Science

Prep.2

Second Term 2024-2025

Final Revision

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* طبقاً لأخر تعديل في المادة للعام الدراسي 2024-2025

Final Revision

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(1) Write the scientific term:

1	Non-audible waves whose frequencies are less than 20 Hz.	(.....)
2	Maximum displacement of the oscillating body away from its rest position.	(.....)
3	The transfer of pollen grains from the anthers of a flower to the stigmas of another flower of the same kind.	(.....)
4	The measuring unit of noise intensity.	(.....)
5	The flower that has four whorls.	(.....)
6	The ability of the medium to refract light.	(.....)
7	The flower which contains both androecium and gynoecium.	(.....)
8	The motion produced as a result of the vibration of the particles of the medium at a certain moment in a definite direction.	(.....)
9	The motion of an oscillating body when it passes by a fixed point on its path two successive times in the same direction.	(.....)
10	It is an external stimulus that affects the ear and causes hearing.	(.....)
11	The process of transfer pollen grains from the flower anther to the stigma.	(.....)
12	A tool is used to determine the pitch of an unknown tone.	(.....)
13	A group of green leaves each of them is called sepal.	(.....)
14	The cell resulting from [illegible] ovum nuclei.	(.....)
15	The reflection in [illegible] directions when falling on the rough surface.	(.....)
16	The amount of light that falling perpendicular to a unit area of a surface in one second.	(.....)

17	The property of sound by which the human ear can be distinguish between sharp and harsh sounds	(.....)
18	The time taken by the oscillating body to make one complete oscillation.	(.....)
19	The highest point in the transverse wave.	(.....)
20	The measuring unit of sound intensity	(.....)
21	The number of complete oscillations made by the body in one second.	(.....)
22	It is a natural phenomenon that takes place on the desert roads at noon especially in the summer times.	(.....)
23	The change of light path when it travels from a transparent medium to another.	(.....)
24	A disturbance that propagates and transfers energy along the direction of propagation	(.....)
25	The angle between the emergent light ray and the normal.	(.....)
26	Angle of incidence= Angle of reflection	(.....)
27	The periodic motion of an oscillating body around its rest point, where the motion is repeated through equal intervals of time.	(.....)
28	Waves that need medium to travel and can't travel in space	(.....)
29	A property by which the human ear can distinguish between strong and weak sounds.	(.....)
30	Rebounding of light waves in the same medium due to meeting a reflecting surface.	(.....)
31	An angle between the incident light ray and the normal at the point of incidence on the interface.	(.....)
32	The flower that contains the four whorls	(.....)
33	The point of the lowest density and pressure in the longitudinal wave	(.....)
34	Bodies don't allow ssage of light through them.	(.....)
35	A new method to produce large numbers of plants from small parts of it.	(.....)

36	A floral whorl in the flower, whose function to attract insects as it is colorful and scented.	(.....)
37	The time needed by the oscillatory body to make a complete oscillation.	(.....)
38	Waves of frequencies ranging from 20 Hz to 20000 Hz.	(.....)
39	The intensity of sound at a certain point is inversely proportional to the square of the distance between this point and the sound.	(.....)
40	The scientist who discovered that the energy of photon depends on its frequency.	(.....)
41	The ability of the medium to refract light rays.	(.....)
42	Fusion of the nucleus of the male cell with the nucleus of the female cell.	(.....)
43	The disturbance that propagates and transfers energy in the direction of propagation	(.....)
44	The area in the longitudinal wave, at which the medium particles are of the highest density and pressure	(.....)
45	The distance that a wave travels in one second.	(.....)
46	The product of Planck's constant times the frequency of photon.	(.....)
47	A modern way of multiplying a small part of the plant to get a large number of plants.	(.....)
48	The ratio between the speed of light in air and its speed in a transparent medium.	(.....)
49	Wave consists of crests and troughs.	(.....)
50	Short stem where the leaves developed and modified into reproductive organs.	(.....)
51	The waves which need a medium to propagate.	(.....)
52	The reflection in which the light rays are [illegible] when falling on a r[illegible] surface.	(.....)
53	A phenomenon that appears in the desert as a result of reflection and refraction of light.	(.....)

54	The property by which the ears can distinguish between sounds with respect to the nature of the source even if they are equal in pitch and intensity.	(.....)
55	The motion produced as a result of the vibration of the particles of the medium at a certain moment and in a certain direction	(.....)
56	The angel between the reflected ray and the normal at the incidence point on the reflecting surface.	(.....)
57	The ability of the medium to refract light rays.	(.....)
58	The number of complete oscillations in one second.	(.....)
59	Sound waves their frequency is more than 20000 Hz.	(.....)
60	Incident ray, reflected ray and normal line, all locate in one plane which is perpendicular on reflecting surface.	(.....)
61	An instrument used to determine the frequency of unknown sound tone.	(.....)
62	A design composed of a tube, where water moves in the form of circular waves for treating sprains and cramps.	(.....)
63	Sound waves have frequency less than 20 Hz.	(.....)
64	A male hormone that responsible for the appearance of secondary sex characters	(.....)
65	The fusion of the male gamete with the female gamete.	
66	A tube that helps to transfer the sperms from testes to urethra.	
67	Two glands of oval shape that produce male cells (gametes) in human.	
68	A fluid secreted by male genital associated glands.	
69	The hormone which is responsible for continuity of pregnancy.	
70	Two glands exist ins[illegible] crotal sac in male.	
71	Two tubes of fun[illegible]ed opening provided with finger like projection and lined with cilia.	

(2) Choose the right answer:

1. The zygote contains ..... of the genetic material of the sperm.
a. half b. double c. quarter d. three times

2. The light ray refracts ..... the normal when it travels from air to glass.
a. near to b. away from c. perpendicular to d. along

3. All the following are from the factors affecting sound intensity except the .....
a. amplitude. b. frequency. c. density of medium. d. wind direction.

4. The ovule after fertilization becomes a .....
a. seed. b. seed coat. c. fruit. d. coat of fruit.

5. The amplitude of the simple pendulum is ..... of a complete vibration.
a. four times. b. a quarter. c. a half. d. double.

6. The quantum of energy of green light is ..... the quantum of energy of yellow light.
a. greater than b. equal to c. less than d. no correct answer

7. Light waves are ..... waves.
a. mechanical transverse b. electromagnetic longitudinal
c. electromagnetic transverse d. mechanical longitudinal

8. A sound wave travels in air with velocity 330 m/s and has a wavelength of 0.1 m, its frequency is .....
a. 330 KHz. b. 3300 Hz. c. 33 KHz. d. 330 Hz.

9. From the typical flowers is .....
a. palm. b. maize. c. petunia. d. pumpkins.

10. The absolute refractive index of water is .....
a. 0.5 b. 0.8 c. 0.33 d. 1.33

11. The ovum contains .....of the genetic material of the plant species.
a. double b. half c. quarter d. all

12. The artificial vegetative reproduction is done in plants by .....
a. grafting. b. cutting. c. tissue culture. d. all the previous.

13. When the incident light ray reflects on itself, the angle of incidence equals .....
a. 0° b. 90° c. 120° d. 180°

14. When the distance between the source of light and the surface of a wall is doubled, the light intensity on the surface .....
a. decreases to a qua... b. increases to double.
c. remains constant. d. ... decreases ...

