

**ISMART SAMPLE PAPER
FOR CLASS 10th
MOVING TO CLASS 11th (ASPIRE)
(Medical)**

Test ID : 00000000

Time : 90 min.

M. Marks: 260

The Test Consists (TOTAL 65 QUESTIONS)		
SUBJECTS	Qs.	SYLLABUS
PHYSICS	20	Light, Human Eye, Electricity
CHEMISTRY	20	Chemical Reactions and Changes, Acid, Bases And Salts, Metals And Non Metals
BIOLOGY	25	Photosynthesis, Human Circulatory System, Human Excretory System, Human Endocrine System, Human Nervous System, Transportation in plants

INSTRUCTIONS TO CANDIDATE

- Please read the instructions given for each question carefully and fill the correct answer against the question numbers on the answer sheet in the respective subject.
- Use ball point pen to darken the appropriate circle & mark should completely fill the circle.
- The Question paper contains blank spaces for your rough work. No additional sheet will be provided for rough work.
- Blank papers, Clipboards, Log Tables, Slide rule, Calculators, Cellular phones, Pagers and Electronic gadgets in any form are not allowed.
- Write your Name, Student ID in the block at the top of the Answer Sheet. Also write your Name & Student ID in the space provided on this cover page of question paper.

Name: _____ Student ID _____

Physics

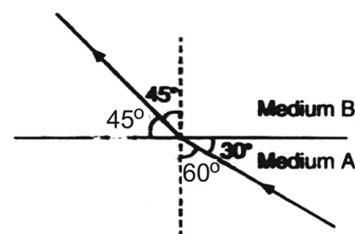
Objective Questions [+4, -1]

1. An object A is placed at a distance d in front of a plane mirror. If one stands directly behind the object at a distance S from the mirror, then the distance of the image of A from the individual is
 (A) $2S$ (B) $2d$
 (C) $S + d$ (D) $S + 2d$
2. Which of the following conditions are necessary for total internal reflection to take place at the boundary of two optical media?
 - I. Light is passing from optically denser medium to optically rarer medium.
 - II. Light is passing from optically rarer medium to optically denser medium.
 - III. Angle of incidence is greater than the critical angle.
 - IV. Angle of incidence is less than the critical angle.
 (A) I and III only (B) II and IV only
 (C) III and IV only (D) I and IV only
3. A wire of radius r has resistance R . If it is stretched to a radius of $\frac{3r}{4}$, its resistance becomes

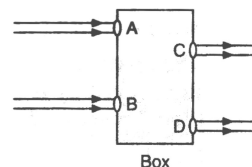
- (A) $\frac{9R}{16}$ (B) $\frac{16R}{9}$

(C) $\frac{81R}{256}$ (D) $\frac{256R}{81}$

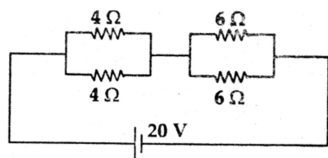
4. Figure shows a ray of light as it travels from medium A to medium B. Refractive index of the medium B relative to medium A is :



- (A) $\sqrt{3}/\sqrt{2}$ (B) $\sqrt{2}/\sqrt{3}$
 (C) $1/\sqrt{2}$ (D) $\sqrt{2}$
5. Beams of light are incident through the holes A and B and emerge out of box through the holes C and D respectively as shown in the figure. Which of the following could be inside the box?



- (A) A rectangular glass slab (B) A convex lens
 (C) A concave lens (D) A prism
6. Four resistances are connected in a circuit as shown. The electric current flowing through each of the 4Ω and 6Ω resistances will be respectively



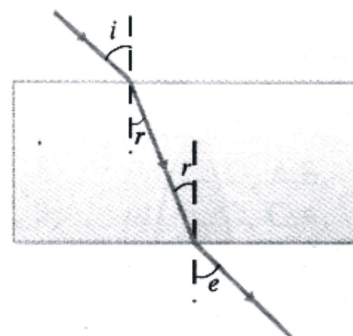
- (A) 1 A and 1 A (B) 1 A and 2 A
(C) 2 A and 2 A (D) 2 A and 4 A
7. Magnification produced by a rear view mirror fitted in vehicles :
(A) is less than one (B) is more than one
(C) is equal to one (D) can be more than one or less than one depending upon the position of the object in front of it.
8. The resistivity of a wire depends on its :-
(A) Length (B) Area of cross-section
(C) Shape (D) Material
9. Four students, A, B, C and D did their experiment on finding the focal length of a convex lens by obtaining the image of a distant object as follows:
Student A Used the window grille in the laboratory as the object, and a white paper sheet held in hand, as the screen.
Student B Used a distant tree in the shade as the object, and a white thick board, held in stand, as the screen.
Student C Used a well illuminated laboratory window grille as the object and a white paper sheet

held in a stand as the screen.

