hint.
u= 24 cm -12 cm = - 12 cm The object distance is negative

R = +12 cm

R =2f

f=R/2

f= 12 cm / 2

= 6cm

v=?

$$\frac{1}{f} = \frac{1}{u} + \frac{1}{v}$$

$$\frac{1}{v} = \frac{1}{f} - \frac{1}{u}$$

$$\frac{1}{v} = \frac{1}{-25} - \frac{1}{-12\,cm}$$

$$\frac{1}{v} = \frac{1 \times 2}{6\,cm \times 2} - \frac{1}{-12\,cm}$$

$$= \frac{2}{12\,cm} - \frac{1}{12\,cm}$$

$$= \frac{2+1}{12}$$

$$\frac{1}{v} = \frac{3}{12\,cm}$$

$$v = \frac{12}{3}$$

v = 4 cm

കൊണ്വെക്സ് ദർപ്പണം ഉണ്ടാക്കുന്ന പ്രതിബിംബം മിഥ്യയായിരിക്കും.

Virtual image is formed in the convex mirror

Marks :(4)

Hide Answer

Qn No. 9 ***Chapter Name:4 .prakasaprethipathanam***

Qn.
3) A spherical mirror forms a real image at the same position of the object placed at a distance of 20cm in front of the mirror.

a) What type of mirror is this?

b) What is the magnification? Justify your answer.

c) Find out the focal length and radius of curvature of the mirror.

Hint.
Hints:

a) Concave mirror

b) -1(Object at C, Height of the object and the image is same)

c)Focal length is 10cm, Radius of curvature 20cm

Marks :(4)

Hide Answer

Qn No. 10 ***Chapter Name:4 .prakasaprethipathanam***

Qn.
If the height of image is given with negative sign as per new cartesian sign convention, what all peculiarities of object can be identified?

Hint.

Hints: Real and inverted image

Marks :(1)

Hide Answer

Qn No. 11 ***Chapter Name:4 .prakasaprethipathanam***

Qn.
What are the peculiarities of the image formed by a plane mirror?

Hint.
Hints: Virtual, Erect, Same size

Marks :(1)

Hide Answer

Qn No. 12 ***Chapter Name:4 .prakasaprethipathanam***

Qn.
Which mirror forms an erect and diminished image?

Hint.In convex mirror ***Marks :(1)***

Hide Answer

Qn No. 13 ***Chapter Name:4 .prakasaprethipathanam***

Qn.
Which mirror forms an erect and large image?

Hint.concave mirror ***Marks :(1)***

Hide Answer

Qn No. 14 ***Chapter Name:4 .prakasaprethipathanam***

Qn.
A lighted candle is kept at a distance of 40cm from a concave mirror of focal length 25cm. It's image is formed on a screen.

a) How far from the mirror the clear image is formed?

b)Find out the magnification.

c) Draw the ray diagram of the image formation and mark the values in the diagram

Marks :(4)

Hint.

b) $m = \frac{-v}{u}$

$= \frac{\frac{-200\,cm}{3}}{-40\,cm}$

$m = \frac{-200\,cm}{3x - 40\,cm}$

m= - 1.666

= -1.7

Hide Answer

Qn No. 15 ***Chapter Name:4 .prakasaprethipathanam***

Qn.
An object is kept at a distance of 40cm from a concave mirror of focal length 80cm

a) Calculate the distance to the image from the mirror.

b) Mark 'U', 'V', and 'f' after drawing the ray diagram of the image formation

Hint.
Image is formed at a distance of 80cm behind the mirror

a) f= - 80 cm

Marks :(4)

u =- 40 cm

v =?

$$\frac{1}{f} = \frac{1}{u} + \frac{1}{v}$$

$$\frac{1}{v} = \frac{1}{f} - \frac{1}{u}$$

$$\frac{1}{v} = \frac{1}{-80} - \frac{1}{-40}$$

$$= \frac{1}{-80} - \frac{1 x 2}{-40 x 2}$$

$$= \frac{-1+2}{80}$$

$$\frac{1}{v} = \frac{1}{80}$$

v= 80 cm

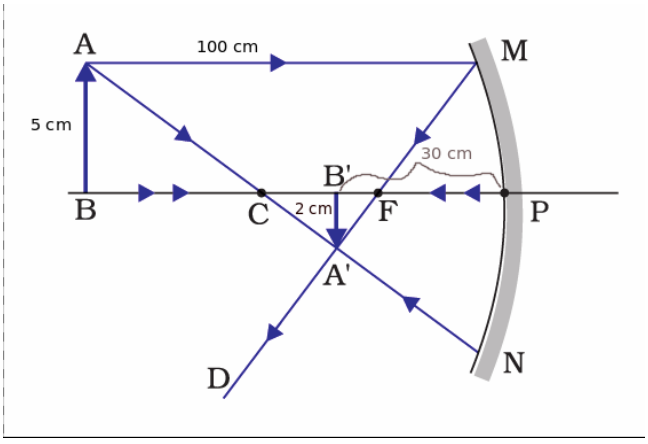
Hide Answer

Qn No. 16

Chapter Name:4 .prakasaprethipathanam

Qn.

Observe the diagram and complete the following using new cartesian sign convention.



a) Height of image .....

b)Height of object .....

c) Distance from the pole to the object .....

d) Distance from the pole to the image .....

Hint.

Answer

a) – 2 cm

b) 5 cm

c) – 100 cm

d) – 30 cm

Marks :(2)

Hide Answer

Qn No. 17 ***Chapter Name:4 .prakasaprethipathanam***

Qn.
An object is placed 20cm away in front of a concave mirror. A real image is formed at a distance of 32cm from the mirror.

a) What is the magnification in this experiment?

b) Calculate the focal length of the mirror.

Hint.
V = - 32cm (Real, Inverted)

Focal length f = 12.3cm

Marks :(4)

Hide Answer

Qn No. 18 ***Chapter Name:4 .prakasaprethipathanam***

Qn.
When an object is placed at a distance of 1.25m from the pole of concave mirror real image is formed at a distance of 6.25m

a) Find out the focal length of the concave mirror.

b) Draw the diagram and mark the measurements.

Marks :(4)

$$\frac{1}{f} = \frac{1}{u} + \frac{1}{v}$$

$$\frac{1}{f} = \frac{1}{-6.25\,m} + \frac{1}{-1.25\,m}$$

$$\frac{1}{f} = \frac{1\,x100}{-6.25\,m\,x100} + \frac{1\,x100}{-1.25\,m\,x100}$$

$$\frac{1}{f} = \frac{100}{-625\,m} + \frac{100\,x5}{-125\,m\,x5}$$

Hint. $\frac{1}{f} = \frac{100}{-625\,m} - \frac{500}{625\,m}$

$$\frac{1}{f} = \frac{-100-500}{-625\,m}$$

$$\frac{1}{f} = \frac{-600}{-625\,m}$$

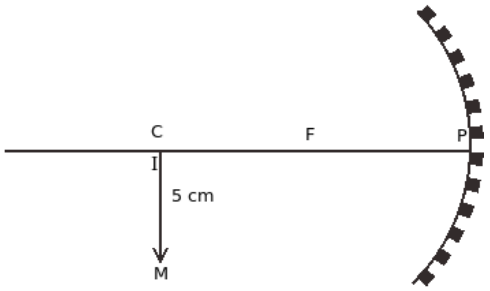
$$f = \frac{-625}{-600\,m}$$

$$f = 0.96\ \text{m}$$

Hide Answer

Qn No. 19 *Chapter Name:4 .prakasaprethipathanam*

Qn.
An image formed by a concave mirror is shown below.



a) Where is the position of object?

b) Find out the height of object.

c) Write the peculiarities of the image.

Hint.
Hints:

OB = 5cm

(To form image at C, the object must be at C, size of the object and image are equal)

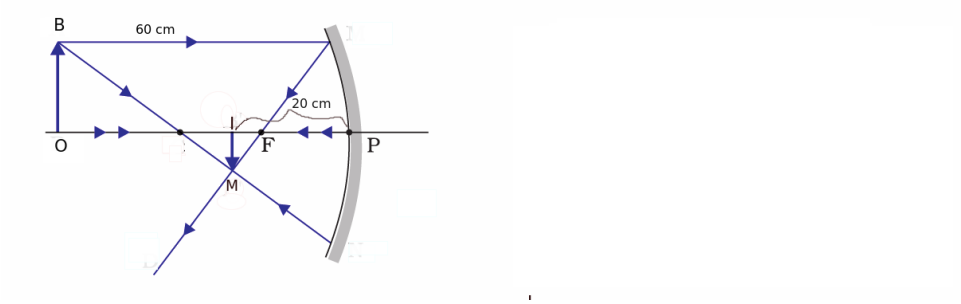
at C, same size of the object, inverted and real.

