The Brigade School@ G and W UT 2 (2020-21)

Total points 37/40

Class 10 | Physics | 40 Marks | Time: 30 minutes

Email address *

manantbsg@gmail.com

Instructions: 0 of 0 points

1. Select your name correctly.
2. Select your school and section correctly.
3. Attempt all the questions.
4. This paper is for 40 marks
5. Ensure that you have completed and revised your paper before submission.
6. You can attempt your paper only once

Name : *

Manan Y Mehta

School: *

TBSG

Class and Section: *

10 A

37 of 40 points

Choose the correct option

✓ 1. The definition and SI unit of heat capacity is: * 2/2

- ○ The amount of heat required to raise the temperature of 1 kg of a body by 1ºC and SI unit is J/K
- ○ The amount of heat required to raise the temperature of a body by 1ºC and SI unit is cal/ºC
- ◉ The amount of heat required to raise the temperature of a body by 1ºC and SI unit is J/ºC ✓
- ○ The amount of heat required to raise the temperature of 1g of a body by 1ºC and SI unit is cal/K

✓ 2. Which of the following is true about the refractive index of a material? * 2/2

- ○ μ = Apparent depth/real depth and μ= c/v
- ◉ μ = real depth/Apparent depth and μ= c/v ✓
- ○ μ = Apparent depth/real depth and μ= v/c
- ○ μ = real depth/Apparent depth and μ= v/c

✓ 3. An element S with atomic number Z and mass number A decays to form element R with atomic number 85 and mass number 222 after emitting 2 alpha particles and 1 beta particle. The atomic number and mass number of element S will be _____ and _____ respectively. * 2/2

- (●) 88 and 230 ✓
- ( ) 81 and 216
- ( ) 230 and 88
- ( ) 90 and 231

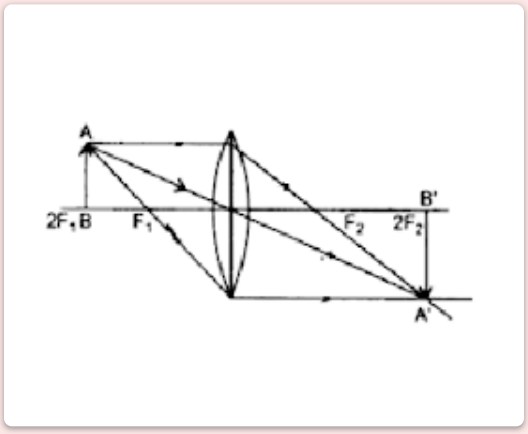
✓ 4. A radio active substance is oxidized. Will there be any change in the nature of its radioactivity? What is the reason? * 2/2

- ( ) Yes there will be a change as number of electrons will change
- ( ) No because there is no change in the number of electrons
- ( ) Yes because there is a change in the nuclear composition
- (●) No because there is no change in the nuclear composition ✓

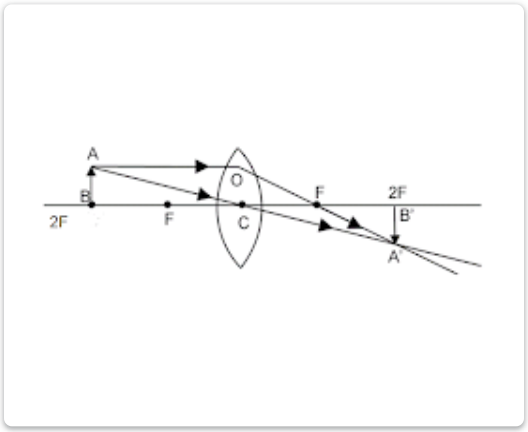
5. Match the electromagnetic radiation with its use. *

	Radio therapy	satellite communication	Radiography	Sterilization	Radio transmission	Therapeuti purpose
Ultra violet radiations	○	○	○	◉	○	○
Infra red radiations	○	○	○	○	○	◉
Gamma rays	◉	○	○	○	○	○
Radio waves	○	○	○	○	◉	○
X-rays	○	○	◉	○	○	○
Microwaves	○	◉	○	○	○	○