Student D Used a well illuminated distant tree as the object and a white thick board, held in a stand as the screen.

Which one of the four sequences of above set-ups represents the decreasing order of preference for performing the experiment ?

- (A) D, B, C, A (B) C, D, A, B
(C) D, C, A, B (D) B, D, C, A
10. While tracing the path of a ray of light passing through glass slab as shown in the diagrams, four students interpreted the results as given below :

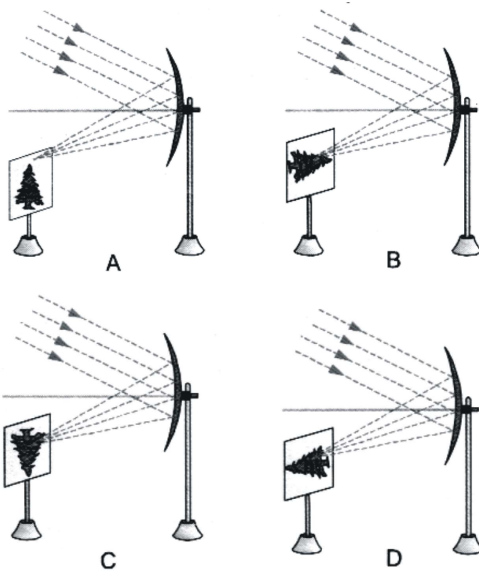


- (A) $\angle r > \angle e = \angle i$
(B) $\angle r = \angle e < \angle i$
(C) $\angle i = \angle r < \angle e$
(D) $\angle i = \angle e > \angle r$

The student who has made the correct interpretation is

- (A) A (B) B
(C) C (D) D
11. Parallel rays, from the top of distant tree, incident on a concave mirror, form an image

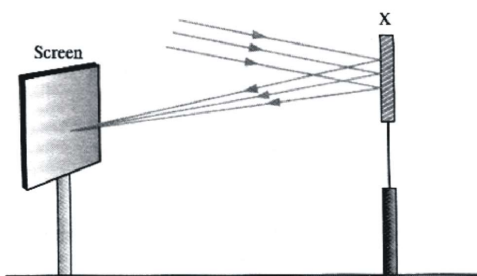
on the screen.



The diagram correctly showing the image of the tree on the screen is

- (A) A (B) B
(C) C (D) D

12. A student focussed the image of a distant object on the screen as shown in the figure by using a device 'X'. This device 'X' could be



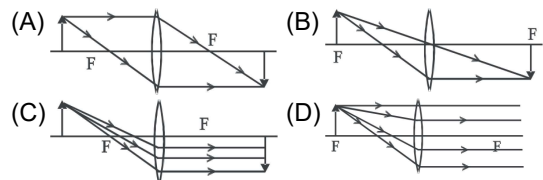
- (A) Plane mirror (B) Concave mirror
(C) Convex mirror (D) Convex lens

13. The image of a candle is formed by a convex lens on a screen. If the lower half of the lens is painted black, to make it completely opaque. What will be the size and intensity of the image attained?



- (A) image same, (B) image and intensity reduced intensity remain same
(C) image small, (D) image becomes intensity same bigger, intensity reduced
14. An object is placed 30 cm in front of a convex mirror of focal length 15 cm. Calculate the nature and position of image
(A) Image is real, (B) Image is real, inverted and 15 cm virtual and 20 cm behind mirror behind mirror
(C) Image is erect, (D) Image is real, virtual and 10 cm virtual and erect behind mirror and 15 cm from mirror