15. The speed of the ball of the simple pendulum ..... as we move away from the rest position.
a. doesn't affect b. decreases c. is doubled d. no correct answer

16. The ..... color light in the spectrum colours has the highest deviation.
a. white b. red c. violet d. yellow

17. The corolla leaves are called .....
a. petals. b. carpels. c. stamens. d. sepals.

18. Regular reflection appeared on .....
a. the skin. b. a plan mirror. c. a tree leaf. d. a piece of wood.

19. Flowers pollinated by air characterized by all of the following except .....
a. hanged anthers. b. feathery like stigmas.
c. scented petals. d. light pollen grains.

20. If the distance between the center of the third compression and that of the fifth compression is 20 cm, the wavelength of this wave is .....
a. 40 cm. b. 20 cm. c. 10 cm. d. 5 cm.

21. Pollen grains are formed inside the ..... of the flower.
a. carpel b. anther c. ovary d. calyx

22. The photon energy= Plank's constant x .....
a. wavelength. b. velocity. c. amplitude. d. frequency.

23. The distance between two successive compressions is called .....
a. frequency. b. periodic time. c. wavelength. d. velocity.

24. If the frequency of an oscillating body is 10 Hz, so the periodic time is .....
a. 10 sec. b. 0.01 sec. c. 0.1 sec. d. 1 sec.

25. The sound of frequency 500 Hz is ..... than the sound of frequency 100 Hz.
a. stronger b. sharper c. weaker d. harsher

26. When the distance between the light source and a certain surface is doubled, the light intensity on the surface .....
a. decreases to quarter. b. increases four times.
c. is doubled. d. remains constant.

27. The angle of incidence of light is ..... its angle of reflection.
a. larger than b. smaller than c. equal to d. no correct answer

28. After fertilization, the ovary develops to become a .....
a. fruit. b. sepal. c. petal. d. flower.

29. Tulip is an example for ..... flower.
a. female b. male c. bisexual

30. After fertilization, ... develops to become a seed.
a. flower b. ovary c. ovule

31. Sound of frequency 200 Hz is ..... than sound of frequency 100 Hz.
a. sharper b. stronger c. harsher d. weaker

32. If the angle between the incident light ray and the reflected light ray is 90°, so the angle of incidence equals .....

a. 0° b. 90° c. 45° d. no correct answer

33. The light waves are ..... waves.

a. mechanical transverse b. electromagnetic transverse
c. mechanical longitudinal d. electromagnetic longitudinal

34. The floral whorl, which is absent in the female flower is .....

a. calyx. b. corolla. c. androecium. d. gynoecium.

35. The sound velocity is maximum in .....

a. vacuum. b. gases. c. liquids. d. solids.

36. The periodic time of a tuning fork which makes 240 waves in one minute equals .....

a. 1 sec. b. 4 sec. c. 0.5 sec. d. 0.25 sec.

37. ..... waves are longitudinal waves.

a. Water b. Light c. Sound d. Radio

38. If the angle between the incident light ray and the reflected light ray is 30° so, the angle of reflection is .....

a. 30 b. 15 c. 60 d. 40

39. Pollen grains are produced from the .....

a. ovary. b. calyx. c. anther. d. gynoecium.

40. All the following are factors affecting sound intensity except .....

a. amplitude of vibration. b. frequency.
c. medium density. d. wind direction.

41. A medium that prevents light to pass through it is called ..... medium.

a. transparent b. translucent c. opaque d. no correct answer

42. The submerged object in water as a fish is seen in an apparent position slightly above its real position due to ..... of the light rays.

a. refraction b. reflection c. analysis d. total internal reflection

43. From the methods of cross pollination is .....

a. air. b. insects. c. human. d. all of them.

44. White light analyzes into ..... spectrum colours.

a. 3 b. 7 d. 9

45. The measuring unit of wave velocity is .....

a. meter. c. Hz d. sec.

46. If the angle between the incident light ray and the reflected light ray is 40°, so the angle of reflection equals .....

a. 90° b. 80° c. 20°

47. The doctors use waves with a frequency ..... to break down kidney stones.
a. less than 20 Hz b. 20 Hz c. more than 20 KHz

48. Sound intensity in air is ..... that in carbon dioxide.
a. less than b. more than c. equal to

49. The absolute refractive index of any material is always ..... one.
a. less than b. more than c. equal

50. In ..... reflection, the reflected rays are reflected in many directions.
a. uniform b. irregular c. both (a) and (b)

51. All of these sounds are of uniform frequency except the sound of .....
a. piano. b. violin. c. loudspeakers. d. guitar.

52. The highest point in the transverse wave is called .....
a. trough. b. compression. c. crest. d. rarefaction.

53. All the following are electromagnetic waves except ..... waves.
a. light b. sound c. infrared d. radio

54. The voice of Adam differs from that of Sara because they are different in .....
a. age. b. intensity. c. pitch. d. kind.

55. The quantum of energy of green light is ..... the quantum of energy of yellow light.
a. greater than b. equal to c. smaller than d. no correct answer

56. ..... media do not allow light to pass through it.
a. Transparent b. Translucent c. Opaque d. no correct answer

57. The floral whorl which is absent in the female flower is .....
a. calyx. b. corolla. c. androecium. d. gynoecium.

58. If the angle between the incident light ray and the reflected light ray is 90°, so the angle of reflection will be equal .....
a. 0° b. 30° c.45° d. 90°

59. Plank's constant= the photon energy divided by photon .....
a. frequency. b. density. c. wavelength. d. amplitude.

60. Doctors use waves of a frequency ..... to break down kidney and ureter stones.
a. more than 20 Hz b. less than 20 KHz
c. 20 Hz d. more than 20 KHz

61. The produced fruit [illegible] grafting belongs to the type of the .....
a. scion. b. [illegible]ut. c. stock. d. bud.

62. The maximum displacement made by the oscillating body away from its original position is .....
a. amplitude. b. frequency. c. periodic time. d. complete.

63. The distance between two successive troughs or two successive crests in the transverse wave is .....

a. wavelength. b. amplitude. c. frequency. d. wave velocity.

64. Pollination in colored flowers takes place by .....

a. insects. b. man. c. water. d. air.

65. The sound velocity is measured in ..... unit.

a. Hertz b. m/sec. c. decibel d. metre

66. The human skin is considered as a/an ..... medium.

a. transparent b. opaque c. translucent d. no correct answer

67. If the light speed in air is higher than that in another transparent medium, so the refractive index is .....

a. zero b. 1 c. more than 1 d. less than 1

68. Two gears of Savart's wheel rotate at a same velocity, if the number of teeth of the first gear is 90 teeth and the number of the second is 60 teeth, then the ratio between their frequencies is .....

a. 1 : 2 b. 3 : 2 c. 2: 1 d. 5: 2

69. Artificial vegetative reproduction by cutting can be done in .....

a. peach. b. palm. c. grapes. d. olive.

70. The measuring unit of noise intensity is .....

a. decibel. b. Hz. c. watt/m2 d. metre.

71. All of the following plants reproduce sexually except.....

a. bean plant. b. pea plant. c. potato. d. olive plant.

72. When distance between sound source and the ear is doubled, the sound intensity .....

a. decrease to its half b. increases twice.

c. decreases to its quarter. d. increases four times

73. The male reproductive organ in the flower is .....

a. gynoecium. b. corolla. c. calyx. d. androecium.

74. The light ray refract ..... the normal when it travels from air to glass.

a. near to b. away from c. perpendicular to d. along

75. A pencil seems broken when it is placed in a glass cup of water due to ..... of light.

a. critical angle b. [illegible] c. [illegible] d. reflection

76. An organ which is responsible for formation of ova in the flower is .....

a . another. b. ovary. c. corolla. d. stamen.

