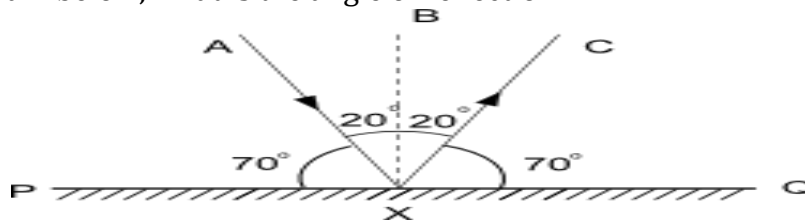


**WANYANGE GIRLS SCHOOL**  
**S.2 PHYSICS TOPICAL TEST TWO**  
**LIGHT AND HEAT**

1. From the diagram below, what is the angle of reflection?



- A.  $20^{\circ}$       B.  $40^{\circ}$       C.  $70^{\circ}$       D.  $90^{\circ}$
2. Which of the following are the properties of a plane mirror image?  
 (i) The image is the same size as the object.  
 (ii) The image is virtual.  
 (iii) The image is inverted.  
 A. (i) only      B. (i) and (ii) only  
 C. (i) and (iii) only      D. (i), (ii) and (iii)
3. An incident ray strikes a plane mirror at an angle of incidence of  $40^{\circ}$ . What is the decrease in the angle of reflection if the incident ray moves to an angle of incidence of  $30^{\circ}$ ?  
 A.  $10^{\circ}$       B.  $20^{\circ}$       C.  $30^{\circ}$       D.  $40^{\circ}$
4. The brightness of the image formed by a pinhole camera depends on A. the size of the object  
 B. the shape of the object  
 C. the size of the pinhole      D. the shape of the pinhole
5. The boiling point of water on a kelvin scale is.  
 A. 273 K      B. 373 K      C. 100 K      D. 0 K
6. Which one of the following is not a property of the image of an object placed 12cm in front of a plane mirror?  
 A. it is behind the mirror      B. it is 12cm from the mirror      C. it is laterally inverted  
 D. it is real
7. A person stands 5 m away from the mirror. Find the distance that the person must move in order to be 2 m away from the image in the mirror.  
 A. 1 m      B. 3 m      C. 4 m      D. 7 m
8. Two girls S and M are standing along a straight line in front of a plane mirror in their dormitory. If S is 1m from the mirror and the image of M is 4 m from M, find how far apart from each other.  
 A. 2.0 m      B. 4.0 m      C. 1.0 m      D. 3.0m
9. To make a liquid-in-glass thermometer sensitive to a small change of temperature we must have;  
 A. A bulb with a thin glass wall.      B. A strong liquid in the bulb.  
 C. A very narrow bore.      D. A stem with a thick glass wall.
10. Linear magnification is defined as the ratio of

- A. Object distance to image distance  
distance to focal length
- B. Object height to image height  
Image height to object height
- C. Image distance to focal length
- D. Image height to object height
11. In a solar heating system, black layers are used because they are:
- A. Bad emitters of heat
- B. bad absorbers of heat
- C. Good absorbers of heat
- D. good reflectors of heat
12. The hands of an image of an unnumbered clock face in a plane mirror indicate 6:20. The actual time is
- A. 5:40
- B. 6:20
- C. 6:40
- D. 7:40
13. An object is placed 30 cm in front of a plane mirror. If the mirror is moved through a distance of 6 cm towards the object, find the distance between its image and its object.
- A. 24 cm
- B. 36 cm
- C. 48 cm
- D. 60 cm
14. Diffuse reflection occurs when
- A. parallel beam of light is reflected in all directions
- B. a parallel beam light falls on a highly polished surface.
- C. a parallel beam of light is reflected as a parallel beam of light.
- D. the angles of incidence of rays the beams are equal to the angles of reflection.
15. An object 6 cm high is placed 24 cm from a tiny hole in a pin-hole camera. If the distance from the hole to the screen is 8 cm, find the size of the image on the screen.
- A. 0.2 cm
- B. 2.0 cm
- C. 18.0 cm
- D. 32.0 cm
16. When a pin-hole camera is moved nearer to an object, the size of the image
- A. remains the same
- B. becomes smaller
- C. becomes larger
- D. becomes diminished
17. The eclipse of the sun takes place when the shadow of the
- A. earth falls on the moon
- B. sun falls on the moon
- C. moon falls on the sun
- D. moon falls on the earth
18. A sensitive thermometer is one which
- A. is sensitive to heat
- B. has large bore
- C. can record big changes in temperature
- D. can record small changes in temperature
19. Which of the following is a false?
- A. Pinhole camera produces an erect image.
- B. Pinhole Camera produces a shadow
- C. Pinhole Camera produces an image
- D. Pinhole Camera produces an inverted image
20. Light can travel in
- A. air only
- B. vacuum only
- C. both air and vacuum
- D. none of the mediums

**SECTION B**

21. Distinguish between heat and temperature. (2 marks)

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22. (a) What is a thermometer? (1 mark)

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(b) Name three types of thermometers. ( $\frac{1}{2}$  marks)

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23. (a) Define the term thermometric substance. (1 mark)

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(b) State three characteristics of a good thermometric substance. (3 marks)

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24. Use particle behavior of matter to explain conduction. (3 marks)

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25. What are the three modes of heat transfer? ( $\frac{1}{2}$  marks)

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26. Explain and state four factors which affect heat transfer in metals. (4 marks)

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27. (a) State four characteristics of images formed by a plane mirror. (4 marks)

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(b) Explain the meaning of the following terms as applied in light.

(i) Lateral inversion. (1 mark)

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(ii) Virtual image (1 mark)

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28. (a) State the laws of reflections. (2 marks)

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(b) Define the terms:

(i) Angle of incidence (1 mark)

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(ii) Angle of reflection (1 mark)

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(iii) The normal (1 mark)

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(c) With the help of a ray diagram, show how a plane mirror forms an image of a point object. (3 marks)

27. (a) With the help of a diagram distinguish between regular reflection and diffuse reflection. (4 marks)

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(b) Give an example of each of the type of the reflection in 27 (a) above. (2 marks)

28. (a) State the principle of reversibility (1 mark)

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(b) Describe an experiment to verify the principle of reversibility (5 marks)

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**END.**