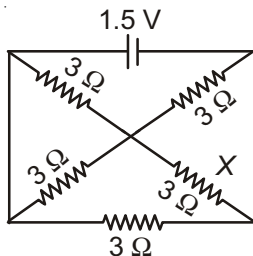


PHYSICS

Choose the correct answer :

1. For a real object placed in front of a concave mirror, which of the following images cannot be formed by the mirror?
 - (1) A real and enlarged image
 - (2) A real and diminished image
 - (3) A virtual and enlarged image
 - (4) A virtual and diminished image
2. Which of the following is the expression for the magnification produced by a spherical mirror?
 - (1) $\frac{v}{u}$
 - (2) $-\frac{v}{u}$
 - (3) $\frac{u}{v}$
 - (4) $-\frac{u}{v}$
3. A light incident at an interface at an angle 60° is refracted into another medium at an angle 30° . If its speed in the first medium is C , then its speed in the second medium is
 - (1) $\sqrt{2}C$
 - (2) $2C$
 - (3) $\frac{C}{2}$
 - (4) $\frac{C}{\sqrt{3}}$
4. Radius of curvature of a concave lens is 20 cm. Where should real object be placed in front of it so that an image of magnification $\frac{1}{4}$ is formed?
 - (1) 15 cm
 - (2) 30 cm
 - (3) 20 cm
 - (4) 7.5 cm
5. Power dissipated across the resistor X is



- (1) 18.7 W
- (2) 0.187 W
- (3) 35.2 W
- (4) 0.352 W

6. According to Fleming's right hand rule, the index finger points in the direction of
 - (1) Induced current
 - (2) Magnetic field
 - (3) Force
 - (4) Current
7. Choose the incorrect statement among the following
 - (1) Electric power can be transmitted over long distances without much loss of energy using AC
 - (2) Alternating current changes its direction periodically
 - (3) Electric fuse is connected in series with the circuit
 - (4) The earth wire provides a low resistance path for the excess current flowing in the circuit
8. Match the following

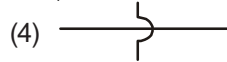
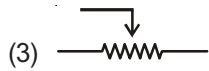
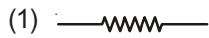
Column I

Column II

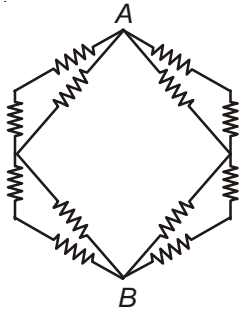
- | | |
|--------------------------------|--------------------------------|
| a. Hot springs | (i) Solar panel |
| b. Silicon | (ii) Nuclear energy |
| c. Uranium | (iii) Biogas |
| d. Methane | (iv) Geothermal energy |
| (1) a(ii), b(iv), c(i), d(iii) | (2) a(iii), b(i), c(iv), d(ii) |
| (3) a(iv), b(i), c(ii), d(iii) | (4) a(iv), b(ii), c(i), d(iii) |

9. The temperature difference between the surface water and the deeper sections of sea is exploited to obtain
 - (1) Tidal energy
 - (2) Wave energy
 - (3) Ocean thermal energy
 - (4) Hydro-power

10. In a circuit diagram, a rheostat is shown by the symbol



11. Find the equivalent resistance between points *A* and *B*, if each resistor is of resistance *r*.



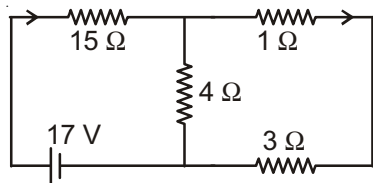
(1) $\frac{4r}{3}$

(2) $\frac{2r}{3}$

(3) $\frac{r}{3}$

(4) r

12. In the electric circuit shown below, the maximum current flows through the resistor of resistance



(1) $4\ \Omega$

(2) $15\ \Omega$

(3) $1\ \Omega$

(4) $3\ \Omega$

13. Nichrome is an alloy of nickle, chromium, manganese and iron. Which of the following has the highest resistivity?

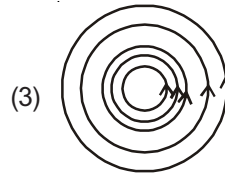
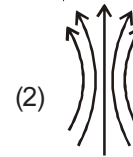
(1) Nickle