15. Which of the following ray diagram is correct?



16. A ray of light is incident in medium 1 on a surface that separates medium 1 from

medium 2. Let v_1 and v_2 represent the velocity of light in medium 1 and medium 2 respectively. Also let n_{12} and n_{21} represent the refractive index of medium 1 with respect to medium 2 and refractive index of medium 2 with respect to medium 1, respectively. If i and r denote the angle of incidence and angle of refraction, then-

$$(A) \frac{\sin i}{\sin r} = n_{21} = \frac{v_1}{v_2} \quad (B) \frac{\sin i}{\sin r} = n_{21} = \frac{v_2}{v_1}$$

$$(C) \frac{\sin i}{\sin r} = n_{12} = \frac{v_1}{v_2} \quad (D) \frac{\sin i}{\sin r} = n_{12} = \frac{v_2}{v_1}$$

17. A deviation in the path of a ray of light can be produced

(A) by a glass prism (B) by a rectangular but not by a glass slab but not rectangular glass by a glass prism slab

(C) by a glass prism as (D) neither by a glass well as a prism nor by a rectangular glass rectangular glass slab slab

18. 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 (B) is scattered the most by smoke or least by smoke or fog fog

(C) is absorbed the (D) moves fastest in air most by smoke or fog

19. A beam of white light when passes through a glass prism, a spectrum is observed. But

when same beam of light passes through hollow glass prism then

(A) Spectrum is same (B) Spectrum become brighter

(C) There will be no (D) Colours of spectrum spectrum reversed

20. A ray of light in air is incident on an equilateral glass prism at an angle θ_i to the normal. After refraction, the light travelled parallel to the base of prism and emerged in air at an angle θ_e to the normal. If the angle between the incident and the emergent rays is 60° , then the refractive index of glass with respect to air is

(A) 1.33

(B) 1.5

(C) 1.73

(D) 1.66

Chemistry

Objective Questions [+4, -1]

21. A change is said to be a chemical change when

(A) Energy change (B) New substances occurs are formed

(C) The change cannot (D) All statements are be easily reversed correct

22. Which of the following are chemical changes

(i) Digestion of food

(ii) Liquefaction of air

(iii) Ripening of fruit

(iv) Dissolution of sulphur in carbon disulphide

(v) Freezing of water

(vi) Electrolysis of water

(A) (i) to (iv) all

(B) (i), (iii) & (v)

- (C) (i), (iii) & (vi) (D) (iii), (iv) & (vi)
23. In the following equations:
 $Na_2CO_3 + xHCl \rightarrow 2NaCl + CO_2 + H_2O$,
 the value of x is -
 (A) 1 (B) 2
 (C) 3 (D) 4
24. $Fe_2O_3 + 2Al \rightarrow Al_2O_3 + 2Fe$
 The above reaction is an example of a -
 (A) combination reaction (B) double displacement reaction
 (C) decomposition reaction (D) displacement reaction
25. Which of the following is not a decomposition reaction?
 (A) $CaCO_3 \rightarrow CaO + CO_2$ (B) $2KClO_3 \rightarrow 2KCl + 3O_2$
 (C) *Digestion of food in body* (D) $H_2 + Cl_2 \rightarrow 2HCl$
26. Which is the oxidising agent in the following reaction?
 $CuO(s) + H_2(g) \longrightarrow Cu(s) + H_2O(l)$
 (A) $CuO(s)$ (B) $H_2(g)$
 (C) $Cu(s)$ (D) $H_2O(l)$
27. Which of the following is a strong acid?
 (A) Lactic acid (B) Ascorbic acid
 (C) Sulphuric acid (D) Formic acid
28. Which of the following is a strong base?
 (A) Ammonium hydroxide (B) Sodium hydroxide
 (C) Magnesium hydroxide (D) Copper hydroxide
29. Which of the following is a dibasic acid?
 (A) HCl (B) H_3PO_4
 (C) HNO_3 (D) H_2SO_4
30. The formula of baking soda is :
 (A) K_2CO_3 (B) $KHCO_3$
 (C) $NaHCO_3$ (D) Na_2CO_3
31. Oxides of metals are generally
 (A) acidic (B) basic
 (C) amphoteric (D) neutral
32. Common name of $CaOCl_2$ is -
 (A) Bleaching powder (B) Baking soda
 (C) Plaster of paris (D) Washing soda
33. Which oxide is neutral ?
 (A) NO_2 (B) MgO
 (C) H_2O (D) None of these
34. An alloy is -
 (A) A element (B) A mixture
 (C) An isomer (D) A metalloid
35. The following reaction is an example of a
 $4NH_3(g) + 5O_2(g) \rightarrow 4NO(g) + 6H_2O(g)$
 (i) displacement reaction
 (ii) combination reaction
 (iii) redox reaction
 (iv) neutralisation reaction
 (A) (i) and (iv) (B) (ii) and (iii)
 (C) (i) and (iii) (D) (iii) and (iv)
36. Which of the following are exothermic processes?
 (i) Reaction of water with quick lime
 (ii) Dilution of an acid
-

