

Practice Questions - Term I

Date: 14/11/2021

Subject: Physics

Topic : The Human Eye and the
Colourful World

Class: X

1. Which of the following statement is correct about the twinkling of the stars?
 - A. Stars reflect sun's light in a non-uniform manner.
 - B. Stars keep changing their positions with respect to the observer randomly.
 - C. Light from the stars get refracted by the earth's atmosphere.
 - D. Light from the stars get reflected by the water droplets in the clouds.

2. Tyndall effect is the scattering of light by _____.
 - A. air particles
 - B. solid particles
 - C. liquid particles
 - D. colloidal particles

3. If Ram is facing west and he sees a rainbow in front of him then, in which direction most probably the Sun is?
 - A. North
 - B. South
 - C. West
 - D. East

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4. If the earth had no atmosphere, then at day time, the sky would appear as ____.
- A.** red
 - B.** blue
 - C.** black
 - D.** white
5. The danger signals installed at the top of tall buildings are red in colour. These can be easily seen from a distance because among all other colours, the red light:
- A.** is scattered the most by smoke or fog.
 - B.** is scattered the least by smoke or fog.
 - C.** is absorbed the most by smoke or fog.
 - D.** Reflection of light from the earth.
6. Which colour will be refracted the most when white light is dispersed from a prism?
- A.** Red
 - B.** Green
 - C.** Blue
 - D.** Violet

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7. Which combination of two identical prisms can cancel out the dispersion of white light?
- A.** When placed inverted with respect to each other.
 - B.** When placed perpendicular with respect to each other.
 - C.** When placed at 60° with respect to each other.
 - D.** It's not possible to cancel out the effect of each other.

8. One cannot see through fog because :

- A.** fog absorbs the light.
- B.** light suffers total reflection at droplets.
- C.** refractive index of fog is infinity.
- D.** light is scattered by droplets.

9. Answer the question by selecting the appropriate option given below:

Assertion (A): During rainbow formation, the light disperses into its seven constituent colours.

Reason (R): Air has lots of suspended dust particles.

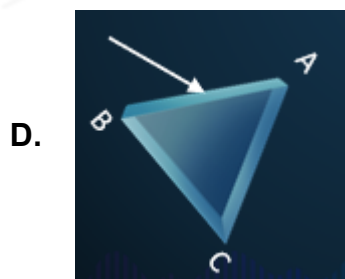
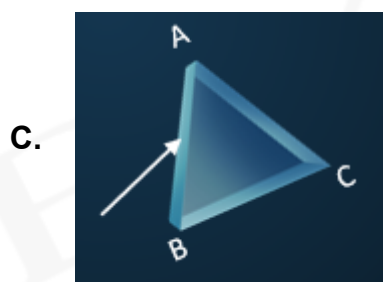
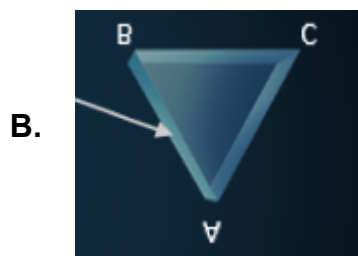
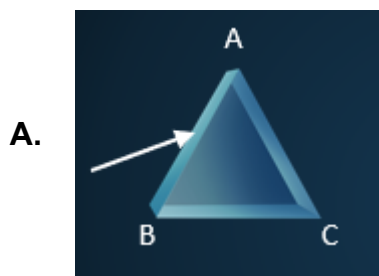
- A.** Both A and R are true, and R is the correct explanation of A.
- B.** Both A and R are true, and R is not the correct explanation of A.
- C.** A is true, but R is false.
- D.** A is false, but R is true.