(2) Chromium

(3) Iron

(4) Nichrome

14. The magnetic field pattern that corresponds to that around a current carrying straight wire is



15. Choose the correct statement among the following.

(1) Magnetic field is stronger where field lines are farther apart

(2) Direct current changes its direction periodically

(3) Magnetic field around a current carrying solenoid is similar to that around a bar magnet

(4) Fleming's left hand rule gives the direction of induced current

16. The metallic body of an electric appliance is connected to the earth wire, so as to

(1) Avoid short circuit

(2) Provide low resistance path for leakage current

(3) Avoid overloading

(4) Reduce power loss

17. A straight wire carrying current in vertically upward direction is placed in a uniform magnetic field directed towards north. The magnetic force acting on the wire is towards

(1) North

(2) South

(3) East

(4) West

18. The mixture of cow dung and water that decomposes in a biogas plant to produce biogas is called

- (1) Slurry (2) Fertiliser
(3) Manure (4) Marsh gas

19. A box type solar cooker has a cover of glass plate so as to

- (1) Reflect more heat
(2) Absorb more heat
(3) Conduct more heat
(4) Trap heat radiations within the box

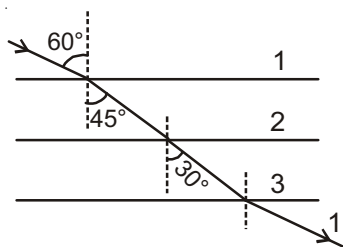
20. Which of the following can converge a light ray the most?

- (1) A convex lens of focal length 20 cm
(2) A convex lens of focal length 10 cm
(3) A concave lens of focal length 20 cm
(4) A concave lens of focal length 10 cm

21. The power of a lens is 6 D. Find the magnification produced by it for a real object placed at 15 cm in front of it.

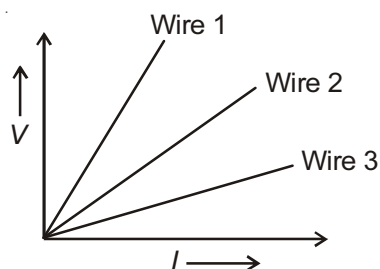
- (1) 10 (2) - 10
(3) $\frac{1}{10}$ (4) $-\frac{1}{10}$

22. A light ray incident obliquely, passes into three media as shown in the figure. The refractive index of medium 3 with respect to medium 1 is



- (1) $\frac{\sqrt{3}}{2}$ (2) $\frac{1}{2}$
(3) $\sqrt{3}$ (4) 2

23. Voltage current graphs are drawn for three aluminium wires of same thickness at a given temperature. If the graphs obtained are as shown below, then the correct order of wires in the increasing order of their lengths is



- (1) Wire 1 < Wire 2 < Wire 3
(2) Wire 3 < Wire 2 < Wire 1
(3) Wire 2 < Wire 3 < Wire 1
(4) Wire 1 < Wire 3 < Wire 2

24. A current of 2 A flows in a circuit for 30 s. The total charge flown through the circuit is

- (1) 30 C
(2) 15 C
(3) 60 C
(4) 12 C

25. A proton moves away from a straight wire carrying some current. It will be deflected in the direction

- (1) Of current flow
(2) Opposite to the current flow
(3) Perpendicular to the plane of wire and the proton
(4) Nowhere