77. Sound wave travels in air with velocity of 340 m/s. and its frequency is 20 Hz. The wavelength of it is .....

a . 14 cm. b. 170 cm. c. 170 m. d. 1700 cm.

78. The plant ovary produces .....

a. Pollen grains. b. ovum. c. sperms. d. ovule.

79. ..... is a short stem where leaves developed and modified into reproductive organs.

a. Tuber b. Flower c. Stock d. Scion

80. The colorful and scented flower leaves are called .....

a. sepals. b. stamens. c. carpels. d. petals.

81. The human ear cannot hear sound of frequency .....

a. 50 Hz. b. 300 Hz. c. 10 Hz.

82. The male reproductive organ in flower is .....

a. gynoecium. b. androecium. c. corolla.

83. The ovum contains ..... of the genetic material of the plant species.

a. half b. all c. quarter

84. The artificial vegetative reproduction is done by .....

a. cutting. b. grafting. c. all the previous.

85. Velocity of sound in air equals ..... m/s.

a. 340 b. 1500 c. 3×10^8

86. From artificial vegetative reproduction .....

a. cutting. b. grafting. c. tissue culture. d. (a) , (b) and (c).

87. Calyx consists of a group of green leaves each of them is called .....

a. sepal. b. carpel. c. petal. d. micropyle.

88. The result of multiplying frequency of an oscillating body by its periodic time equals .....

a. one. b. negative value. c. constant value. d. variable value.

89. A natural phenomenon takes place on the desert roads at noon due to reflection and refraction of the light .....

a. lightning. b. thunder. c. mirage. d. rainbow.

90. After fertilization, the ovule develops into .....

a. ovary. b. fruit. c. seed. d. seed coat.

91. We can hear all of the following sounds except .....

a. 40 Hz. b. 60 KHz. c. 10 KHz. d. 60 Hz.

92. Light refraction is due to the difference in ..... through different media.

a. sound intensity b. nature of the surface
c. light velocity d. all the previous answer.

93. The absolute refractive index of any material is always .....

a. more than one. b. less than one. c. equal to one. d. equal zero.

94. The zygote contains ..... of the genetic material of the plant species.

a. half b. all c. quarter d. third

95. The artificial vegetative reproduction is done in plants by .....

a. cutting. b. grafting. c. tissue culture. d. all the previous.

96. The flower is a modified .....

a. stem. b. leaf. c. root. d. branch.

97. The transverse waves consists of .....

a. crests and compressions. c. crests and troughs.
b. compressions and rarefactions. d. rarefactions and troughs.

98. Sound of different musical instruments can be differentiated from each other by .....

a. harmonic tones. b. fundamental tone.
c. sound intensity. d. sound pitch.

99. The submerged object in water is seen in an apparent position slightly above its real position due to ..... of light.

a. reflection b. interference c. diffraction d. refraction

100. The male genital system consists of vas deferens, penis and .....

a. urethra b. cervix c. vagina d. endometrium

101. ..... hormone in males is responsible for appearance of secondary sex characters

a. testosterone b. progesterone c. insulin d. estrogen

102. All of the following are organs of male reproductive system, except .....

a. vas deferens. b. uterus. c. testes. d. penis.

103. The ovary in female human releases one ripe ovum every ..... days.

a. 14 b. 28 c.34 d. 56

104. ..... hormone is responsible for the continuity of pregnancy.

a. Testosterone b. Estrogen c. Thyroxin d. Progesterone

105. The sperm consists of ....., middle part and tail.

a. head b. prostate c. cilia d. membrane

✹(3) Complete the following:

1. ..... is a transparent medium of light but wood is a(an) ..... medium.
2. The ovule inside the ovary is converted into ..... after fertilization.
3. ..... waves are used in breaking the stones of kidneys and ureters.
4. Sharp tones have ..... frequencies, while rough tones have ..... frequencies.
5. ..... is the male reproductive organ in the plant, while ..... is the female reproductive organ in the plant.
6. Harmonic tones are lower in ..... and higher in ..... than fundamental tones.
7. In transverse wave, the particles of the medium vibrate ..... the direction of wave propagation.
8. In the flower, the corolla consists of colored leaves, each leaf is called .....
9. The ratio between the velocity of light through air to the velocity of light through another transparent medium is known as .....
10. The outer whorl of the flower is the ..... and it consists of leaves called .....
11. Angle of ..... is the angle between the refracted light ray and .....
12. The measuring unit of noise intensity is ....., while the measuring unit of the periodic time is .....
13. The crest in the ..... wave is equivalent to the ..... in the longitudinal wave.
14. The velocity of the oscillating body reaches its ..... value when it passes its rest position.
15. Transverse wave consists of ..... and .....
16. When light travels from a medium of ..... optical density to another of ..... optical density, it refracts far from the normal line.
17. Types of pollination are ..... and .....
18. Fertilization is process of fusion the male cell nucleus with ..... nucleus to form .....
19. If the angle between the incident light ray and the reflecting surface is 25°, so the angle of reflection = ...
20. The frequency of sonic waves ranges between ..... Hz to ..... KHz.
21. The voice of women is ..... pitched, while the voice of men is ..... pitched.
22. The cell produced from the fusion of pollen grain with the ovum nucleus is called .....

23. Sound ..... is the property by which the ear can distinguish between harsh and sharp sounds.

24. Waves are classified according to the ability to propagate and transfer energy into ..... and ..... waves.

25. Complete oscillation consists of ..... displacements (amplitudes).

26. Max Planck proved that the energy of light wave consists of energy quanta known as .....

27. The calyx of the flower consists of green leaves called .....

28. Stamen consists of anther and .....

29. Savart's wheel is used to determine the ..... of an unknown tone.

30. The stigmas are feathery like and sticky to .....

31. ..... is the reflection of light rays when they meet a rough surface.

32. A pencil partially immersed in water appears as being .....

33. The periodic time of an oscillating body which make 480 oscillations in one minute equals .....

34. The measuring unit of noise intensity is ..... , while ..... is the measuring unit of the amplitude.

35. After fertilization, the ovary grows forming the ..... , while the ovule converted into .....

36. The glass prism is used to analyses the ..... light into ..... colors.

37. As the amplitude increases, the sound intensity .....

38. Infrasonic waves are sound waves of frequencies less than ..... Hz.

39. When a light ray falls perpendicular on a reflecting surface the angle of reflection equals .....

40. Sound pitch is a property by which ear can distinguish between ..... and .....

41. Sound wave velocity = ...

42. ..... motion is ..... which is regularly ..... in equal periods of time.

43. Sound travels through air as pulses of ..... and .....

44. In the uniform reflection, the light rays reflect in ..... direction when they fall on a ..... surface.

45. The energy of the photon is ..... proportional to the ..... of the light wave.
46. ..... color has the longest wavelength, while ..... has the shortest wavelength.
47. If the vertical distance between crest and trough is 4 cm, the amplitude equals ..... cm.
48. ..... are transverse waves, while ..... waves may be longitudinal or transverse waves.
49. Oscillatory motion and ..... motion is from ..... motion.
50. Light intensity is ..... proportional to ..... of the distance between the surface and the source.
51. The flower of pumpkins is ..... flower, while the flower of tulip is ..... flower.
52. When you look at a coin in a glass of water, its ..... position appears to be lower than the ..... position.
53. The maximum displacement done by the oscillating body away from its rest point is called .....
54. Stamen of the flower consists of ..... and .....
55. The measuring unit of the frequency is ..... but the measuring unit of the noise intensity is .....
56. Pollen grains which spread by wind are produced by ..... numbers, and their weight is .....
57. Sounds can be classified into two groups, musical tones of ..... frequency and noises of ..... frequency.
58. The human skin is considered ..... medium, while pure glass is ..... medium for light.
59. The Sound if from ..... waves that can't travel through.....
60. In a flower, the calyx consists of ..... but group of petals form .....
61. The high-pitched sounds have high ..... and small .....
62. There are two types of periodic motion which are ..... motion and ..... motion.