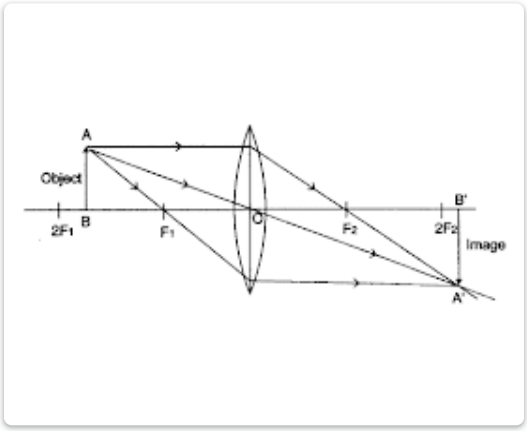
✕ 6. An object is placed between 2F and F as shown in the diagram, Which of the options shows the correct ray diagram for image formation and its size. * 0/2



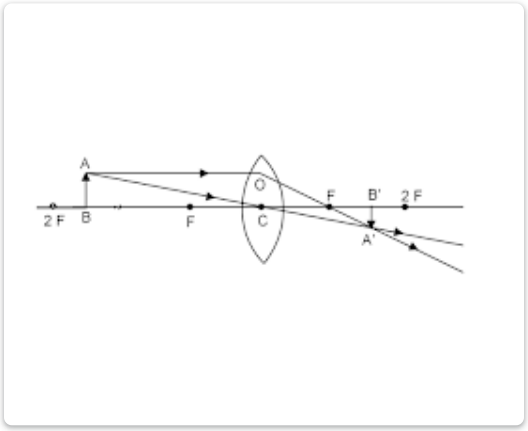
◉ Image is enlarged ✕



○ Image is of the same size



○ Image is magnified



○ Image is diminished

Correct answer

◉ Image is magnified

✓ 7. You have a choice of three metals A, B and C, of specific heat 700 J/kgK, 180 J/kgK, 260 J/kgK respectively to make a calorimeter. Which of these will you use and why? * 2/2

- ○ A because it has the highest specific heat
- ◉ B because it has the least specific heat ✓
- ○ C because its specific heat is neither too high nor too low

✓ 8. Heat lost by hot body is equal to the heat gained by the cold body, provided there is no heat loss to surroundings. This is known as _____. * 1/1

- ○ Principle of conservation of heat energy
- ○ Principle of thermal equilibrium
- ◉ Principle of mixtures ✓
- ○ Principle of equality of heat

✓ 9. State true or false. Melting point and boiling point of a substance increases with the addition of impurities. * 1/1

- ○ True
- ◉ False ✓

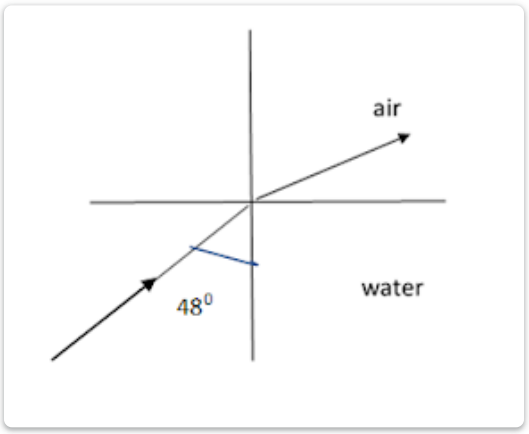
✓ 10. The correct ascending order of the penetrating power of alpha, beta and gamma rays is: * 1/1

- (●) alpha < beta < gamma ✓
- ( ) gamma <beta< alpha
- ( ) beta <alpha <gamma
- ( ) alpha < gamma <beta