CHEMISTRY

26. Identify 'A' in the given chemical equation
 $A + \text{Ca}(\text{OH})_2 \longrightarrow \text{Ca}(\text{NO}_3)_2 + \text{H}_2\text{O}$
(1) N_2 (2) NO_2
(3) HNO_3 (4) HNO_2
27. $\text{Fe}_2\text{O}_3 + 2\text{Al} \longrightarrow \text{Al}_2\text{O}_3 + 2\text{Fe}$
Which of the following statements is incorrect for above reaction?
(1) Fe_2O_3 is getting reduced
(2) Al is getting oxidised
(3) Fe_2O_3 is an oxidising agent
(4) Al_2O_3 is reducing agent
28. The product(s) obtained during an exothermic reaction taking place in our body is/are
(1) Glucose and water
(2) Glucose and carbon dioxide
(3) Carbon dioxide and water
(4) Carbon dioxide only
29. An amphoteric oxide 'X' reacts with aqueous NaOH to form sodium aluminate. Identify the product when 'X' reacts with hydrochloric acid
(1) NaCl (2) AlCl_3
(3) Al_2Cl_3 (4) NaAlO_2
30. Which of the following is not a compound of sodium?
(1) Sodium carbonate
(2) Sodium amalgam
(3) Sodium acetate
(4) Sodium sulphate
31. In activity series, a metal is more reactive than lead but less reactive than zinc. It reacts with steam to form its oxide with chemical formula
(1) Fe_3O_4 (2) CaO
(3) MgO (4) FeO
32. Which of the following compounds has the least melting/boiling point?
(1) MgCl_2 (2) NaCl
(3) CHCl_3 (4) CaCl_2
33. Which of the following metals cannot be used to reduce copper oxide during metallurgy?
(1) Mercury (2) Sodium
(3) Calcium (4) Aluminium
34. Which of the following solutions has the highest hydronium ion concentration?
(1) Sodium sulphate (2) Sodium carbonate
(3) Acetic acid (4) Sulphuric acid
35. Total number of electrons present in M shell of S^{2-} ion is
(1) 8 (2) 6
(3) 4 (4) 2
36. The process of conversion of ethanol into ethanoic acid is
(1) A reduction reaction
(2) An addition reaction
(3) An oxidation reaction
(4) A hydrogenation reaction
37. The survival of aquatic life in rivers becomes difficult when the pH becomes less than
(1) 7.0 (2) 5.6
(3) 6.5 (4) 12.2
38. An acid present in atmosphere of venus in the form of yellow clouds reacts with sodium hydroxide to form
(1) Sodium chloride (2) Sodium carbonate
(3) Sodium nitrate (4) Sodium sulphate

39. During the process of anodising oxygen gas evolved

- (1) In the form of oxide
- (2) At cathode
- (3) At anode
- (4) In the electrolytic solution

40. The molecular formula of cyclohexane is

- (1) C_6H_{12}
- (2) C_6H_{14}
- (3) C_6H_{10}
- (4) C_6H_{15}

41. Consider the following statements,

- I. The oily dirt gets collected in the centre of the micelle.
- II. The hydrophobic part of a soap molecule remains towards water.

Choose the correct option.

- (1) Statement I is correct, statement II is incorrect
- (2) Statement II is correct, statement I is incorrect
- (3) Both the statements are correct
- (4) Both the statements are incorrect

42. Combustion of fossil fuel does not evolve

- (1) Oxides of carbon
- (2) Oxides of sodium
- (3) Oxides of sulphur
- (4) Oxides of nitrogen

43. Which of the following is not acidic in nature?

- (1) Vinegar
- (2) Nettle sting
- (3) Lime water
- (4) Lemon juice

44. Match the following.

| Column I | Column II |
|-------------------|------------------------------|
| a. Ethanol | (i) Sweet smelling substance |
| b. Methanol | (ii) Dehydrating agent |
| c. Sulphuric acid | (iii) Lethal |
| d. Ester | (iv) Organic solvent |

- (1) a(iv), b(i), c(ii), d(iii)
- (2) a(iii), b(iv), c(ii), d(i)
- (3) a(iv), b(iii), c(i), d(ii)
- (4) a(iv), b(iii), c(ii), d(i)

45. Which of the following is not the member of same homologous series?

- (1) CH_3COOH
- (2) CH_3COCH_3
- (3) CH_3CH_2COOH
- (4) $HCOOH$

46. Which of the following steps is not involved in the process of extraction of carbonate ore of a moderately reactive metal?