63. Light ..... is the change of light path when it travels from a transparent medium to another one of different .....
64. The light velocity is the distance .....
65. Light travels through the ..... media in ..... lines.
66. Sound waves are longitudinal waves because particles of the medium vibrate ..... the direction of wave propagation.
67. The light reflection is classified in two types which are ..... and .....
68. From properties of light is that light travels in ..... lines.
69. The frequency of the oscillation body is measured by unit called .....
70. The measuring unit of sound intensity is ..... while that of noise intensity is .....
71. The angle of incidence ..... the angle of reflection.
72. In the ..... waves, the particles of the medium vibrate perpendicular to the direction of wave propagation.
73. The ..... are small cells that formed in the anther of the flower.
74. The sound intensity at a point is ..... proportional to the square of the distance between this and the source of sound.
75. Each carpel consists of a swollen part called ovary which connects with tube called ..... and ending in.....
76. The frequency of sonic waves ranges between..... Hz and ..... Hz
77. The amplitude equals ..... of a complete oscillation.
78. Sound is produced from ..... of bodies.
79. The natural vegetative reproduction in potatoes is done by.....
80. Frequency of sonic wave, ranges between ..... Hz and ..... Hz.
81. ..... is considered the simplest form of oscillatory motion.
82. Calyx of a flower consists of green leaves called ..... but corolla consists of colored leaves called .....
83. From the artificial vegetative reproduction in plant are ..... and .....

84. If the angle between the incident light ray and reflected light ray is 100° , so the angle of reflection = ...

85. The sound velocity is measured in ..... unit while the sound intensity is measured in .....

86. The bisexual flower contains ..... and ....., but the male flower contains ..... only.

87. In ..... reflection, rays are reflected in one direction.

88. The complete oscillation include 4 displacements, each one is called.....

89. ..... sound wave accompany the blowing of storms before rainfall.

90. After fertilization the ovary of the flower grows forming the.....

91. Male gametes in man are known as ..... ,while the female gametes are known as .....

92. ..... hormone which is responsible for the appearance of secondary female sex characters.

93. The ..... hormone in male and ..... hormone in female are responsible for appearance of secondary characters.

94. The human zygote results from the fusion of ..... and .....

95. Testes produce ..... and secrete ..... hormone.

✹(4) Correct the underlined words:

1	Sound pitch is increased by **decreasing** the frequency.	(.....)
2	A complete oscillation comprises of **two** amplitudes.	(.....)
3	The angle between the incident light ray and the reflected light ray = 100°, so the angle of reflection = **60°**	(.....)
4	Reproduction by tubers can be used in **apples**	(.....)
5	The human skin is considered as **translucent** medium.	(.....)
6	The energy of light quantum is directly proportional to its **wavelength**	(.....)
7	The big colored flowers are pollinated by **air**	(.....)
8	The crest in the transverse wave is equivalent to the **bottom** in the longitudinal wave	(.....)
9	We see the submerged objects in water in a **lower** position than its real position	(.....)
10	Fusion between the pollen grain and the ovum is called **pollination**.	(.....)
11	Changing the light ray path when it faces a transparent object is considered **light reflection**	(.....)
12	The light travels in **curved** lines.	(.....)
13	The absolute refractive index of any material is always **smaller than one**	(.....)
14	In pollination by **water** the flower has feathery like and sticky stigma	(.....)
15	The movement of the clock pendulum is an example of **wave motion.**	(.....)
16	The sound intensity **decreases**, when the source of sound touches an empty box	(.....)
17	**Yellow** colour is the first colour in spectrum colors.	(.....)
18	Each carpel consists of ovary, **filament** and stigma	(.....)
19	**Sonic** waves are used in sterilization of milk.	(.....)
20	If the distance between the first crest and the second crest on the wave propagation is 10 cm, then the wavelength of this wave is **20** cm.	(.....)
21	Human ear can distinguish between sound of frequencies ranging between **10** ... 0 Hz	(.....)
22	**Ovule** consists of stigma, style and ovary.	(.....)
23	Particles of the medium vibrate along the direction of the wave propagation in the **transverse** wave	(.....)

24	The angle of incident of a light ray is **greater than** the angle of reflection.	(.....)
25	**Rainbow** phenomenon takes place on desert roads at noon specially in summer.	(.....)
26	Colored **sepals** attract insects for pollination.	(.....)
27	Speed of sound in water is slower than in **air**.	(.....)
28	Reproduction by tubers can be used in **apples and pears.**	(.....)
29	Unit of sound intensity is **Hertz**.	(.....)
30	Harmonic tones companying the fundamental tone lower in **pitch**.	(.....)
31	The wall of the **ovule** after fertilization forms the wall of the fruit.	(.....)
32	Reproduction by **tuber** happens in orange	(.....)
33	When the sound source touches a resonance box, the sound intensity **decreases**.	(.....)
34	Grafting by **wedge** in which scion is attached to stock.	(.....)
35	**Oscillatory** motion is the motion that is repeated regularly in equal time.	(.....)
36	Light **refraction** is rebounding of light wave in the same medium.	(.....)
37	Sweet potatoes is reproduced by **grafting**.	(.....)
38	The sound intensity **decreases** by increasing the density of the medium and vice versa.	(.....)
39	The result of multiplying the frequency of an oscillating body by its periodic time equals **variable value.**	(.....)
40	Angle of **refraction** = angle of reflection.	(.....)
41	Sugar cane is reproduced by **grafting**.	(.....)
42	The wall of the ovary after fertilization form **fruit**.	(.....)
43	The produced tone from tuning fork is called **complicated tone.**	(.....)
44	The flower which polli[illegible]on is occurred by **insects** has changed anther and sticky st[illegible]	(.....)
45	**Light** waves used in radars.	(.....)
46	Syphilis is caused by a special type of **spherical** bacteria	(.....)

✹(5) Give reason for:

1. The periodic time decreases as the number of complete oscillations increases.

.....

2. The pen seems broken when it is put in a glass of water.

.....

3. The use of ultrasonic waves in milk sterilization

.....

4. Wood doesn't allow the passage of light through it.

.....

5. Man sometimes has to pollinate palm trees.

.....

6. When a light ray is incident perpendicular to the reflecting surface, it reflects on itself.

.....

7. The waves produced due to vibration of strings are transverse mechanical waves.

.....

8. Auto pollination can't happen in sunflower.

.....

9. The energy of red light photon is less than the energy of violet light photon.

.....

10. Sound waves are mechanical waves while radio waves are electromagnetic waves.

.....

11. Sound travelling in air has less intensity than that travelling in carbon dioxide.

.....

12. Man cannot hear all sounds produced by dolphins.

.....

13. Clear glass is a transp[illegible]

.....

14. Absolute refractive inde[illegible] of any transparent medium is always greater than one.

.....

15. A light ray transfers from a transparent medium to another and doesn't refract.

.....