Marks :(1)

Hide Answer

Qn No. 20 *Chapter Name:4 .prakasaprethipathanam*

Qn.
Observe the diagram and find out the focal length of the mirror



Hint.
u= -60 cm

v= -20 cm

$$\frac{1}{f} = \frac{1}{u} + \frac{1}{v}$$

$$\frac{1}{f} = \frac{1}{-20\,cm} + \frac{1}{-60\,cm}$$

$$\frac{1}{f} = \frac{1x3}{-20\,cm\,x3} + \frac{1}{-60\,cm}$$

f=?

$$\frac{1}{f} = \frac{3}{-60} + \frac{1}{60}$$

$$\frac{1}{f} = \frac{-3-1}{60\,cm}$$

$$\frac{1}{f} = \frac{-4}{60\,cm}$$

$$f = \frac{-60}{4}\ cm$$

f = -15cm

Marks :(2)

Hide Answer

Qn No. 21 *Chapter Name:4 .prakasaprethipathanam*

Qn.
Vijay and Kiran forms the image of an object on the screen using a concave mirror of focal length 40cm.

a) Vijay places the object at a distance of 80cm and conduct the experiment. How far the screen be placed to get a clear image?

b) Kiran places the object at a distance of 10cm and conduct the experiment. Then how far the screen be placed to get a clear image?

a)Screen must be placed 80cm away from the pole of the mirror.

b) Screen must be placed 60cm away from the pole of the mirror.

Hint.
a) Vijay

f = -40cm

u = -80cm

v = ?

1/v+1/u =1/f

1/v = 1/f-1/u

1/v = 1/-40 - 1/-80

= -80cm

സ്ക്രീൻ ദർപ്പണത്തിന്റെ പോളിൽ നിന്നും 80cm അകലെ വയ്ക്കണം .

(b) കിരൺ

f = -40cm

u = -120cm

v = ?

1/v+1/u =1/f

1/v = 1/f-1/u

1/v = 1/-40 - 1/-120

= -60cm

Marks :(4)

Hide Answer

Qn No. 22 ***Chapter Name:4 .prakasaprethipathanam***

Qn.
Why plane mirrors are used to see the image of face?

Hint.
Hints: Erect, same size images are formed.

Marks :(1)

Hide Answer

Qn No. 23 ***Chapter Name:4 .prakasaprethipathanam***

Qn.

Radha used three mirrors to look her face. She found the size of image different in three occasions. Identify the mirrors by understanding difference in the size of image formed.

a) Image of face is big.

b)Image of face is small

c) Image of same size

Hint.
a) Concave mirror

b)Convex mirror

c)Plane mirror

Marks :(3)

Hide Answer

Qn No. 24 ***Chapter Name:4 .prakasaprethipathanam***

Qn.
What will be the nature of image when the magnification is positive in mirrors.

Show Answer

Qn No. 25 ***Chapter Name:4 .prakasaprethipathanam***

Qn.
Find out the true statements from the following.

a) When the magnification is greater than one, the size of the image is less than object.

b) When the magnification is greater than one. The size of the image is greater than object.

c) When the magnification is positive, image will be real and inverted.

d)When the magnification is negative, image will be virtual and inverted.

Hint.
Hints:

b)When the magnification is greater than one the size of the image will be greater than object.

Marks :(1)

Hide Answer

Qn No. 26 ***Chapter Name:4 .prakasaprethipathanam***

Qn.

An object of height 8cm is placed 40cm away from a concave mirror. Focal length of the mirror is 20cm.

a) Where is the image formed?

b) Write down the height of image using new cartesian sign convention.

Show Answer

Qn No. 27 ***Chapter Name:4 .prakasaprethipathanam***

Qn.
An object of height 8cm is placed 40cm away from a concave mirror. Focal length of the mirror is 20cm.

a) Where is the image formed?

b) Write down the height of image using new cartesian sign convention.

Hint.
Hints:

a) at C

b) -8cm

Marks :(2)

Hide Answer

Qn No. 28 ***Chapter Name:4 .prakasaprethipathanam***

Qn.
)An object of height 10cm is placed at a distance of 50cm from a concave mirror. Focal length of the mirror is 20cm. Which among the following could be the height of image?

(+10cm, -10cm, +7cm, -7cm)

Hint.-7 ***Marks :(1)***

Hide Answer

Qn No. 29 ***Chapter Name:4 .prakasaprethipathanam***

Qn.
Concave mirrors are used to construct solar furnaces. Convex mirrors are not used. Why?

Hint.
Hints:

Light rays and heat rays coming parallel to the principal axis converges on a point on the principal axis in concave mirrors, convergence of heat radiations are used in solar furnace for heating.

But in convex mirrors rays coming parallel to the principal axis are diverging after reflection, not converging. So can not be used for constructing solar furnaces.

Marks :(2)

Hide Answer

Qn No. 30 ***Chapter Name:4 .prakasaprethipathanam***

Qn.
Two plane mirrors are arranged by joining their sides to form a particular angle between them. If the object is placed at the perpendicular bisector of the angle. Calculate the number of images formed for the following angles.

a) $\angle 90^0$

b) $\angle 60^0$

Hint.
a) n = (360/θ) – 1

θ = 90

n = 3

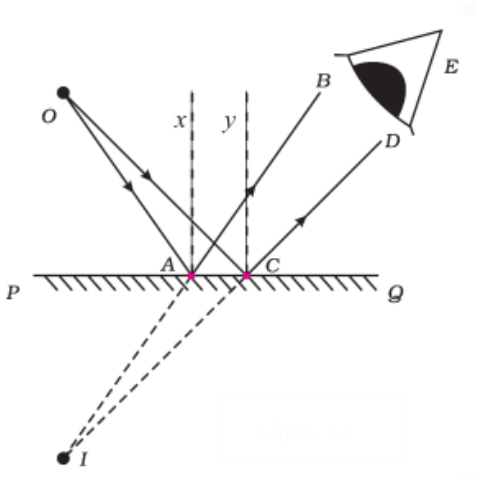
b) n = 5

Marks :(3)

Hide Answer

Qn No. 31 ***Chapter Name:4 .prakasaprethipathanam***

Qn.
Diagram of reflection of light rays from a plane mirror is shown below.



a) What type of image is formed at the point

b)What are the peculiarities of the image formed?

Hint.
Hints:

a) Virtual image

b)Erect, Virtual (Image which can not be projected on a screen)

Marks :(4)

Hide Answer

PRINT

Qn No. 1 *Chapter Name:5 prakasathinde apavarthanam*

Qn..
The critical angle of glass is 42˚ .

1. **What is meant by Critical Angle ?**
2. **When the angle of incidence in glass is 42˚ what will be the angle of refraction ?**
3. **Name the Phenomenon occur when the angle of incidence is 40˚, Define this phenomenon.**
4. **Name the Phenomenon occur when the angle of incidence is 45˚, Define this phenomenon.**

Hint.
.a)When a ray of light passes from a medium of greater optical density to that of lower optical density, the angle of incidence at which the angle of refraction becomes 90° is the critical angle.

b)90 °

c) refraction.When a ray of light entering obliquely from one transparent medium to another, its path undergoes a deviation at the surface of separation. This is refraction.

d)Total internal reflection.

When a ray of light passes from a medium of higher optical density to a medium of lower optical density at an angle of incidence greater than the critical angle, the ray is reflected back to the same medium without undergoing refraction. This phenomenon is known as total internal reflection.

Marks :(4)

Hide Answer

Qn No. 2 ***Chapter Name:5 prakasathinde apavarthanam***

Qn..Pick out the wrong statements from the following and rewrite them after correction.
a.Refraction is due to the difference in the optical density of different media.

b.Velocity of light is greater in the media with higher optical density.

c.Optical density of glass is less than that of water.

d.Velocity of light in vacuum is 3 x 10^8 m/s.

Hint..wrong statements b,c ***Marks :(2)***

Hide Answer

Qn No. 3 ***Chapter Name:5 prakasathinde apavarthanam***

Qn.
Find the magnification of the image formed when the object is placed at 2F of a convex lens.

(Greater than 1, 1 ,Less than 1, 0

Hint.Magnification=1 (one) ***Marks :(1)***

Hide Answer

Qn No. 4 *Chapter Name:5 prakasathinde apavarthanam*

Qn.
A person use a spectacle of power of lens -1.25 D.

a. What type of lens is this?

b. What is mean by power of a lens?

c. Find the focal length of the lens ?