- (1) Concentration
- (2) Roasting
- (3) Calcination
- (4) Refining

47. Which of the following metal pairs reacts with very dilute nitric oxide to produce hydrogen?

- (1) Mg and Na
- (2) Mg and Mn
- (3) Mn and Si
- (4) Cu and Si

48. Which of the following is not a covalent compound?

- (i) NaCl
 - (ii) HCl
 - (iii) CCl_4
 - (iv) $MgCl_2$
- (1) (i) & (ii)
 - (2) (ii) & (iii)
 - (3) (iii) & (iv)
 - (4) (i) & (iv)

49. The decomposition of iron sulphate results in the formation of

- (1) FeO , SO_2 & SO_3
- (2) Fe_2O_3 , O_2 & SO_3
- (3) Fe_2O_3 , SO_2 & SO_3
- (4) Fe_3O_4 & SO_3

50. The lustrous non-metal is

- (1) Phosphorus
- (2) Iodine
- (3) Sulphur
- (4) Gallium

BIOLOGY

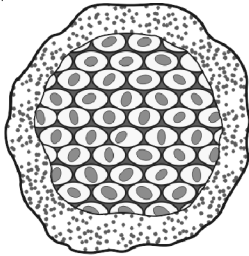
51. All of the following structures are found in *Amoeba*, except

- (1) Cilia
- (2) Nucleus
- (3) Parapodia
- (4) Food vacuole

52. Central nervous system consists of X and Y where X is protected by cranium and Y is protected by

- (1) Ribs
- (2) Skull
- (3) Vertebral column
- (4) Spleen

53. Identify the mode of reproduction which is shown in the given diagram.



- (1) Budding
- (2) Multiple fission
- (3) Binary fission
- (4) Regeneration

54. Select the dominant traits of pea plant from the following.

- a. Round shaped seeds
- b. White coloured flowers
- c. Tall height

- (1) a, b & c
- (2) Only b
- (3) Only c
- (4) a & c

55. Which of the following statements is **incorrect**?

- (1) Sex in human beings is genetically determined
- (2) All human females have single X chromosome
- (3) All boys inherit Y chromosome from their father
- (4) Human males have X and Y sex chromosomes

56. 'X' is the female reproductive part of the flower which consists of three parts A, B and C. A is the swollen bottom part and C is the sticky part. Identify X, B and C.

- (1) X – Stamen, B – Style, C – Stigma
- (2) X – Carpel, B – Ovary, C – Style
- (3) X – Stamen, B – Anther, C – Stigma
- (4) X – Carpel, B – Style, C – Stigma

57. In human beings, the respiratory pigment is

- (1) Haemoglobin
- (2) Chlorophyll
- (3) Melanin
- (4) Biliverdin

58. Which of the following glands is located in the human brain?

- (1) Hypothalamus
- (2) Adrenal gland
- (3) Pineal gland
- (4) Thyroid gland

59. In humans, the digestion of fats starts from

- (1) Oesophagus
- (2) Mouth
- (3) Stomach
- (4) Small intestine

60. Which of the following is used by human males to prevent pregnancy?

- (1) Contraceptive oral pills
- (2) Condom
- (3) Loops
- (4) Copper-T

61. Which of the following characteristics was selected by farmers to breed cauliflower from wild cabbage?

- (1) Sterile flowers
- (2) Arrested flower development
- (3) Short distance between leaves
- (4) Swollen parts