- (iii) Evaporation of water
 (iv) Sublimation of camphor (crystals)
 (A) (i) and (ii) (B) (ii) and (iii)
 (C) (i) and (iv) (D) (iii) and (iv)
37. What happens when a solution of an acid is mixed with a solution of a base in a test tube?
- (i) The temperature of the solution increases
 (ii) The temperature of the solution decreases
 (iii) The temperature of the solution remains the same
 (iv) Salt formation takes place
 (A) (i) only (B) (i) and (iii)
 (C) (ii) and (iii) (D) (i) and (iv)
38. During the preparation of hydrogen chloride gas on a humid day, the gas is usually passed through the guard tube containing calcium chloride. The role of calcium chloride taken in the guard tube is to
- (A) absorb the evolved gas
 (B) moisten the gas
 (C) absorb moisture from the gas
 (D) absorb Cl^- ions from the evolved gas
39. Aluminium is used for making cooking utensils. Which of the following properties of aluminium are responsible for the same?

- (i) Good thermal conductivity
 (ii) Good electrical conductivity
 (iii) Ductility
 (iv) High melting point
 (A) (i) and (ii) (B) (i) and (iii)
 (C) (ii) and (iii) (D) (i) and (iv)
40. What happens when calcium is treated with water?
- (i) It does not react with water
 (ii) It reacts violently with water
 (iii) It reacts less violently with water
 (iv) Bubbles of hydrogen gas formed stick to the surface of calcium
 (A) (i) and (iv) (B) (ii) and (iii)
 (C) (i) and (ii) (D) (iii) and (iv)

Biology

Objective Questions [+4, -1]

41. Which type of blood vessels carries blood away from the heart?
- (A) Veins (B) Arteries
 (C) Capillaries (D) Arteries, veins and capillaries
42. Match the articles in columns I and II (single matching)
- | Column A | Column B |
|-------------------------|-----------------------|
| (a) Cell growth | (i) Abscissic acid |
| (b) Wilting | (ii) Nerve conduction |
| (c) Emergency | (iii) Adrenaline |
| (d) Electrical impulses | (iv) Auxin |

- (A) a-iv, b-i, c-iii, d-ii (B) a-i, b-iv, c-iii, d-ii
(C) a-iii, b-i, c-iv, d-ii (D) a-ii, b-iv, c-iii, d-i

43. **Match the Columns :-**

Column I	Column II
(a) Cerebrum	(i) controls the pituitary
(b) Cerebellum	(ii) controls vision and hearing
(c) Hypothalamus	(iii) controls the rate of heart beat
(d) Midbrain	(iv) seat of intelligence
	(v) maintains body posture

- (A) a-v, b-iv, c-iii, d-ii (B) a-iv, b-v, c-i, d-ii
(C) a-v, b-iv, c-i, d-ii (D) a-iv, b-ii, c-i, d-v

44. Circulation of oxygenated and deoxygenated blood to lungs is classified as
(A) pulmonary circulation (B) systematic circulation
(C) digestive system (D) lymphatic circulation
45. Coordination via the nervous system tends to differ from that produced by the endocrine system because the nervous system.
(A) is quick, precise and localized (B) is slower and more pervasive
(C) does not require conscious activity (D) has long-lasting effects
46. Oxygen liberated during photosynthesis comes from
(A) water (B) carbon dioxide

- (C) chlorophyll (D) Glucose
47. In reflex action the reflex arc is formed by
(A) brain → spinal cord → muscles
(C) muscle → receptor → brain → spinal cord → muscles
48. Cow has a special stomach as compared to that of a lion in order to
(A) absorb food in better manner (B) digest cellulose present in the food
(C) assimilate food in a better way (D) absorb large amount of water
49. A catabolic process is
(A) Absorption of minerals (B) Ascent of sap
(C) Respiration (D) Assimilation
50. The filtration units of kidneys are called
(A) Ureter (B) Urethra
(C) Neurons (D) Nephrons
51. The opening and closing of the stomatal pore depends upon
(A) Oxygen (B) Temperature
(C) Water in guard cells (D) Concentration of CO_2 in stomata
52. Phloem transport occurs through
(A) Capillarity (B) Protoplasmic streaming
(C) Diffusion (D) Mass flow
53. Pulmonary artery differs from pulmonary vein in having
(A) Thick wall (B) Wide lumen
(C) Valves (D) No endothelium