Hint.
a. Power of the lens is negative. So it is a concave lens. (1 score)

b. Power of a lens is the reciprocal of its focal length (1 score)

c.

f = $\frac{1}{p}$ **(** $^{1}/_{2}$ **score)**

= $\frac{1}{-1.25}$

= $\frac{-100}{125}$ **=** $\frac{-4}{5}$ **(1 score)**

= --4/5 x100

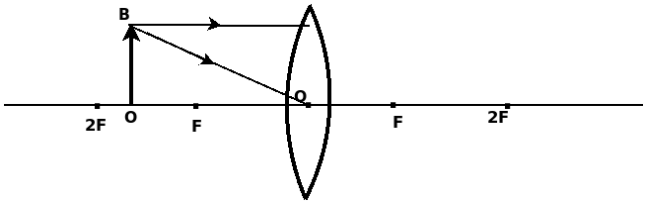
=-20cm ($^{1}/_{2}$ **score)**

Marks :(4)

Hide Answer

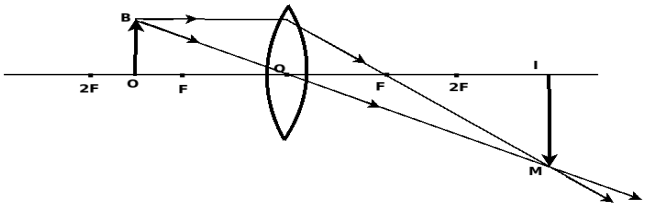
Qn No. 5 *Chapter Name:5 prakasathinde apavarthanam*

Qn.
Analyse the ray diagram. OB indicates an object placed in front of the convex lens.



1. **Complete the ray diagram using given incident rays and find the position of the image formed.**
2. **What will be the position of image when the object is placed at 2F.**
3. **Where should be the object placed to get a virtual image ?**

Hint.
a.



(2 score)

a. Beyond 2F (1 score)

b. Image is formed at 2F. (1 score)

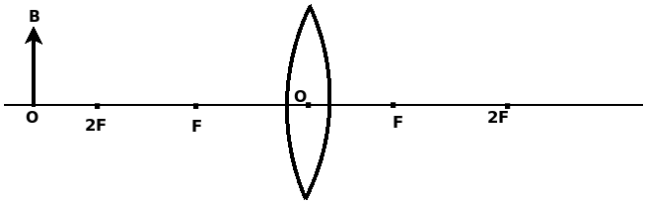
c. An object is placed in between optic centre and focus

Marks :(4)

Hide Answer

Qn No. 6 ***Chapter Name:5 prakasathinde apavarthanam***

Qn.
The diagram below is of an object OB placed in front of a lens

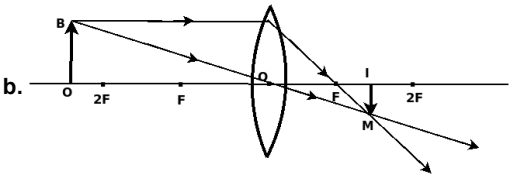


a..Which type of lens is used here ?

b.Complete the ray diagram and find the position of the image.

c.Write any two characteristics of the image.

Hint.
a. Convex lens (1)

b.


(2)

Images formed in between F and 2F.

c. Real and inverted images formed. (1)

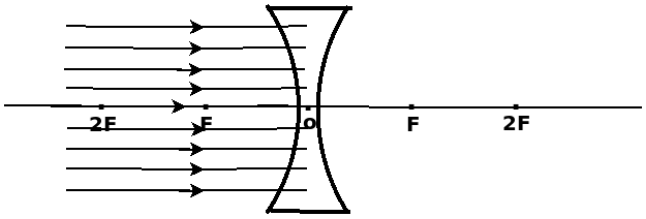
Marks :(4)

Hide Answer

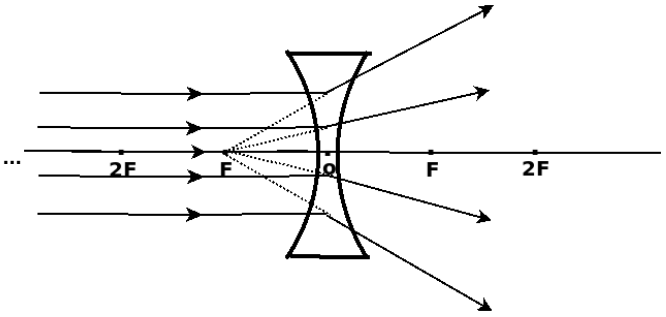
Qn No. 7 ***Chapter Name:5 prakasathinde apavarthanam***

Qn.

Complete the diagram and label the principal focus of the concave lens.



Hint.



Marks :(2)

Hide Answer

Qn No. 8 ***Chapter Name:5 prakasathinde apavarthanam***

Qn.
An image with twice the size of the object is produced on a screen using a convex lens of focal length 15cm.

1. **What is the Object distance from lens ?**
2. **What is the Image distance from lens ?**

a) f = +15cm

Marks :(3)

m = -2 (convex lens create real images so its magnification is negative)

$m=\frac{u}{v}$ (½ score)

$-2=\frac{v}{u}$

v = - 2u

$\frac{1}{f} = \frac{1}{v} - \frac{1}{u}$ (½ score)

$\frac{1}{15} = -\frac{1}{2u} - \frac{1}{u}$

$\frac{1}{15} = -\frac{1}{2u} - \frac{1}{u} \times \frac{2}{2}$

Hint.

$\frac{1}{15} = \frac{-3}{2u}$

2u = - 45 (½ score)

$u = \frac{-45}{2}$

u = - 22.5 cm (½ score)

b) v = -2u

= -2 x -22.5

= 45 cm (1score)

Hide Answer

Qn No. 9

Chapter Name:5 prakasathinde apavarthanam

Qn.

Statements related to the images formed by lenses are given below. Tabulate them into those related to real images and those related to virtual images.

a.Inverted

b.cannot be captured on screen

c.can be captured on a screen

d.image formed when actual intersection of light rays occur

e.erect

f.magnification will be negative

Hint.

<u>Real images</u>

a, c, d,f

<u>virtual images</u>

b,e

Marks :(3)

Hide Answer

Qn No. 10 *Chapter Name:5 prakasathinde apavarthanam*

Qn.
The image of a lit candle is produced on a screen using convex lens. Find the position of the object in each of the following conditions.

a.Obtains an image of size equal to the object

b.Obtains an image smaller than object

c.Obtains an real image bigger than the object.

Hint.
a. 2F Or C (1 score)

b. Beyond 2F Or Beyond C (1 score)

C. In between 2F and F (In between C and F) (1 score)

Marks :(3)

Hide Answer

Qn No. 11 *Chapter Name:5 prakasathinde apavarthanam*

Qn.
The terms given are related to lens. Using these fill up the following statements.

(Focal length, Pricipal axis, Optic centre, Centre of curvature, Radius of curvature.)

1. **.....is the centre of the lens.**
2. **The distance between the optic centre and the principal focus is.....**
3. **The centre of a sphere of which lens is a part is known as.....**
4. **The imaginary line joining the two centres of curvature of the lens and passing through the optic centre is .....**

Hint.
a. Pole **($^{1}/_{2}$ score)**

b. Focal length **($^{1}/_{2}$ score)**

c. Centre of curvature **($^{1}/_{2}$ score)**

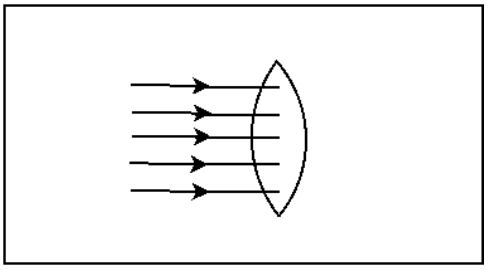
d. Principal axis **($^{1}/_{2}$ score)**

Marks :(2)

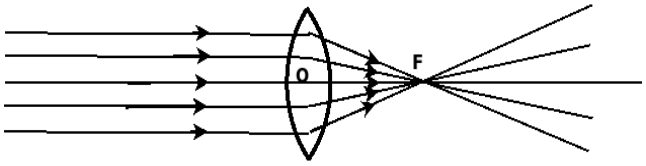
Hide Answer

Qn No. 12 *Chapter Name:5 prakasathinde apavarthanam*

Qn.
The light lays falling parallel to the principal axis of a convex lens is shown in the diagram. Complete the diagram & label the principal focus of the lens.



Hint.



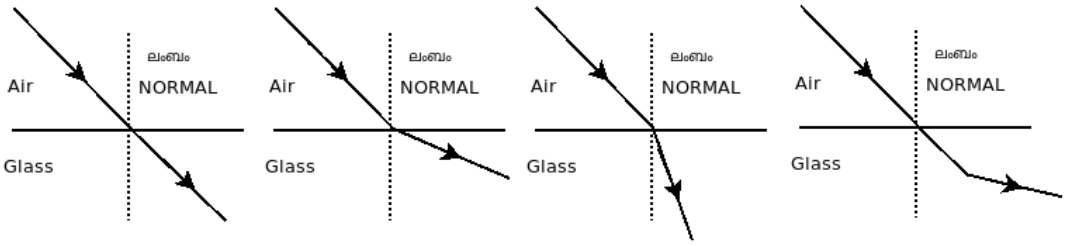
F is the focus

Marks :(2)

Hide Answer

Qn No. 13 ***Chapter Name:5 prakasathinde apavarthanam***

Qn.
Light ray entering glass from air at an angle is shown in the diagram. Which among the following is the correct one.



i **ii** **iii** **iv**

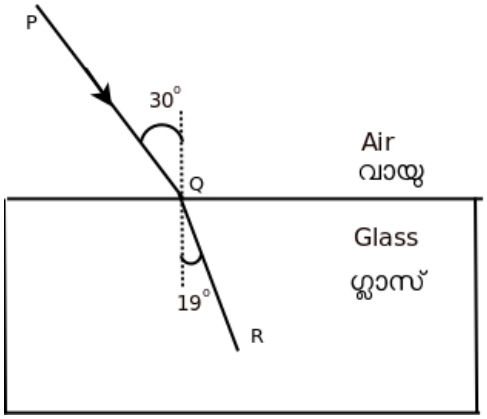
Hint.
Figure iii, It bent towards the normal

Marks :(1)

Hide Answer

Qn No. 14 ***Chapter Name:5 prakasathinde apavarthanam***

Qn.
The diagrams show light ray entering glass slab from air



Analyse these diagrams and answer the following questions.