16. We see lightning before hearing thunder.

.....

17. The petals of corolla are colorful.

.....

18. To pick up a coin which has fallen in water, we must look at it vertically.

.....

19. The floor of the swimming pool appears higher than its real position.

.....

20. Light can travel through space.

.....

21. Oscillatory motion is considered as a periodic motion.

.....

22. The flower of bean plant is bisexual.

.....

23. Palm plant is unisexual.

.....

24. Sound can be heard from all surrounding directions.

.....

25. The petals of corolla are colored and scented.

.....

26. The stigma of air pollinated flowers are feathery like and sticky.

.....

27. The periodic time decrease as the number of complete oscillation increases.

.....

28. The sperm has a long [illegible] tail.

.....

✹(6) What happen if:

1. The frequency of an oscillating body increases (concerning its periodic time) .

.....

2. The oscillating body passes its rest position during its movement (concerning its velocity).

.....

3. Decreasing the amplitude of the sound source to its half (concerning the sound intensity).

.....

4. A pollen grain falls on a stigma.

.....

5. The frequency of a wave is doubled (concerning the wavelength) when the wave velocity is constant.

.....

6. Incidence of a white light ray on one face of a triangular glass prism.

.....

7. Ovary after fertilization.

.....

8. A light ray travels from a transparent medium of high optical density to another of lower optical density.

.....

9. A light ray falls perpendicular to the interface between two different transparent media.

.....

10. When the distance between the light source and a surface is doubled (concerning the light intensity).

.....

11. When you put a ri[illegible] mobile phone on a resonance box (concerning the sound intensity).

.....

12. **Incidence of light rays on a rough surface.**

.....

13. **Vibration of particles of a medium perpendicularly to the direction of wave propagation.**

.....

14. **The stigma of a flower doesn't secrete sugary solution after pollination process.**

.....

15. **The sound wave travels from solid to water (concerning it's velocity)**

.....

16. **The wave length increases to the double value when the wave velocity is constant (concerning the frequency).**

.....

17. **A light ray falls perpendicular on a reflecting surface.**

.....

18. **The distance between the sound source and the ear becomes double (concerning the sound intensity).**

.....

19. **The testes stop their production of testosterone hormone**

.....

✸(7) Put (√) or (X) :

1. The fish is seen higher than its real position in the fish tank. ( )
2. The complete oscillation includes four successive amplitudes. ( )
3. The velocity of the oscillating body is maximum when it passes through the original position. ( )
4. Androecium is the female reproductive organ in plant. ( )
5. Stigma is the male reproductive organ in the flower. ( )
6. The movement of pendulum is an example for wave motion. ( )
7. Bats, dogs and dolphins can hear ultrasonic waves. ( )
8. The sound intensity decreases, when the source of sound touches an empty box. ( )
9. The light ray refracts towards the normal when it travels from air to glass. ( )
10. The velocity of the oscillating body is minimum when it passes its rest position ( )
11. The corolla is the male reproductive organ in the flower. ( )
12. Infrasonic waves are used in breaking down stones of kidney. ( )
13. Sound can be heard from all directions that surround the sound source. ( )
14. Harmonic tones that accompany the fundamental tone are lower in pitch. ( )
15. Reproduction by tubers can be used in apples and pears. ( )
16. Wood doesn't allow the passage of light through it. ( )
17. The measuring unit of sound intensity is decibel. ( )
18. Sound velocity through liquids is more than that through gases. ( )
19. The pollen grains of the air pollinated flowers are sticky and have coarse surface. ( )
20. If the angle between the incident light ray and the reflecting surface is 40°, so the angle of reflection equals 40° according to the first law of light reflection. ( )
21. The pendulum motion is an example of wave motion. ( )
22. The typical flower contains three whorls. ( )
23. Drill is an example of the musical tones. ( )
24. The energy of light is constant wavelength. ( )
25. Androecium in the flower is responsible for producing pollen grains. ( )
26. The particles of the medium vibrate along the direction of the wave propagation in longitudinal wave ( )

27. The sound intensity deceases when it touches a resonance box ( )
28. The swing is an example of periodic motion ( )
29. The typical flower contains three whorls. ( )
30. Light waves are electromagnetic transverse wave. ( )
31. Sound intensity increase as amplitude increase. ( )
32. Sound can be heard from all directions that surround the sound source ( )
33. Sound intensity increases when wind and sound waves are in the same direction ( )
34. The absolute refractive index for any transparent medium is less than 1 ( )
35. From ways of artificial vegetative reproduction are cutting, grafting and tubers ( )
36. The sound velocity through solids is less than that through liquids. ( )
37. Sonic waves are used in sterilizing food substances. ( )
38. The wall of ovary after pollination forms the coat of the fruit. ( )
39. The sound intensity increases as the amplitude increases. ( )
40. Reproduction by tuber happens in orange and bitter orange. ( )
41. The transverse wave consists of compressions and troughs. ( )

✹(8) What is meant by Define .... ?

1. Complete oscillation.

2. Ultrasonic waves.

3. The inverse square law of light.

4. Sound pitch.

5. Flower.

6. Sonic waves.

7. Light intensity.

8. Periodic time.

9. Fertilization in plant.

10. Light refraction.

11. Absolute refractive index of water is 1.33

12. The wavelength of a sound wave is 1.5 m.

13. Regular reflection of light.

14. Angle of incidence of light ray = 30°

15. Mixed pollination.

16. Harmonic tones.

17. Speed of light.

18. Amplitude.

19. Sound intensity

20. First law of reflection.

21. The angle of reflection of a light ray equals 45°

22. The wave.

23. Light reflection.

24. Periodic motion.

25. Pollination.

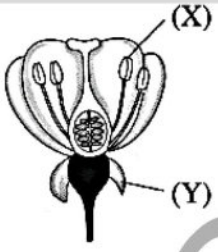
26. The amplitude of an oscillating body is 3 cm.

(9) Problems

1

In the opposite figure :

1. Mention the name of parts (X) and (Y).
2. What is the function of part (Y) ?
3. Identify the sex of this flower.



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2

Calculate the frequency of a musical tone similar to the tone produced from Savart's wheel rotating with a velocity of 960 cycles in two minutes, knowing that the number of gear teeth= 30 teeth.

.....

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.....

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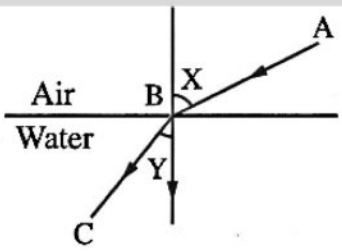
3

From the opposite figure, answer :

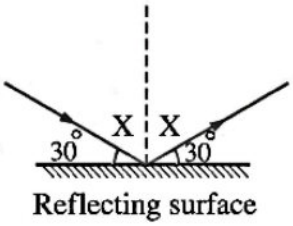
1. The ray (AB) represents .....
2. The ray (BC) represents .....
3. Angle (X) is .....
4. Angle (Y) is .....



4

From the opposite figure :

1. Calculate the angles of incidence and reflection.
2. What can you conclude from this figure ?
3. What will happen if this light ray falls perpendicular on the reflecting surface ?



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5

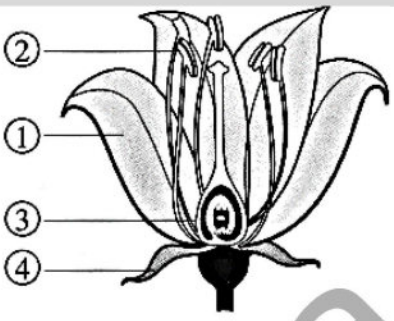
Label the figure :

① .....