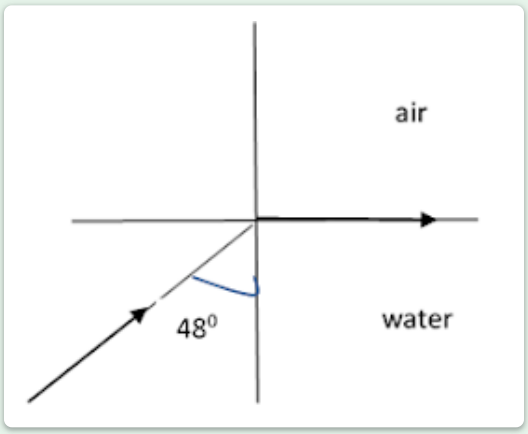
✓ 11. The correct ascending order of the ionizing power of alpha, beta and gamma rays is: * 1/1

- ( ) alpha < beta < gamma
- (●) gamma <beta< alpha ✓
- ( ) beta <alpha <gamma
- ( ) alpha < gamma <beta

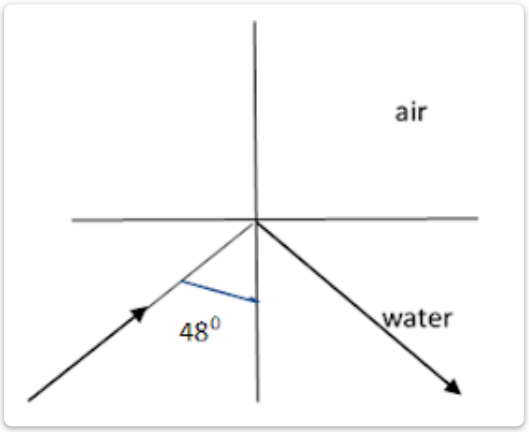
✓ 12. Given that the critical angle for water is 48°, identify the correct diagram. * 1/1



Option 1



Option 2 ✓



Option 3

✓ 13. A ray of light enters from medium A to medium B and does not bent. The reason for this is: * 1/1

Optical density of both the mediums is the same

Incident ray is normal on the surface separating the two media

Both the given options are correct ✓

Both the given options are incorrect

✓ 14. Name the highly energetic invisible electromagnetic wave which helps in the study of crystals. An additional use of the same wave is _____. * 2/2

- ○ X-ray; Additional use- detecting purity of gems
- ○ Gamma -ray; Additional use- to check welding
- ◉ X-Ray; Additional use- to detect fracture in bones ✓
- ○ Infra-red ray; therapeutic use

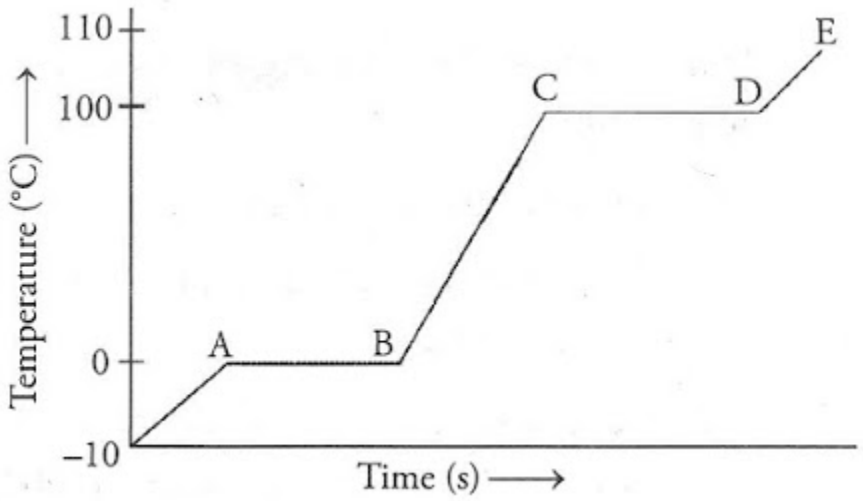
✓ 15. Which is the correct option for refractive indices of red and violet? * 1/1

- ○ μ red > μ violet
- ◉ μ red < μ violet ✓
- ○ μ red = μ violet
- ○ μ red and μ violet are not related

✓ 16. An object of 8 cm height, is placed at a distance 24cm in front of a convex lens of focal length 8 cm. Find the (a) position (b) size and (c) characteristics of the image. * 3/3