1. **Which is the incident ray ?**
2. **Which is the refracted ray ?**
3. **Which is the angle of incidence ?**
4. **Which is the angle of refraction ?**
5. **What happens to the light ray when it enter the glass from air at an angle.**
6. **Which is this phenomenon?**

Hint.
a. PQ

b. QR

c. 30^0

d.19^0

e. It bend towards the normal (refraction takes place)

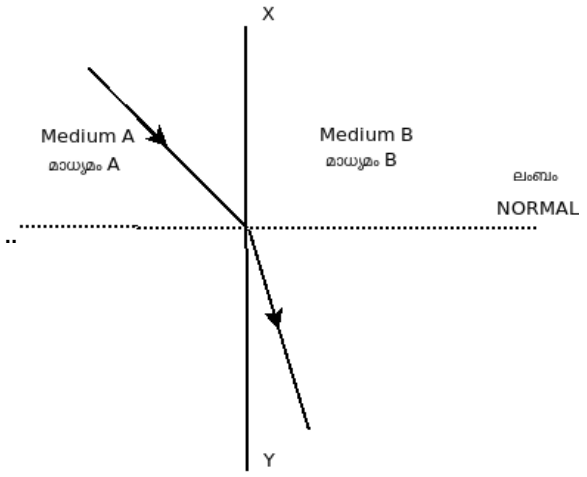
f. Refraction

Marks :(4)

Hide Answer

Qn No. 15 ***Chapter Name:5 prakasathinde apavarthanam***

Qn.
Observe the figure. XY is the surface of separation of the media A and B. Light ray enters B from A



1. **When the light ray enter B from A**

(no deviation, move towards the normal, moves away from the normal)

2. Among media A& B. Which has more optical density?

3. In which medium does the light travels with more velocity ?

Hint.

a. It bent towards the normal (1 score)

b. Medium B (1 score)

c. Medium B (1 score)

Marks :(3)

Hide Answer

Qn No. 16 ***Chapter Name:5 prakasathinde apavarthanam***

Qn.

Find the relation and complete the word pair

Focal length : metre

Power of lens : .....

Hint.

Power of lens:Dioptre

Marks :(1)

Hide Answer

Qn No. 17 ***Chapter Name:5 prakasathinde apavarthanam***

Qn.

Find the power of a convex lens with focal length 10cm

Marks :(2)

Hint.

$f = +10\ cm$

$= \frac{+10}{100} m$ ($\frac{1}{2}$ score)

$= \frac{+1}{10} m$ ($\frac{1}{2}$ score)

$p = \frac{1}{f}$

$= \frac{1}{\frac{+1}{10}}$

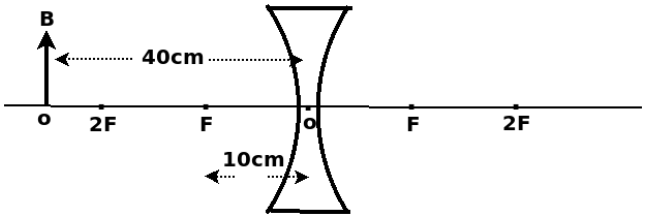
$= +10\ D$ | 1 score)

Hide Answer

Qn No. 18 *Chapter Name:5 prakasathinde apavarthanam*

Qn.

Object AB is placed in front of a concave lens



a.What is the focal length of the lens in New Cartesian sign convention

b.Calculate the image distance

Hint.

a) f = - 10 cm (1 score)

b) u = - 40 cm

f = -10 cm

v = uf/ u+f

= $\frac{-40\,x-10}{-40+-10}$ **(** $^{1}/_{2}$ **score)**

= $\frac{+400}{-50}$

= - 8 cm (1 score)

Marks :(3)

Hide Answer

Qn No. 19 *Chapter Name:5 prakasathinde apavarthanam*

Qn.

An object is placed 20 cm from the convex lens, virtual and erect images formed 100 cm from the lens .

a. Find out the focal length of the lens ?

b. What is the power of the lens?

Marks :(4)

a) u = - 20 cm

v = - 100 cm

f = $\frac{uv}{u-v}$ (½ score)

= $\frac{-20x-100}{-20--100}$ (½ score)

= $\frac{+2000}{80}$

Hint. = + 25 cm (1 score)

b) f =+ 25 cm (½ score)

= $\frac{+25}{100}m$

= $\frac{+1}{4}m$ (½ score)

p = $\frac{1}{f}$

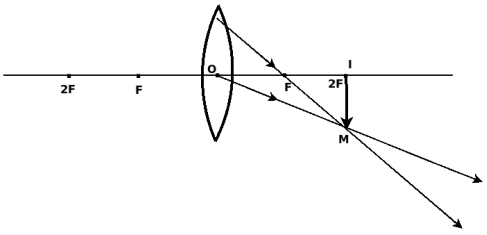
=+4D (1 score)

Hide Answer

Qn No. 20 *Chapter Name:5 prakasathinde apavarthanam*

Qn.

The diagram shows the image formation by a convex lens.

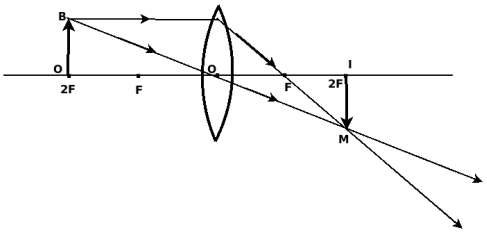


a.Find the position of the image by completing the ray diagram.

b.What is the magnification of the image? Justify your answer.

Hint.

a)



Object is placed at 2F (2 score)

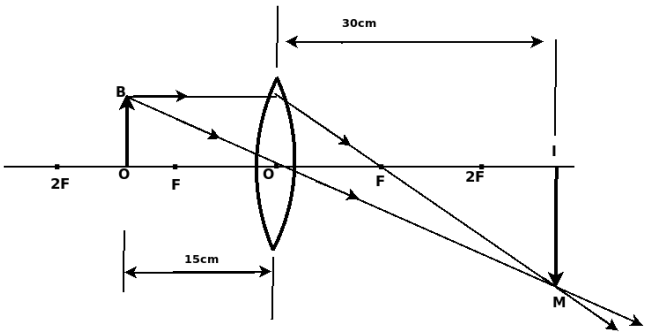
b. Magnification is one, because size of the image is equal to the size of the object. (1 score)

Marks :(3)

Hide Answer

Qn No. 21 *Chapter Name:5 prakasathinde apavarthanam*

Qn.
The diagram shows the image formation by a convex lens.



a. Find out the focal length using new Cartesian method.

b. Find its magnification using ray diagram,?

Hint.
a) u = -15 cm

v = +30 cm

f = $\frac{uv}{u-v}$ **(1/2 score)**

= $\frac{-15x+30}{-15-30} = \frac{-450}{-45}$ **(1/2 score)**

= + 10 cm (1/2 score)

b. $m=\frac{v}{u}$ **(1/2 score)**

= $\frac{30}{-15}$ **(1/2 score)**

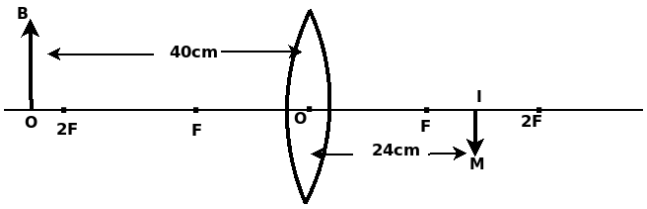
= -2 (1/2 score)

Marks :(3)

Hide Answer

Qn No. 22 *Chapter Name:5 prakasathinde apavarthanam*

Qn.
Express the following measurements in New Cartesian Sign Convention. IM is the image of object OB.



a.Object distance (u) = _____

b.Image distance (v) = _____

c.Height of the Object (OB) = _____

d.Height of the Image (IM) = _____

Hint.
a) u = - 40 cm ($^{1}/_{2}$ score)

b) v = +24 cm ($^{1}/_{2}$ score)

c) OB = +2 cm ($^{1}/_{2}$ score)

d) IM = - 1 cm ($^{1}/_{2}$ score)

Marks :(2)

Hide Answer

Qn No. 23 *Chapter Name:5 prakasathinde apavarthanam*

Qn.
Method of measuring distances according to New Cartesian Sign Convention is given below. Choose the correct statements from these.

a.All the distances are measured form F.

b.The distances measured in the direction of incident ray are positive.

c.It is assumed that the incident rays travels from right to left.

d.X axis is considered as the principal axis.