② .....

③ .....

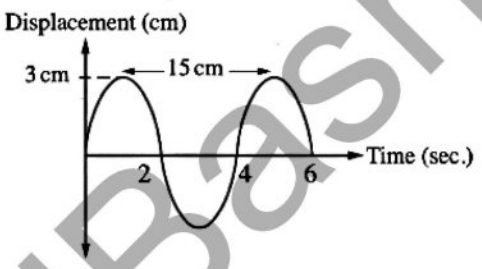
④ .....



6

From the opposite figure, calculate :

1. Wavelength.
2. Frequency.
3. Amplitude.
4. Periodic time.



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7

Complete the opposite figures after redrawing them in your answer sheet then complete the following statements :

1. In fig. (1) the angle of reflection = ...
2. In fig. (2) the angle of incidence = ...

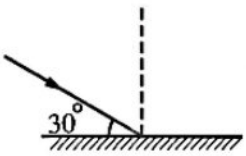

Fig. (1)

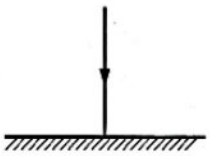
Fig. (2)

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.....

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8

savart's wheel rotates with a rate of 300 cycles per minute. A sound of frequency 600 Hz is produced when an elastic plate touches the teeth of the gear, calculate the number of teeth of the gear.

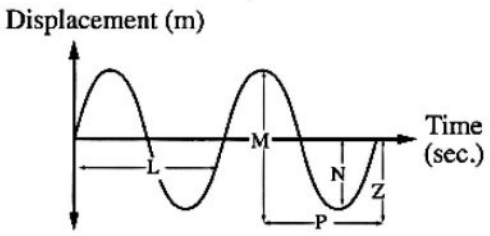
.....

.....

.....

9

The opposite figure represents an oscillatory motion for a simple pendulum. Choose the letter that denotes :



1. The oscillation of the pendulum forming $\frac{3}{4}$ complete oscillation.
2. The amplitude.

.....

.....

.....

10

Calculate the number of gear teeth of Savart's wheel, if a musical tone similar to the frequency of an emitted tone = 160 Hz, and Savart's wheel rotated with a velocity of 960 cycles in three minutes.

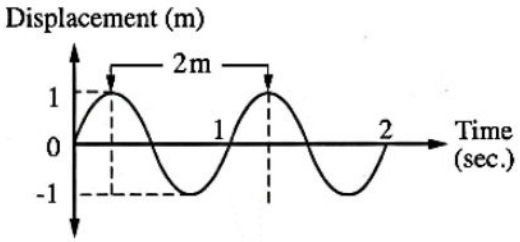
.....

.....

.....

11

From the opposite figure, find :



1. Wavelength.
2. Frequency.
3. Amplitude.
4. Wave velocity.

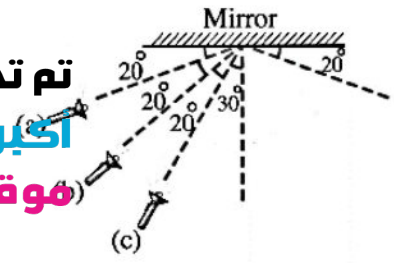
.....

.....

.....

12

The opposite figure represents a torch emits light falls on a mirror :



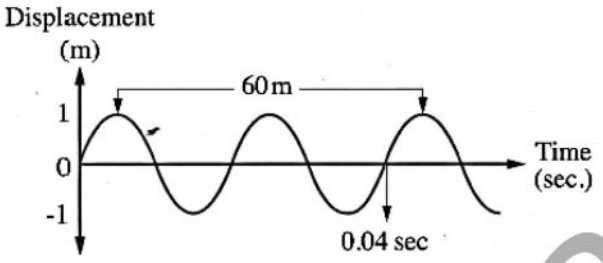
1. Torch ..... represents the following reflection.
2. The angle between the ... and its incident ligh... = ...
3. Identify the second ... reflection of light.

.....

13

From the opposite figure, calculate :

1. Frequency.
2. Wavelength.
3. Velocity of the wave.



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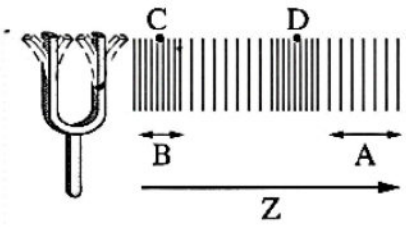
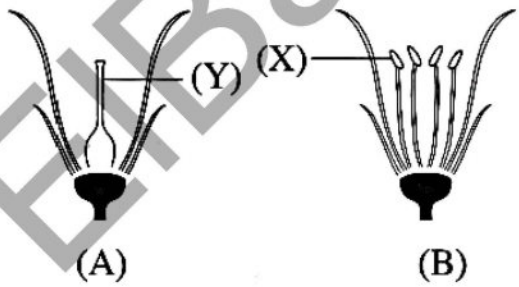
14

(1)



1. What is the kind of the produced wave ?
2. Label points (A) and (B).
3. What's the name of the distance between (C) and (D) ?
4. The arrow (Z) refers to the .....

(2)



1. What is the name of parts (X) and (Y) ?
2. Mention the function of part (X).
3. What is the sex of flowers (A) and (B) ?

.....

.....

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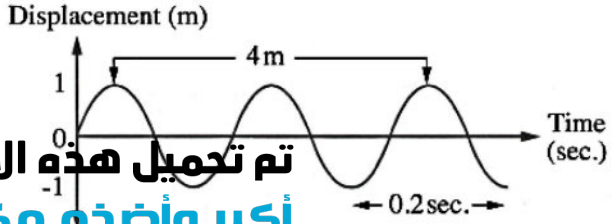
15

From the opposite figure, find :

1. Wavelength.
2. Frequency.
3. Amplitude.
4. Wave velocity.



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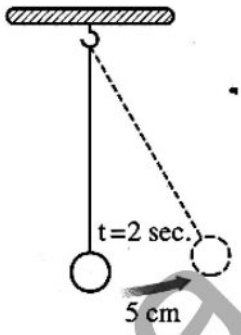
16

From the opposite figure, calculate the following :

1. Amplitude.
2. Periodic time.
3. Frequency.



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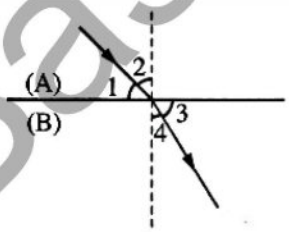
17

From the opposite figure, find the number that refers to the following :

1. The angle of incidence.
2. The angle of refraction.
3. Which medium (A) or (B) is greater in the optical density ?



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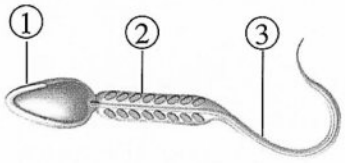
18

Study the opposite figure, Then label the figure

.....

.....

.....