54. Tricuspid valve is found in between
 (A) sinus venosus and (B) right auricle and right ventricle
 (C) left ventricle and (D) ventricle and aorta. left auricle
55. Parasympathetic nervous system increases the activity of
 (A) Gut, iris and (B) Heart, adrenal and urinary bladder sweat gland
 (C) Heart, pancreas (D) Lachrymal gland and lachrymal and sweat gland gland
56. In a synapse, chemical signal is transmitted from :
 (A) dendritic end of one neuron to axonal end of another neuron
 (B) axon to cell body of the same neuron
 (C) cell body to axonal end of the same neuron to dendritic end of another neuron
 (D) axonal end of one neuron to dendritic end of another neuron
57. Posture and balance of the body is controlled by :
 (A) Cerebrum (B) Cerebellum
 (C) Medulla (D) Pons
58. Some crushed boiled rice, water and saliva mixture is warmed in a test-tube for about 15 to 20 minutes and 2 or 3 drops of dilute iodine solution are added to it. The colour change will be into
 (A) violet (B) brown
 (C) blue-black (D) none of these
59. Chemicals which are released at the synaptic junction are called
 (A) cerebrospinal fluid (B) Hormones
 (C) neurotransmitters (D) Lymph
60. Name the hormone that lowers the blood sugar level?
 (A) Adrenaline (B) Estrogen
 (C) Glucagon (D) Insulin
61. Which kind of transport is present in xylem?
 (A) No transport (B) Unidirectional
 (C) Bidirectional (D) Multidirectional
62. In which of the following vertebrate group/groups, heart does not pump oxygenated blood to different parts of the body?
 (A) Pisces and (B) Amphibians and amphibians reptiles
 (C) Amphibians only (D) Fishes only
63. What prevents the backflow of blood inside the heart during contraction?
 (A) thick muscular walls of ventricles
 (B) valves
 (C) thin walls of atria (D) all of the above
64. With main onset of puberty, changes in body features in humans occur mainly due to the secretion of
 (A) testosterone from testes and estrogen from ovary
 (B) testosterone from ovary and estrogen from testes.
 (C) estrogen from pancreas and testosterone from pituitary.
 (D) estrogen from pituitary and testosterone from pancreas.
65. Which of the following statements are true about the brain?
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- (i) The main thinking part of brain is hind brain.
- (ii) Centres of hearing , smell, memory, sight, etc. are located in fore brain.
- (iii) Involuntary actions like salivation, vomiting, blood pressure are controlled by the medulla in the hind brain.
- (iv) Cerebellum does not control posture and balance of the body.
- (A) (i) and (ii) (B) (i), (ii) and (iii)
- (C) (ii) and (iii) (D) (iii) and (iv)

Answer Key

- | | |
|-------|-------|
| 1. C | 24. D |
| 2. A | 25. D |
| 3. D | 26. A |
| 4. A | 27. C |
| 5. A | 28. B |
| 6. C | 29. D |
| 7. A | 30. C |
| 8. D | 31. B |
| 9. A | 32. A |
| 10. D | 33. C |
| 11. C | 34. B |
| 12. B | 35. C |
| 13. A | 36. A |
| 14. C | 37. D |
| 15. B | 38. C |
| 16. A | 39. B |
| 17. A | 40. D |
| 18. B | 41. B |
| 19. C | 42. A |
| 20. C | 43. C |
| 21. D | 44. A |
| 22. C | 45. A |
| 23. B | 46. A |
| | 47. B |
| | 48. B |
| | 49. C |
| | 50. D |
| | 51. C |
| | 52. D |
| | 53. A |
| | 54. B |
| | 55. A |
| | 56. D |
| | 57. B |
| | 58. D |
| | 59. C |
| | 60. D |
| | 61. B |
| | 62. D |
| | 63. B |
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64. A
65. C