Hint.
b. All distances measured along the direction of incident light is positive.

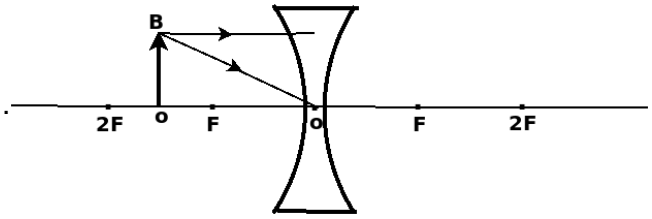
d.X axis is considered as the principal axis.

Marks :(2)

Hide Answer

Qn No. 24 *Chapter Name:5 prakasathinde apavarthanam*

Qn.
Observe the figure carefully and an object 'OB' is placed in front of the concave lens

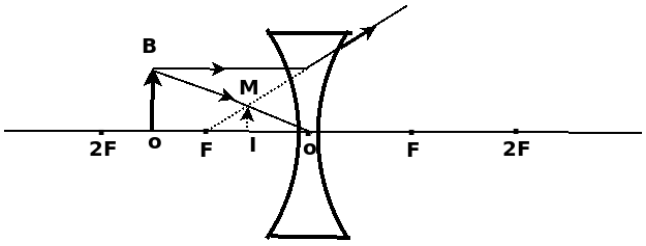


a. Find the position of the image by completing the diagram ?

b. Can this image be screened? why.?

c.If the position of the object is in 2 F, where is the position of the image?

Hint.
a)



Virtual and erect images formed in between F and O.

b. No, because it is a virtual image

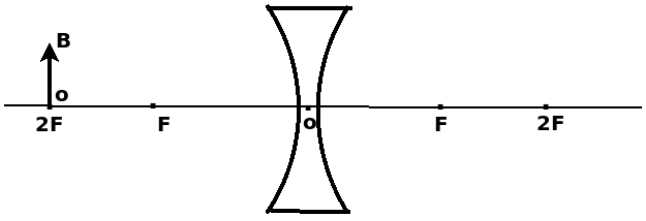
C. Image is always formed in between focus and centre. but it is a virtual and erect and diminished image

Marks :(2)

Hide Answer

Qn No. 25 ***Chapter Name:5 prakasathinde apavarthanam***

Qn.
An object is placed in front of the lens is given below.



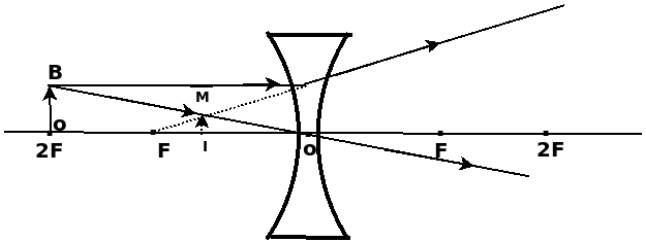
a.Whether the principal focus of this lens is real or virtual (1)

b.Find out the position of the image by completing the figure. (2)

c. Write any two nature of the image. (1)

Hint.
a. Convex lens

b.



Images formed in between F and 2F.

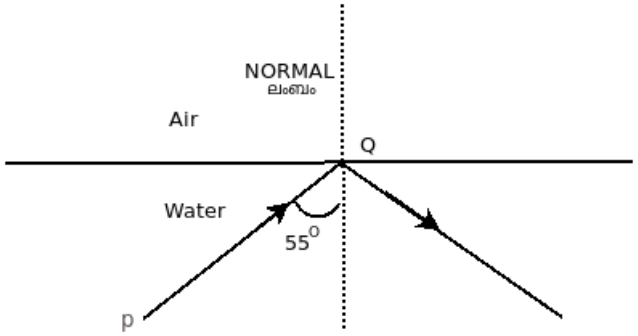
c. Real and inverted images formed.

Marks :(4)

Hide Answer

Qn No. 26 ***Chapter Name:5 prakasathinde apavarthanam***

Qn.
Observe the figure given below



a. Why the ray PQ reflected this way?

b. Name the phenomenon?

c. What will happen to the ray of light when angle of incidence is 30^0 at Q

Hint.
a. Angle of incidence is greater than that of critical angle.

b. Total internal reflection.

c. refraction takes place when it travels from water to air.

Marks :(3)

Hide Answer

Qn No. 27 ***Chapter Name:5 prakasathinde apavarthanam***

Qn.
Obseve the table and answer the questions given below

Medium	Refractive index
A	1.33
B	1.62
C	1.47
D	1.52

a)In which medium the speed of light is maximum?

b)Which of the following is correct based on the speed of light in the media?

1) A>B>D>C 2) A>C>B>D 3) A>C>D>B 4) A<C<D<B (1)

c)Find out the speed of light in medium B?(speed of light in vaccum = $3x10^8$m/s)

Hint.

a) Mediuum A.

b) 3) A >C> D>B (1 score)

c) n= c/v ($^1/_2$ score)

v = 3 x 10 ^{8} / 1.62 ($^1/_2$ score)

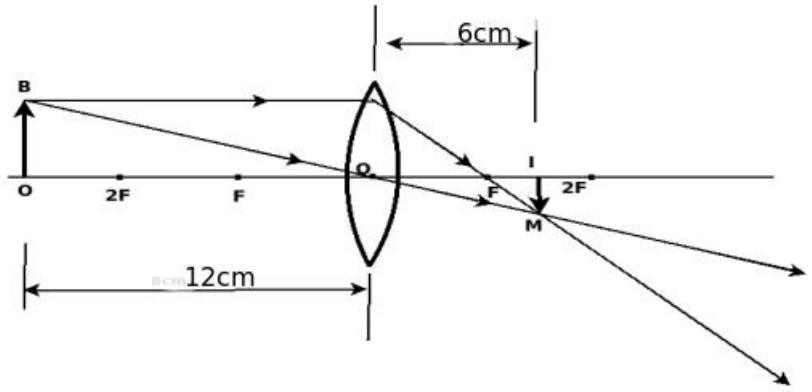
= 1.85 x 10 ^{8} m/s (1 score)

Marks :(4)

Hide Answer

Qn No. 28 ***Chapter Name:5 prakasathinde apavarthanam***

Qn.



a.Find u and v in terms of new cartisian sign convention?

b.Is the image real?

c.Find out the focus of the lens from the diagram.Justify the answer by using lens formula

Hint.

a) u = -12cm (1/2 score)

v = +6 cm (1/2 score)

b) യഥാർത്ഥം (1 score)

c) f = +4 cm (1/2 score)

ലെൻസ് സമവാക്യം അനുസരിച്ച് $f = \frac{uv}{u-v}$ (1/2 score)

$= \frac{(-12) \times (+6)}{(-12) - (+6)}$ (1/2 score)

$= \frac{-12 \times 6}{-18}$

$= +4$ cm

Marks :(3)

Hide Answer

PRINT

Qn No. 1 *Chapter Name:6. kazhchayum Varnangalude lokavum*

Qn.
Why concave lens always create virtual and erect image of the object.?

Hint.
In this case refracted Ray do not actually intersect to each other. It appears to intersect the images formed the same side of the lens. (1 score)

Marks :(1)

Hide Answer

Qn No. 2 *Chapter Name:6. kazhchayum Varnangalude lokavum*

Qn.
what is the value of near point distance of a healthy person

(10 cm, 50 cm, 100 cm, 25 cm)

Hint..25 ***Marks :(1)***

Hide Answer

Qn No. 3 *Chapter Name:6. kazhchayum Varnangalude lokavum*

Qn.
name the phenomenon that causes tyndal effect

(reflection, refraction, scattering, dispersion)

Hint..scattering ***Marks :(1)***

Hide Answer

Qn No. 4 *Chapter Name:6. kazhchayum Varnangalude lokavum*

Qn.
Scattering of light by minute particles is called ----------

(scattering, dispersion, reflection, refraction)

Hint.scattering ***Marks :(1)***

Hide Answer

Qn No. 5 *Chapter Name:6. kazhchayum Varnangalude lokavum*

Qn.

```
The defect of the eye that Far point drops from infinity to a fixed distance is called
(pressbiopia, Longsight, Shortsight)
```

Hint.Shortsight *Marks :(1)*

Hide Answer

Qn No. 6 *Chapter Name:6. kazhchayum Varnangalude lokavum*

Qn.
which among the following is the most scattered color of light

(red, blue, violet, green)

Hint..violet *Marks :(1)*

Hide Answer

Qn No. 7 *Chapter Name:6. kazhchayum Varnangalude lokavum*

Qn.
Name the eye defect that can be corrected with a concave lens

(Longsight, shortsight, pressbiopia)

Hint.shortsight *Marks :(1)*

Hide Answer

Qn No. 8 *Chapter Name:6. kazhchayum Varnangalude lokavum*

Qn.
.The unit of power of a lens?