Model Answer

(1) Write the scientific term:

1. Infrasonic waves
2. Amplitude
3. Cross-pollination
4. Decibel
5. Typical flower
6. Optical density of medium
7. Bisexual
8. Wave motion
9. Complete oscillation
10. Sound
11. Pollination
12. Savart wheel
13. Calyx
14. Zygote
15. Irregular reflection
16. Light intensity
17. Sound pitch
18. Periodic time
19. Crest
20. Watt/m^2
21. Frequency
22. Mirage
23. Light refraction
24. Longitudinal waves
25. Angle of emergence
26. First law
27. Oscillatory motion
28. Mechanical waves
29. Sound intensity
30. Light reflection
31. Angle of incidence
32. Typical flower
33. Rarefaction
34. Opaque object
35. Tissue culture
36. Corolla
37. Periodic time
38. Sonic waves
39. Inverse square law of sound
40. Max blank
41. Optical density of medium
42. Fertilization
43. Wave
44. Compression
45. Wave velocity
46. Photon energy
47. Tissue culture
48. Absolute refractive index
49. Transvers waves
50. Flower
51. Mechanical waves
52. Irregular reflection
53. Mirage
54. Sound quality
55. wave motion
56. Angle of reflection
57. Optical density of medium
58. Frequency
59. Ultrasonic waves
60. Second law
61. Savart wheel
62. Jacuzzi
63. Infrasonic
64. Testosterone
65. Fertilization
66. Vas deference
67. Testis
68. Seminal fluid
69. Progesterone
70. Testis
71. Fallopian tube

(2) Choose the right answer:

1. B	15. B	29. C	43. D	57. C	71. C	85. A	99. D
2. A	16. C	30. C	44. C	58. C	72. C	86. D	100. A
3. B	17. A	31. A	45. B	59. A	73. D	87. A	101. A
4. A	18. B	32. C	46. C	60. B	74. A	88. A	102. B
5. B	19. C	33. B	47. C	61. A	75. C	89. C	103. B
6. A	20. C	34. C	48. A	62. A	76. B	90. C	104. D
7. C	21. B	35. D	49. B	63. A	77. D	91. B	105. A
8. B	22. D	36. D	50. B	64. A	78. D	92. C	
9. C	23. C	37. C	51. C	65. B	79. B	93. A	
10. D	24. C	38. B	52. C	66. B	80. D	94. B	
11. B	25. B	39. C	53. B	67. C	81. C	95. D	
12. D	26. A	40. B	54. C	68. B	82. B	96. A	
13. A	27. C	41. C	55. A	69. C	83. A	97. C	
14. A	28. A	42. A	56. C	70. A	84. C	98. A	

(3) Complete the following:

1. Glass opaque
2. Seed
3. Ultrasonic
4. High – low
5. Androecium – gynoecium
6. Intensity – pitch
7. Perpendicular
8. Petal
9. Absolute refractive index
10. Calyx - sepal
11. Refraction – normal
12. Decibel
13. Transverse – compression
14. Maximum
15. Crest - trough
16. Higher – lower
17. Self - cross
18. Female – zygote
19. 65
20. 20 – 20
21. High – low
22. Zygote
23. Pitch
24. Electromagnetic – mechanical
25. Four
26. Photons
27. Sepal
28. Filament
29. Frequency
30. Catch pollen grains
31. Irregular
32. Brocken
33. 0.125
34. Decibel – meter
35. Fruit – seed
36. White – seven
37. Increase
38. 20
39. Zero
40. Sharp – harsh
41. Fr[illegible]ency x
42. [illegible]
43. [illegible]riodic – repeated
44. [illegible]
45. Directly – frequency
46. Red – violet
47. 2
48. Electromagnetic – mechanical
49. Wave – periodic
50. Directly – square
51. Unisexual – bisexual
52. Real – apparent
53. Amplitude
54. Anther – filament
55. Hertz – decibel
56. Huge – light
57. Uniform – non uniform
58. Opaque – transparent
59. Mechanical – vacuum
60. Sepal – corolla
61. Frequency – amplitude
62. Oscillatory – wave
63. Refraction – density
64. Covered by light in one second
65. [illegible]
66. Along
67. [illegible]
68. Straight
69. [illegible]
70. Watt/m^2
71. Equals
72. Transverse
73. Pollen grains
74. Inversely
75. Style – stigma
76. 20 – 20000
77. Quarter
78. Vibration
79. Tubers
80. 20 – 20000
81. Simple harmonic motion
82. Sepal – petal
83. Cutting – grafting
84. 50
85. m/sec - Watt/m^2
86. Androecium – gynoecium
87. Regular
88. Amplitude
89. Infrasonic
90. Fruit
91. Sperm – ovum
92. Estrogen
93. Testis – estrogen
94. Sperm – ovum
95. Sperm – testis

✹(4) Correct the underlined words:

1. Increase
2. Four
3. 50
4. Potatoes
5. Opaque
6. Frequency
7. Insects
8. Compression
9. Higher
10. Fertilization
11. Light refraction
12. Straight
13. More
14. Air
15. Oscillatory
16. Increase
17. Red
18. Style
19. Ultrasonic
20. 10
21. 20
22. Carpel
23. Longitudinal
24. Equal
25. Mirage
26. Petals
27. Solid
28. Potatoes and sweet potatoes
29. Watt/m^2
30. Intensity
31. Ovary
32. Grafting
33. Increase
34. Attachment
35. Periodic
36. Reflection
37. Tuber
38. Increase
39. One
40. Incident
41. Cutting
42. Pericarp
43. Fundamental tones
44. Wind
45. Radio
46. Spiral

✹(5) Give reason for:

1. Because the number of complete oscillations is inversely proportional to the periodic time.
2. Due to the refraction of light rays coming from the immersed part in water , where the eye sees the immersed part of the pencil on the extensions of these refracted rays.
3. Because they have high ability to kill some types of bacteria and stop the action of some viruses.
4. Because it is an opaque medium.
5. To ensure the pollination process, as pollination is difficult to occur by insects or by air.
6. Because angle of incidence= angle of reflection= zero.
7. They are transverse because the medium particles vibrate perpendicular to the direction of wave propagation forming crests and troughs and mechanical because they need a medium to propagate through.
8. Because their anthers and stigmas are not maturated at the same time.
9. Because the frequency of red light photon is less than that of violet light photon.
10. Because sound waves need a medium to propagate through, while radio waves don't need a medium to propagate through.
11. Because the density of carbon dioxide gas is more than that of air, since sound intensity is directly proportional to the density of the medium.
12. Because dolphins produce ultrasonic waves, while the human ears can't hear sounds of frequencies more than 20 kilohertz
13. Because clear glass permits most light to pass through and objects can be seen clearly through it.
14. Because the velocity of light through air is always greater than that through any other transparent medium.
15. Because the angle of incidence = zero.
16. Because the velocity of light waves of lightning (electromagnetic waves) is much greater than that of sound waves of thunder (mechanical waves).
17. To attract insects to the flower which help in the sexual reproduction process.
18. Because the ray which falls perpendicular to the interface passes to air without refraction, so the apparent position is the real position.
19. Due to light refraction.
20. Because it is electromagnetic waves which don't need a medium to travel through.
21. Because it is repeated regularly in equal periods of time.
22. Because its flower contains four whorls.
23. Because the flowers contain only male or female reproductive organ.
24. Because sound travels through air as spheres of compressions and rarefactions whose center is the sound source
25. To attract insects to the flower which help in the sexual reproduction process.
26. To catch pollen grains fro
27. Because the number of oscillations is inversely proportional to the periodic time.
28. To enable it to move.