- ○ (a) 8 cm on the same side as the object (b) 2.66 cm (c) virtual, erect and diminished image
- ○ (a) 6 cm on the same side as the object (b) 1.33 cm (c) virtual, erect and diminished image
- ○ (a) 8 cm behind the lens (b) 2.66 cm (c) real, inverted and diminished image
- ◉ (a) 12cm behind the lens (b) 4 cm (c) real, inverted and diminished image ✓

✓ 17. A piece of ice is heated at a constant rate. Observe the graph showing variation in temperature with time of heating and answer the next three questions based on it. (i) What is represented by AB? * 1/1



- Freezing of water to ice at 0° C
- Melting of ice to water at 0° C ✓

✓ ii) What is the state of matter at E? * 1/1

- Water at 110° C
- Steam at 110° C ✓

✓ iii) Why is AB shorter than CD? * 1/1

- Because it takes longer for boiling
- Because latent heat of vaporization is greater than latent heat of fusion ✓
- Because latent heat of fusion is greater than latent heat of vaporization
- Because melting happens at a lower temperature

✗ 18. What energy change would you expect to take place in the molecules of a substance when it undergoes a change in state without any change in its temperature? * 0/1

- ○ Intermolecular space increases, potential energy increases
- ○ intermolecular space decreases, kinetic energy decreases
- ○ intermolecular space changes, kinetic energy increases
- ◉ intermolecular space changes, potential energy decreases ✗

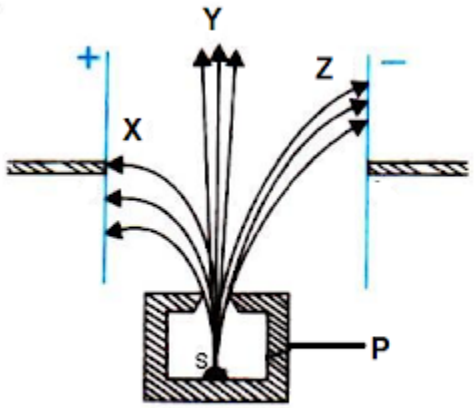
Correct answer

- ◉ Intermolecular space increases, potential energy increases

✓ 19. In beta emission from a radioactive substance, an electron is ejected. This electron comes from: * 1/1

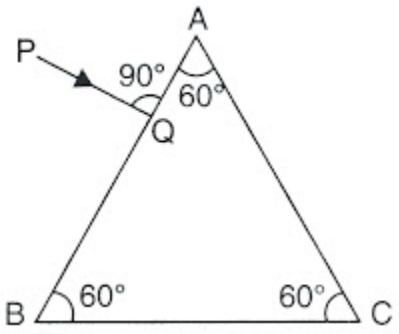
- ○ the inner orbits of the atom
- ◉ the nucleus of the atom ✓
- ○ the outermost orbit of atom
- ○ Surface of the substance

✓ 20. Choose the correct option to identify X, Y and Z respectively, to show the deflection of radioactive radiation in an electric field. What is the material used in P? * 2/2



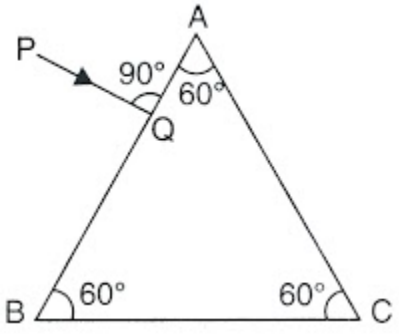
- β, α, γ. P is Uranium
- β, γ, α. P is Lead ✓
- α, γ, β. P is Lead
- α, γ, β. P is Uranium

✓ 21. If the critical angle for glass of the prism is 42º and PQ is incident normally on face AB, then (i) the angles of incidence at faces AB and AC of the prism are_____ and _____ respectively. * 2/2



- 90º and 30º
- ◉ 0º and 60º ✓
- 0º and 30º
- 90º and 60º

✓ (ii) In the fig. in Q 21, the phenomenon that the ray of light suffers at face AC is * 1/1



- Reflection
- Refraction
- ◉ Total internal reflection ✓
- None of the above, the ray passes undeviated

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