(Meter, Diopter, Watt, Newton)

Hint..Diopter *Marks :(1)*

Hide Answer

Qn No. 9 *Chapter Name:6. kazhchayum Varnangalude lokavum*

Qn.
The vehicle's tail lamps and signal lamps are red.

a) Which is the longest wavelength in the spectrum of white light?

b) How the wavelength and scattering of colors are related.

c) Why are the signal lamps red?

Hint..

```
a) - red

b) - The dispersion decreases as the wavelength increases.

c) - The longer the wavelength for the red, the less the scattering
```

Marks :(3)

Hide Answer

Qn No. 10 *Chapter Name:6. kazhchayum Varnangalude lokavum*

Qn.
International Dark Skyweek.is celebrated during the week of the new moon in April
a) What is the message of celeberating like this?

b) Suggest two ways to reduce light pollution

.

Hint..
a) Awareness of environmental issues that cause light pollution

b)Reduce overuse of light sources.

Marks :(2)

Hide Answer

Qn No. 11 *Chapter Name:6. kazhchayum Varnangalude lokavum*

Qn..

```
The rainbow can be seen circular from high-flying aircraft. Why can't you see it from the floor?
```

Hint..

```
From the floor, it is impossible to see 42.70 down from the line of sight.
```

Marks :(1)

Hide Answer

Qn No. 12 *Chapter Name:6. kazhchayum Varnangalude lokavum*

Qn.
A child sees a rainbow in the evening.

a) In what direction would the rainbow appear?

b) What color is the color on the outside of the rainbow?

Hint.
a) East direction

b) red

. *Marks :(2)*

Hide Answer

Qn No. 13 *Chapter Name:6. kazhchayum Varnangalude lokavum*

Qn.

```
Find the right statements related to dispersion of light through the prism?

a) the color of light with greater wavelength is deviated more
b) the color of light with shorter wavelength is deviated more.

c) color of light with longer wavelength is deviated less

d) color of light with shorter wavelength is deviated less
```

Hint..b & c *Marks :(1)*

Hide Answer

Qn No. 14 *Chapter Name:6. kazhchayum Varnangalude lokavum*

Qn..

```
Explain why light undergo dispersion in a prism concidering wavelength of elements?
```

Hint.
when wavelength increases refraction decreases

wavelength of red color is more and violet is less

Marks :(2)

Hide Answer

Qn No. 15 *Chapter Name:6. kazhchayum Varnangalude lokavum*

Qn..

The white light in the sunlight is a composite light
a) What is meant by composite light?

b) What is the name of the phenomenon where a composite light split up into constituent colors

Hint.

a) - Light that is made up of more than one color

b) - Dispersion

Marks :(2)

Hide Answer

Qn No. 16 *Chapter Name:6. kazhchayum Varnangalude lokavum*

Qn..

Some individuals find it difficult to see objects nearby.

a) By what name is this eye defect known?

b) Write two reasons for this defect?

Hint.
.a) longsight

b) size of eyeball is less, power of eye lens is less

Marks :(2)

Hide Answer

Qn No. 17 *Chapter Name:6. kazhchayum Varnangalude lokavum*

Qn..

Objects can be seen clearly because of power of accommodation of the eye.

a) What is power of accommodation of the eye?

b) How does power of accommodation of the eye related to ciliary muscles?

Hint..

a) The ability to adjust the focus distance by varying the curvature of the lens of the eye

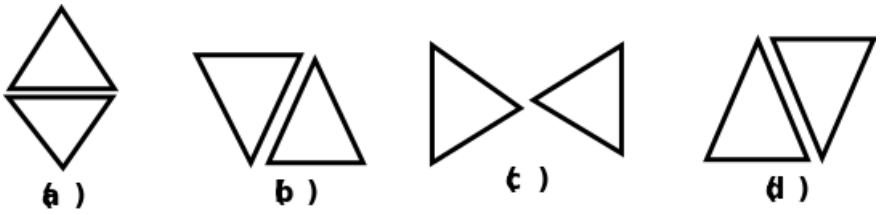
b) The ciliary muscle contracts when looking at nearby objects. The focus distance decreases. When looking at distant ob

Marks :(3)

Hide Answer

Qn No. 18 ***Chapter Name:6. kazhchayum Varnangalude lokavum***

Qn.
The following is an illustration of the experiment to demonstrate the recombination of colors using two prisms.



Hint.
a) b and d

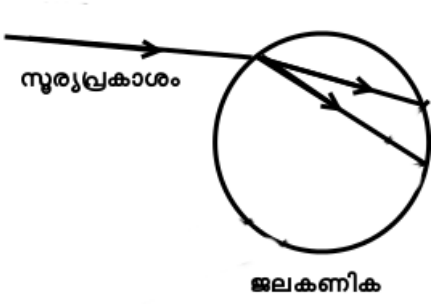
b)composite light/sunlight/whitelight

Marks :(2)

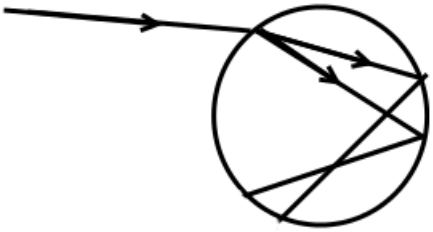
Hide Answer

Qn No. 19 ***Chapter Name:6. kazhchayum Varnangalude lokavum***

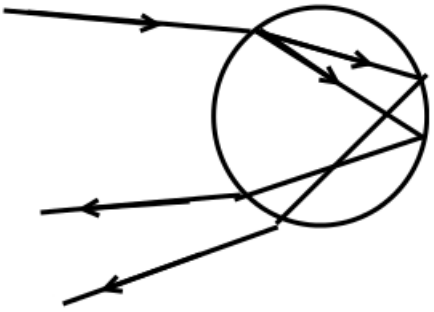
Qn.
Complete the following figure



Hint.



1



1+1

Drawing inside particle (1)

Drawing outside particle (½)

To mark V and R (½)

Marks :(2)

Hide Answer

Qn No. 20 ***Chapter Name:6. kazhchayum Varnangalude lokavum***

Qn.
You might have observed leaves of rotating fan as disc and raindrops as glass rodes during rain.

During rain ,rain drops are seen as glass rodes and while a fan is working the leaves appears as disc

a) Which peculiarity of eye is the reason behind this?

b) Explain this in detail

c) Write another situation for which the reason is same peculiarity

Hint.
a) persistance of vision (1)

b) Definition of persistance of vision (1)

c) Write any suitable situation like rotation of Newtons color disc(1)

Marks :(3)

Hide Answer

Qn No. 21 ***Chapter Name:6. kazhchayum Varnangalude lokavum***

Qn.
During the formation of rain bow, lght ray enters in a rain drop undergoes .....

a) refraction only

b) internal reflection only

c) refraction and internal reflection

d)nothing happens

Hint.
Refraction and internal reflection (1)

Marks :(1)

Hide Answer

Qn No. 22 ***Chapter Name:6. kazhchayum Varnangalude lokavum***

Qn.
The teacher was asked to plan an experiment to prove the scattering of light.

a) List the materials needed to perform the test.

b) Summarize the test procedure

Hint.
Dissolve sodium thiosulphate in bowl water. (1 +1 +1)

Add two drops of hydrochloric acid to it.

Monitor the change in light between the solution and the screen.

Marks :(4)

Hide Answer

Qn No. 23 ***Chapter Name:6. kazhchayum Varnangalude lokavum***

Qn.
match A,B,C columns most suitably

A	B	C
Tyndal effect	rainbow	Newtons disc
Dispersion	Blue sky	atmosphere
Scattering	recombination of colors	colloid
persistance of vision	path of light	water drop

Hint.
Tyntal Effect - path of light - Colloid (½ + ½)

Dispersion - Rainbow - Waterdrop (½ + ½)

scattering -blue sky - Atmosphere (½ + ½)

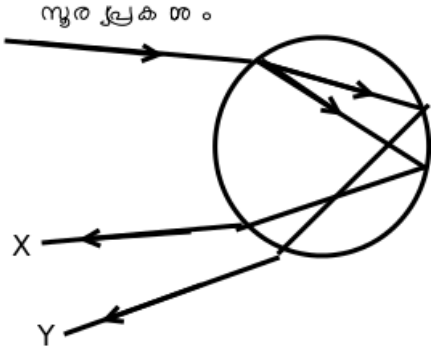
Persistence of vision - recombination of colors - Color disc ((+ ½)

Marks :(4)

Hide Answer

Qn No. 24 *Chapter Name:6. kazhchayum Varnangalude lokavum*

Qn.
Raydiagram of path of light in a raindrop during the formation of rainbow is depicted .



a)What are the colours represented by X, Y ?

b)As per diagram, which are the phenomena happening here?

c) Suggest a method to produce artificial rainbow.