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10. Assertion (A): The sky appears dark instead of blue to an astronaut.
Reason (R): Scattering of sunlight cannot happen due to the absence of atmosphere in outer space.
Choose the correct option.
- A.** Both A and R are true and R is the correct explanation of A
 - B.** Both A and R are true but R is not the correct explanation of A
 - C.** A is true but R is false
 - D.** A is false but R is true
11. Why does sun appear yellowish-white at the noon?
- A.** Because sunlight has to travel relatively shorter atmospheric distance.
 - B.** Because sun light has to travel longer atmospheric distance.
 - C.** Because only red and violet are scattered.
 - D.** Because all the colours are scattered by the cloud.

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12. A prism ABC (with BC as base) is placed in different orientations. A narrow beam of white light is incident on the prism as shown in figure. In which of the following cases, after dispersion, the third color from the top corresponds to the color of the sky?



13. In Tyndall effect, the colour of light that is scattered depends on:
- A. Size of the scattering particle.
 - B. Colour of scattering particle.
 - C. Temperature of the scattering particle.
 - D. Both temperature and size of the particles.

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14. Statement I: Stars twinkle, while planets shine steadily.
Statement II: The refractive index of the atmosphere is different at different altitudes.

- A. Only statement I is correct.
- B. Only statement II is correct.
- C. Both the statements are correct.
- D. Both the statement are incorrect.

15. Statement 1: There is a time delay between actual sunrise and apparent sunrise.

Statement 2: Since the Earth is spinning on its axis, therefore day and night occur.

- A. Statements 1 and 2 are correct but statement 2 is not the reason of statement 1.
- B. Statements 1 and 2 are correct and statement 2 is the correct reason for statement 1.
- C. Both statements are wrong.
- D. Statement 1 is correct but statement 2 is incorrect.

16. A man observes the sunrise and sunset at 5 : 58 *AM* and 5 : 32 *PM* respectively. What is the length of the day between the actual sunrise and sunset?

- A. 11 *hours 40 minutes*
- B. 11 *hours 34 minutes*
- C. 11 *hours 30 minutes*
- D. 11 *hours 26 minutes*

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17. In an experiment, Rakesh used an equilateral triangular glass prism and projected a narrow beam of white light source from one side of the surface of the prism. He placed a screen on the other side and saw many colours appearing as patches on the screen. But when he placed a second identical prism in an inverted position with respect to the first prism, he found a beam of white light emerging out from the other side of the second prism.

Why did the white light split into its constituent colours after passing through the first prism?

- A. Refractive index of each colour of light is different.
 - B. Wavelength of each colour of light is different.
 - C. Speed of each colour of light is different in the glass prism.
 - D. All of the above
18. In an experiment, Rakesh used an equilateral triangular glass prism and projected a narrow beam of white light source from one side of the surface of the prism. He placed a screen on the other side and saw many colours appearing as patches on the screen. But when he placed a second identical prism in an inverted position with respect to the first prism, he found a beam of white light emerging out from the other side of the second prism.

If Rakesh had passed a monochromatic light through the prism, then which of the following phenomenon would be observed?

- A. Dispersion
- B. Refraction
- C. Reflection
- D. Scattering

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19. In an experiment, Rakesh used an equilateral triangular glass prism and projected a narrow beam of white light source from one side of the surface of the prism. He placed a screen on the other side and saw many colours appearing as patches on the screen. But when he placed a second identical prism in an inverted position with respect to the first prism, he found a beam of white light emerging out from the other side of the second prism.

If the white ray falls on the system arranged in the given way, then what will be the topmost colour of the output light coming from the third prism?



- A. Red
- B. Yellow
- C. Violet
- D. Blue

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20. In an experiment, Rakesh used an equilateral triangular glass prism and projected a narrow beam of white light source from one side of the surface of the prism. He placed a screen on the other side and saw many colours appearing as patches on the screen. But when he placed a second identical prism in an inverted position with respect to the first prism, he found a beam of white light emerging out from the other side of the second prism.

What would've Rakesh observed if he had kept the prism inside the water instead of air and had passed the same white light through it?

- A.** White light would've passed through prism without splitting.
- B.** The angle of deviation of each splitted ray would've increased.
- C.** The angle of deviation of each splitted ray would've decreased.
- D.** Splitted red light would've bent more than the splitted blue light.