✹(6) What happen if:

1. The periodic time will decrease
2. Its velocity increases to the maximum value.
3. Sound intensity will decrease
4. It will germinate fanning a pollen tube.
5. The wavelength decreases to its half value.
6. The white light analysis into seven colours.
7. The ovary will grow to become a fruit.
8. It will refract.
9. It will pass without refraction.
10. The light intensity decreases to its quarter.
11. The intensity of the produced tone increases.
12. The light rays are reflected in many directions.
13. Transverse waves are formed.
14. The pollen grain will not stick on stigma, and then pollen grain will not germinate
15. Sound velocity will decrease, since velocity of sound through solids is higher than the velocity of sound through liquids
16. The frequency will decrease to half since ($v = F \times \lambda$).
17. The light ray will reflect on itself
18. The sound intensity will decrease to its quarter.
19. the male doesn't reach to the puberty.

✹(7) Put (√) or (X) :

1. (√)	10. (X)	19. (X)	28. (√)	37. (X)
2. (√)	11. (X)	20. (X)	29. (X)	38. (√)
3. (√)	12. (X)	21. (X)	30. (√)	39. (√)
4. (X)	13. (√)	22. (X)	31. (√)	40. (X)
5. (X)	14. (X)	23. (X)	32. (√)	41. (X)
6. (X)	15. (X)	24. (X)	33. (√)	
7. (√)	16. (√)	25. (√)	34. (X)	
8. (X)	17. (X)	26. (√)	35. (√)	
9. (√)	18. (√)	27. (X)	36. (X)	

✹(8) What is meant by Define .... ?

1. It is the motion of an oscillating body when it passes by a fixed point on its path two successive times in the same direction.
2. They are sound waves of frequencies higher than 20000 Hz (20 KHz).
3. The light intensity of a surface is inversely proportional to the square of the distance between the surface and the source of light.
4. It is the property by which the ear can distinguish (differentiate) between harsh and sharp voices.
5. It is a short stem whose leaves are modified into reproductive organs.
6. They are sound waves of frequencies ranging from 20 Hz to 20 KHz
7. It is the quantity of light falling perpendicular to a unit area of a surface in one second.
8. It is the time taken by an oscillating body to make one complete oscillation.
9. It is the process of fusion of the nucleus of male cell (pollen grain) with the nucleus of female cell (ovum) to form the zygote.
10. It is the change of light path when it travels from a transparent medium to another transparent medium of different optical density.
11. The ratio between the velocity of [illegible]
12. The distance between the ce[illegible]f two successive compressions or two successive rarefactions is 1.5 m.
13. It is the reflection of light [illegible] they meet (fall on) a smooth (uniform) and glistening reflecting surface, where the incident light rays are [illegible]ctal.
14. The angle between the incident light ray and the line perpendicular to the reflecting surface at the point of incidence is 30 °
15. It is the transfer of pollen grains from the anthers of a flower to the stigmas of another flower in other plant of the same kind.

16. They are tones that accompany the fundamental (basic) tone but they are higher in pitch and lower in intensity and differ from one instrument to another.
17. It is the distance which is covered by light in one second.
18. It is the maximum displacement done by the oscillating body away from its rest position.
19. It is the property by which the ear can distinguish (differentiate) between either strong and weak sounds.
20. Angle of incidence = Angle of reflection
21. The angle between the reflected light ray and the line perpendicular to the reflecting surface at the point of incidence = 45 °
22. It is the disturbance that propagates and transfers energy in the direction of propagation.
23. It is the rebounding of light waves in the same medium on meeting a reflecting surface.
24. It's a motion which is regularly repeated in equal periods of time.
25. It is the process of transfer of pollen grains from the flower anthers to the stigmas.
26. The maximum displacement done by the oscillating body away from its rest position is 3 cm (0.03 m).

✹(9) Problems

1

1. Part (X) : Anther.
   Part (Y) : Sepal.
2. It protects the inner parts of the flower specially before blooming.
3. Bisexual (hermaphrodite) flower.

2

Sound frequency (F)

$$= \frac{\text{Number of cycles (d)} \times \text{Number of gear teeth (n)}}{\text{Time in seconds (t)}}$$

$$= \frac{960 \times 30}{120} = 240 \text{ Hz.}$$

3

1. incident ray. 2. refracted ray.
3. angle of incidence.
4. angle of refraction.

4

1. Angle of incidence = 90° – 30° = 60°
   Angle of reflection = 90° – 30° = 60°
2. Angle of incidence = Angle of reflection
3. It will reflect on itself.

5

① Petal. ② Anth
③ Ovary. ④

6

1. Wavelength = 15 cm = 0.15
2. Frequency = $\frac{1}{4}$ = 0.25 Hz.
3. Amplitude = 3 cm = 0.03 m.
4. Periodic time = $\frac{1}{0.25}$ = 4 sec.

7

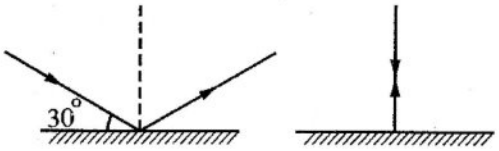


Fig. (1) Fig. (2)

1. 60° 2. zero

8

Sound frequency (F) =

$$\frac{\text{Number of cycles (d)} \times \text{Number of gear teeth (n)}}{\text{Time in seconds (t)}}$$

$$600 = \frac{300 \times \text{Number of gear teeth}}{60}$$

$$\text{Number of gear teeth} = \frac{600 \times 60}{300} = 120 \text{ teeth.}$$

9

1. P 2. N

10

Sound frequency (F) =

$$\frac{\text{Number of cycles (d)} \times \text{Number of gear teeth (n)}}{\text{Time in seconds (t)}}$$

$$160 = \frac{960 \times \text{Number of gear teeth}}{180}$$

$$\text{Number of gear teeth} = \frac{160 \times 180}{960} = 30 \text{ teeth.}$$

11

1. Wavelength = 2 m.
2. Frequency = $\frac{\text{Number of complete oscillations}}{\text{Time in seconds}}$
   $= \frac{2}{2} = 1$ Hz.
3. Amplitude = 1 m.
4. Wave velocity = Wavelength × Frequency
   $= 2 \times 1 = 2$ m/sec.

12

1. (a) 2. 140°
3. The incident light ray, the reflected light ray and the normal to the surface of reflection at the point of incidence, all locate in one plane perpendicular to the reflecting surface.

13

1. Frequency $= \frac{2}{0.04} = 50$ Hz.
2. Wavelength $= \frac{60}{2} = 30$ m.
3. Wave velocity = Frequency × Wavelength
   $= 50 \times 30 = 1500$ m/sec.

14

(1) 1. Longitudinal wave.
2. (A) Rarefaction.
(B) Compression.
3. The wavelength.
4. direction of wave propagation.

(2) 1. (X) Anther.
(Y) Style.
2. It produces and holds pollen grains.
3. - Flower (A) is a female flower.
- Flower (B) is a male flower.

15

1. Wavelength $= \frac{4}{2} = 2$ m.
2. Periodic time $= 2 \times 0.2 = 0.4$ sec.
   Frequency $= \frac{1}{\text{Periodic time}} = \frac{1}{0.4} = 2.5$ Hz.
3. Amplitude = 1 m.
4. Wave velocity = Wavelength × Frequency
   $= 2 \times 2.5 = 5$ m/sec.

16

1. Amplitude = 5 cm = 0.05 m.
2. Periodic time $= 4 \times 2 = 8$ sec.
3. Frequency $= \frac{1}{\text{Periodic time}} = \frac{1}{8}$
   $= 0.125$ Hz.

17

1. 2 2. 4 3. Medium (B)

18

1. Head
2. Middle
3. Tail