Hint.
a)X- violet, Y-red

b) refraction, inernal reflection, dispersion

c)Water spraying activity or any combination action in opposition to the sun (1)

Marks :(3)

Hide Answer

Qn No. 25 *Chapter Name:6. kazhchayum Varnangalude lokavum*

Qn.
Scattering occurs when light ray collide with tiny particles in air

a) Which colours undergo more scattering?

b) Why does the sky appear blue ?

c) " While watching from moon It is possible to see stars even in day time" .Will you admit this statement? Justify.

Hint.
a) violet, blue

b) violet , blue which having less wave length undergo more scattering

c) As there is no atmosphere the sky in moon will be dark even in day time.

Marks :(4)

Hide Answer

Qn No. 26 *Chapter Name:6. kazhchayum Varnangalude lokavum*

Qn.
dentify the correct order of colours in a spectrum from the given list

a) blue, violet, red, green

b) violet, blue, yellow, red

c) violet, dark blue, yellow, green

d) green, yellow, orange, violet

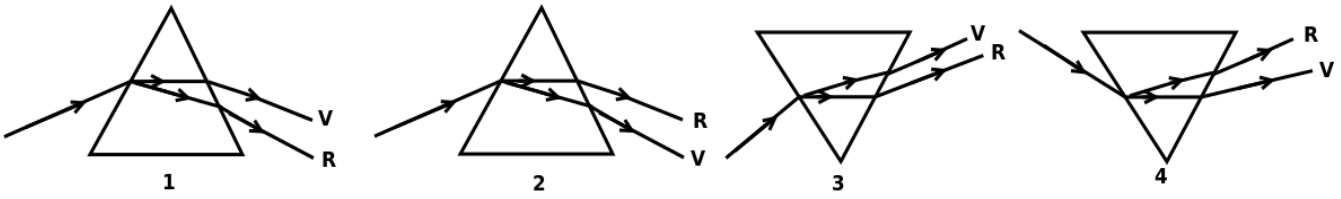
Hint.
b) violet, blue, yellow, red

Marks :(1)

Hide Answer

Qn No. 27 *Chapter Name:6. kazhchayum Varnangalude lokavum*

Qn.
Among the given figures which is the correct one?



Hint.
figure 2

Marks :(1)

Hide Answer

Qn No. 28 *Chapter Name:6. kazhchayum Varnangalude lokavum*

Qn.
We can see the path of light during misty mornings

a) Which phenomenon is this ?

b) Explain the phenomenon

Hint.
a) Tyndall effect

b) Due to scattaring on colloidal particles the path is seen

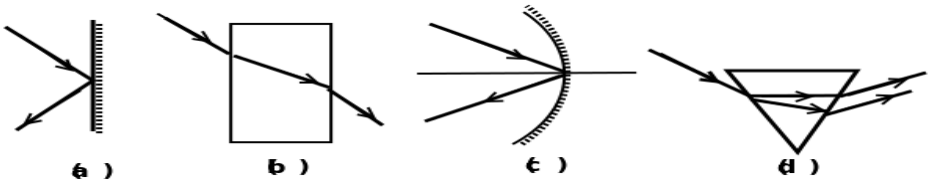
Marks :(3)

Hide Answer

Qn No. 29 *Chapter Name:6. kazhchayum Varnangalude lokavum*

Qn.

Among the below given figures , which figure indicates dispersion of light



Hint.
(d)

Marks :(1)

Hide Answer

Qn No. 30 *Chapter Name:6. kazhchayum Varnangalude lokavum*

Qn.
Myopia and Hypermetropia are the eye defect of human beings, identify the given statement then separate the reason for Myopia and Hypermetropia.

a. Image is formed behind the retina

b. Images formed in front of the retina

c. Power of the eye lens decreases

d. Power of the eye lens increases

f. Suitable power of convex lens is used to solve this problem

Hint.
Myopia -b, d, e

Hypermetropia-a, c,f ($^{1}/_{2}$ x 6 = 3 score)

Marks :(3)

Hide Answer

Qn No. 31 *Chapter Name:6. kazhchayum Varnangalude lokavum*

Qn.
What is the importance of eye donation in your opinion?

Hint.
a. Any age person can donate eye.

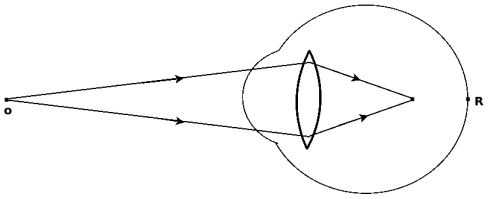
b. When we donate eye, it enlighten others life. (1+1 = 2 score)

Marks :(2)

Hide Answer

Qn No. 32 *Chapter Name:6. kazhchayum Varnangalude lokavum*

Qn.
The image formation of a defected eye is given below



a. In which position images formed on a normal eye?

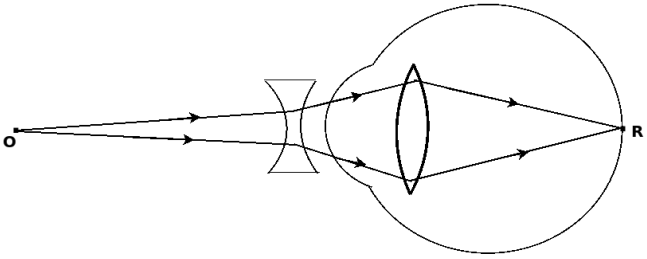
b. What is this eye defect?

c. How to solve this defect?Draw the diagram .

Hint.
a. On the retina

b. short sight(Myopia)

c. Suitable power of concave lenses is used to solve this problem.



Marks :(4)

Hide Answer

PRINT

Qn No. 1 *Chapter Name:7. Oorjaparipalanom*

Qn.
From the following statements given below, find out the statements related to Nuclear Fusion

a. The activity of dividing heavy nuclei

b. The activity of joining light nuclei

c. It is the reason for the energy production in stars

d. The principle behind atom bomb.

Hint.
2, 3

Marks :(2)

Hide Answer

Qn No. 2 *Chapter Name:7. Oorjaparipalanom*

Qn.
If we completely convert 1 gm of matter in to energy, we get 9x10 ^{13}J energy.

a) Which equation of Einstein help us to find this?

b) By what name are the power stations that utilize the matter-energy conversion known?

Hint.
a) $E = mc^2$

b)Nuclear power stations

Marks :(5)

Hide Answer

Qn No. 3 *Chapter Name:7. Oorjaparipalanom*

Qn.
Fossil fuels are precious and it is to be conserve for the future.

a)What is mean by fossil fuels?

b)Prepare posters to convince the need of utilising fossil fuels in a rational way.

Hint.
a.Fossil fuels are formed by the transformation of plants and animals that went under the earth's crust millions of years ago. The transformation took place in the absence of air under high pressure and high temperature.

b.poster

Marks :(2)

Hide Answer

Qn No. 4 ***Chapter Name:7. Oorjaparipalanom***

Qn.
LPG is an important fuel for house hold utilisation.

a) Write the full form of LPG

b) Which is the main constituent in LPG?

c)Why Ehyl mercaptane is added to this fuel?

Hint.
Hint.

a) Liquified Petroleum Gas

b) Main constituent – Butane

c) Ethyl Mercaptane is added know the foul smell, if there is any leakage.

Marks :(3)

Hide Answer

Qn No. 5 ***Chapter Name:7. Oorjaparipalanom***

Qn.

Hydrogen is a fuel having high calorific value.

a)Write the situation,in which hydrogen is used as a fuel?

b) Why hydrogen is not used as a house hold fuel?

Hint.
a). Rocket

b).Hydrogen is highly inflammable and explosivs.

Marks :(2)

Hide Answer

Qn No. 6 ***Chapter Name:7. Oorjaparipalanom***

Qn.

In large cities, now CNG is used in vehicles instead of petrol and diesel

a)what is mean by CNG?

b)Write two advantageous of using CNG

Hint.
a.Compressed natural gas is made from natural gas that comes with petroleum

b.

- **Less atmospheric pollution**
- **Fuel efficiency is more**
- **Low cost**
- **easy to transport**

  (any two)

Marks :(2)

Hide Answer

Qn No. 7 ***Chapter Name:7. Oorjaparipalanom***

Qn.
Find out the statements related to LNG from the following.

a) Ehyl mercaptane is added

b) Main constituent in this is Methane

c) Main constituent in this is Butane

d) It is used as a fuel in Industries and Power stations

Hint.
Hint.

b) Main constituent in this is Methane

d) It is used as a fuel in Industries and Power stations

Marks :(2)

Hide Answer

Qn No. 8 ***Chapter Name:7. Oorjaparipalanom***

Qn.
a) How fossil fuels are formed in nature?

b) Write two examples of fossil fuels?

Hint.
Hint.

a) The plants and animals which were under the soil by millions of years, transformed in to fossil fuels with high temperature and pressure.

b) Coal, Petroleum,Natural Gas

Marks :(3)

Hide Answer

Qn No. 9 ***Chapter Name:7. Oorjaparipalanom***

Qn.
a) What is the purpose of pollution test in vehicles?