62. Which of the following structures transport urine from kidneys to urinary bladder?

- (1) Urethra
- (2) Alveoli
- (3) Nephrons
- (4) Ureters

63. Roots of plants are
- (1) Positively geotropic
 - (2) Positively phototropic
 - (3) Negatively geotropic
 - (4) Negatively hydrotropic
64. Salivation and vomiting are controlled by
- (1) Pons (2) Medulla
 - (3) Cerebrum (4) Cerebellum
65. The transport of soluble products of photosynthesis is called
- (1) Respiration (2) Transpiration
 - (3) Translocation (4) Guttation
66. The wings of a bat and the wings of a bird are an example of
- (1) Fossils (2) Homologous organs
 - (3) Analogous organs (4) Vestigial organs
67. $\text{Glucose} \xrightarrow{\text{A}} \text{Pyruvate} \xrightarrow{\text{B}} \text{CO}_2 + \text{H}_2\text{O} + \text{Energy}$
The reactions A and B occur in
- (1) Plasma and mitochondria, respectively
 - (2) Cytoplasm and mitochondria, respectively
 - (3) Endoplasmic reticulum and mitochondria, respectively
 - (4) Mitochondria and plasma, respectively
68. Find the **incorrect** match.
- (1) Right atrium – Deoxygenated blood
 - (2) Left atrium – Deoxygenated blood
 - (3) Right ventricle – Deoxygenated blood
 - (4) Left ventricle – Oxygenated blood
69. Match the following
- | Column I | Column II |
|---------------|--------------------|
| a. Ammonite | (i) Fish |
| b. Trilobite | (ii) Dinosaur |
| c. Rajasaurus | (iii) Invertebrate |
| d. Knightia | |
- (1) a(ii), b(iii), c(iii), d(i)
 - (2) a(i), b(iii), c(ii), d(iii)
 - (3) a(iii), b(iii), c(ii), d(i)
 - (4) a(iii), b(ii), c(i), d(ii)

70. What will be the blood group of the individual if its genotype is I^AI^B?
- (1) A (2) B
 - (3) O (4) AB
71. **Statement 1** : Testes are located in the abdominal cavity.
Statement 2 : Testes secrete testosterone and estrogen.
- (1) Both the statements are false
 - (2) Both the statements are true
 - (3) Statement-1 is true and statement-2 is false
 - (4) Statement-2 is true and statement-1 is false
72. Which of the following statements is **correct**?
- (1) The female germ cells are produced in oviducts
 - (2) Zygote gets implanted in the lining of the uterus in human females
 - (3) Two eggs are produced by both oviducts every month
 - (4) The embryo gets nutrition from placenta which is located in vagina
73. Which of the following gases were used by Miller and Urey while conducting their experiments?
- (1) Hydrogen sulphide, oxygen and nitrogen
 - (2) Oxygen, methane, ammonia and nitrogen
 - (3) Hydrogen, oxygen, methane and nitrogen
 - (4) Ammonia, methane and hydrogen sulphide
74. Which of the following hormones is released by the glands located on our excretory organ?
- (1) Testosterone (2) Insulin
 - (3) Thyroxin (4) Adrenaline
75. Gustatory and olfactory receptors are located in
- (1) Nose and ear, respectively
 - (2) Ear and tongue, respectively
 - (3) Tongue and nose, respectively
 - (4) Skin and nose, respectively

(Sample Paper)

(Two Years Course for Medical (AIPMT) 2014-2016)

Answers

| | | | | |
|---------|---------|---------|---------|---------|
| 1. (4) | 16. (2) | 31. (1) | 46. (2) | 61. (1) |
| 2. (2) | 17. (4) | 32. (3) | 47. (2) | 62. (4) |
| 3. (4) | 18. (1) | 33. (1) | 48. (4) | 63. (1) |
| 4. (2) | 19. (4) | 34. (4) | 49. (3) | 64. (2) |
| 5. (2) | 20. (2) | 35. (1) | 50. (2) | 65. (3) |
| 6. (2) | 21. (1) | 36. (3) | 51. (1) | 66. (3) |
| 7. (4) | 22. (3) | 37. (2) | 52. (3) | 67. (2) |
| 8. (3) | 23. (2) | 38. (4) | 53. (2) | 68. (2) |
| 9. (3) | 24. (3) | 39. (3) | 54. (4) | 69. (3) |
| 10. (3) | 25. (1) | 40. (1) | 55. (2) | 70. (4) |
| 11. (2) | 26. (3) | 41. (1) | 56. (4) | 71. (1) |
| 12. (2) | 27. (4) | 42. (2) | 57. (1) | 72. (2) |
| 13. (4) | 28. (3) | 43. (3) | 58. (3) | 73. (4) |
| 14. (3) | 29. (2) | 44. (4) | 59. (4) | 74. (4) |
| 15. (3) | 30. (2) | 45. (2) | 60. (2) | 75. (3) |