Hint.
Hint.

a) To know whether there is more polluting materials in the smoke.

Marks :(1)

Hide Answer

Qn No. 10 ***Chapter Name:7. Oorjaparipalanom***

Qn.
For the complete combustion air (oxygen) is needed.

a) what is mean by partial combustion?

b)Write the disadvantages of partial combustion?

c) Write the name of two products during combustion

Hint.
a.If oxygen is not sufficient, large quantities of carbon monoxide, soot and a little of carbon dioxide will be formed. This type of burning is partial combustion.

b)Fuel loss, Time loss, low heat, pollution (any two)

c) Carbondiaoxide, carbon monoxide, steam (any two)

Marks :(2)

Hide Answer

Qn No. 11 ***Chapter Name:7. Oorjaparipalanom***

Qn.
Which among the following are the two forms of coal ?

(Coal tar, anthracite, lignite, paraffin)

Hint.

Hint.

anthracite, lignite,- 1 score

Marks :(1)

Hide Answer

Qn No. 12 ***Chapter Name:7. Oorjaparipalanom***

Qn.
Substances related to coal are given below. Tabulate them in to two

(i)Forms of coal and (ii) Products of coal after distillation ?

(1) Coal tar(2) Coke (3) Peat (4) Lignite (5) Ammonia (6) Anthracite (7) Coal gas (8) Bituminous coal

Hint.
Hint.

Forms of coal – Peat, Lignite, Bituminous coal, Anthracite

Products after distillation – Ammonia, Coal gas, Coal tar, Coke

Marks :(2)

Hide Answer

Qn No. 13 ***Chapter Name:7. Oorjaparipalanom***

Qn.

Fill suitably

----------is the gas used in Hydrogen fuel cell with hydrogen

(Nitrogen, CO, Oxygen, CO2)

Hint.
Oxygen

Marks :(1)

Hide Answer

Qn No. 14 ***Chapter Name:7. Oorjaparipalanom***

Qn.
Write any three qualities of a good fuel?

Hint.
Hints.

- **More availability**
- **less economic**
- **Less atmospheric pollution at the time of combustion**
- **high calorific value**

•

Marks :(2)

Hide Answer

Qn No. 15 *Chapter Name:7. Oorjaparipalanom*

Qn.

1) Write two examples for biomass?

2) What are the 2 problems of biomass as a fuel?

Hint.
Hint.

1) fire wood, cow dung cake, coconut shell, -- (any two)

(2) smoke, smell, poisonous gases

Marks :(2)

Hide Answer

Qn No. 16 *Chapter Name:7. Oorjaparipalanom*

Qn.

Converting biomass in to biogas is beneficial for agriculture and reducing environmental pollution- Explain

Hint.
Hint.

Fuel which has high calorific value

Manure for agriculture

Reduce environmental pollution

(appropriate Explanation)

Marks :(2)

Hide Answer

Qn No. 17 *Chapter Name:7. Oorjaparipalanom*

Qn.
a. In which name the energy sources which causes the environmental pollution including global warming is called ?

b. Write two examples for these type of energy sources?

Hint.
a. Brown Energy

b. Nuclear Energy, Thermal energy.

Marks :(2)

Hide Answer

Qn No. 18 ***Chapter Name:7. Oorjaparipalanom***

Qn.
There will be foul smell when the bio wastes are heaped together.

a) Which gases causes this foul smell?

b) How biogas is formed from bio wastes?

Hint.
Hint.

a) Hydrogen sulphide, Methane

b). Reaction of bacteria in the absence of oxygen.

Marks :(2)

Hide Answer

Qn No. 19 ***Chapter Name:7. Oorjaparipalanom***

Qn.
Write the situations in which the following materials are used related to fuels.

1. Ethyl mercaptain

2. Enriched Uranium.

Hint.
Hint.

1. It has smell, so the leakage of LPG can be found.

2. Used as fuel in Nuclear reactor.

Marks :(2)

Hide Answer

Qn No. 20 ***Chapter Name:7. Oorjaparipalanom***

Qn.
(1) What is the energy change in solar panel?

(2)Why do we call Solar panel as an electronic device?

(3) Explain photo voltaic effect?

Hint.
Hint.

(1) Light energy converted to Electrical energy

(2) The main part of a solar panel is the P-N junction diode made up with silicon. So it is an electronic device.

(3) In a P-N junction diode, when sunlight falls on N – region, the electron flow occurs on P region. The phenomenon in which electricity formed when sunlight falls is known as Photo Voltaic effect.

Marks :(4)

Hide Answer

Qn No. 21 ***Chapter Name:7. Oorjaparipalanom***

Qn.

Write the name of the two appliances which use heat energy directly from solar energy?

Hint.
Hint.

Solar cooker, solar water heater

Marks :(1)

Hide Answer

Qn No. 22 ***Chapter Name:7. Oorjaparipalanom***

Qn.

Find out the odd one and write the reason?

(1) Diesel, LPG, Coal gas, Petrol

(2) Solar energy, wind energy, nuclear energy.

Hint.
Hint.

(1) Coal gas , others are taken from Petroleum.

(2) Nuclear energy, others are green energy.

Marks :(2)

Hide Answer

Qn No. 23 *Chapter Name:7. Oorjaparipalanom*

Qn.

For the solution of energy crisis, we have to utilise maximum green energy when building a house.

- **Suggest two methods to utilise green energy while constructing a house.**

Hint.
Hint.

1. The energy sources must be eco-friendly and non polluting.

2. Utilise maximum light from the sun during day time

Marks :(2)

Hide Answer

Qn No. 24 *Chapter Name:7. Oorjaparipalanom*

Qn.

(a) What is known as energy crisis?

(b) Write 4 situations which leads to energy crisis?

(c) Suggest two methods to solve energy crisis.

Hint.
Hint.

(a) The increase in the demand of energy ---------- 1/2 score

Lack of availability---------- 1/2 score

(b) Increase in population---------- 1/2 score

Industrialisation ---------- 1/2 score

unreasonable usage of energy ------- 1/2 score

maximum usage of non renewable sources of energy. -- 1/2 score

(c)Utilise maximum solar energy --------- 1/2

Use energy in a reasonable and scientific way. ------- 1/2

Marks :(4)

Hide Answer

Qn No. 25 *Chapter Name:7. Oorjaparipalanom*

Qn.

Nuclear fusion and nuclear fusion are two ways ofproducing energy from the nucleus of an atom.

Write two advantages of nuclear fusion over nuclear fusion

Hint.
Hint.

There will be no radioactive products.

Hydrogen is the fuel for fusion and it is lavish.

Marks :(1)

Hide Answer

Qn No. 26 ***Chapter Name:7. Oorjaparipalanom***

Qn.

From the following sources, Find out the Sources of Green energy?

(1) Atomic reactors

(2) Solar cells

(3) Thermal powerstations

(4) Tidal power station

(5) Hydro electric power station

(6) Windmill farms (2) Score

Hint.
Hint.

2, 4, 5, 6

Marks :(2)

Hide Answer

Qn No. 27 ***Chapter Name:7. Oorjaparipalanom***

Qn.

Analyse the following statements related to solar water heater and answer the questions

*** Hot water is taken from the upper side of the solar water heater tank.**

***When heated the density of the water is changed.**

(1) Explain the working of a solar water heater, based on the above statements. (3)

Hint.
Hint.

Density of water decreases when temperature increases. ----1/2

Cold water of high density will be in the bottom side of tank ----- 1/2

Cold water is heated through the bottom pipes ------ 1/2

when density decreases, it reaches top. ----- 1/2

The hot water is taken from the tap at the top ----- 1/2

Scientific explanation ------ 1/2

Marks :(3)

Hide Answer

Qn No. 28 ***Chapter Name:7. Oorjaparipalanom***

Qn.

What are the advantageous of storing bio-wastes in a bio gas plant instead of throwing it.?

Hint.
Hint.

1. Decrease environment pollution

2. We get fuels with high calorific value.

3. The waste from the plant can be used as manure.

Marks :(2)

Hide Answer

Qn No. 29 ***Chapter Name:7. Oorjaparipalanom***

Qn.

Write the difference between a solar voltaic power plant and solar thermal power plant..

Hint.
Hint.

In solar voltaic plant, electrical energy is produced from solar energy using solar panel.

In solar thermal power plant, steam is produced using the solar energy and with that mechanical energy is converted to electrical energy.

Marks :(2)

Hide Answer

Qn No. 30 ***Chapter Name:7. Oorjaparipalanom***

Qn.
Find the relation and fill in the blanks

a.kerosene : Petroleum

Ammonia : ---------

b.LPG : Butane

CNG: ----------

Hint.
a. coal

b.methane

Marks :(2)

Hide Answer

Qn No. 31 ***Chapter Name:7. Oorjaparipalanom***

Qn.
Find the odd one and write the reason?

(Coal tar, Coal gas, Nitrogen, Ammonia)

Hint.Hint.
Nitrogen - others are taken from coal

Marks :(2)

Hide Answer