

ALPHA +1, +2 INTEGRATED SCIENCE HIGHER SECONDARY SCHOOL

MOCK TEST FOR HSE SCREENING EXAMINATION 2019-20

Duration : 2 Hrs
Maximum Marks : 340

➤ ***PART - 1***

➤ **OBJECTIVE TYPE**

(Each question carries 4 marks and negative 1 mark for each Wrong Answer)

Total Questions : 80

Total Marks : 320

➤ **SUBJECTS (BASED ON 10th SYLLABUS)**

◆ **Physics - 20 questions**

◆ **Chemistry - 20 questions**

◆ **Mathematics - 20 questions**

◆ **Biology - 20 questions**

➤ ***PART - II ENGLISH***

➤ **SUBJECTIVE TYPE (COMPREHENSIVE ESSAY)**

(Each question carries 10 marks)

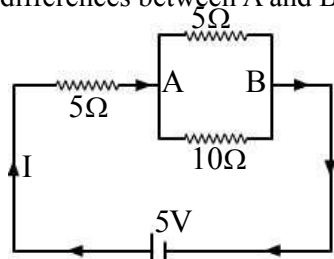
Total Questions : 2

Total marks : 20

PART - 1

PHYSICS

- Which colour is at the lower end of visible spectrum, which is formed by passing white light through an equilateral prism.
a. Red b. Blue c. Green d. Violet
- Sun appears reddish during sunrise because of
a. Atmospheric refraction
b. dispersion of light
c. Scattering of light d. Reflection of light
- A convex lens is distinguished from a concave lens by the property of
a. divergence b. convergence
c. linear propagation d. looming
- Ozone layer absorbs
a. IR rays b. UV rays
c. R- rays d. X-rays
- The frequency of AC mains in India is
a. 30 cycles/s b. 0 cycles/s
c. 60 cycles/s d. 50 cycles/s
- A dynamo
a. Create mechanical energy
b. Create electrical energy
c. Converts electrical energy into mechanical
d. Converts mechanical energy into electrical energy
- Which one of the following is a non conventional source of energy
a. Coal b. Hydro energy
c. Natural gas d. Ocean energy
- To view a full size image of a person ,the minimum size of plane mirror required is equal to
a. Half of height of the person
b. 3/4 th of the height of the person
c. Twice the height of the person
d. Height of the person
- Critical temperature of mercury ?
a. 4.2 k b. 7.25 k
c. 120 k d. 26 k
- Find the current drawn by the battery and the potential differences between A and B



- a. 1.66A b. .6A c. 8.33A d. 3.33A
- SI unit of magnetic field is
a. Gauss b. Tesla c. Weber d. Henry
 - The best material to make permanent magnet is
a. alnico b. copper
c. aluminium d. soft iron

- Which of the following is a step up transformer
a. Input voltage 200 V output voltage 110 V
b. Input current 2A output current 1.1 A
c. Input power is 50W output power is 20W
d. All of these
- You are given water, mustard oil, glycerine and kerosene. In which of these media, a ray of light incident obliquely at same angle would bend the most ?
a. Kerosene b. Water
b. Mustard oil d. Glycerine
- What is the equivalent resistance between any two vertex of a triangle if the sides of the triangle are of equal resistance?
a. 3R b. 2R c. R d. 2R/3
- Direction of induced current is given by
a. Fleming's left hand rule
b. Fleming's right hand rule
c. right hand thumb rule
d. left - hand thumb rule
- Foul smelling of LPG is due to
a. Ethyl mercaptan b. sodium thiosulphate
c. ethyl alcohol d. lead acetate
- Hydrogen bomb is based on
a. nuclear fission b. controlled nuclear fusion
c. uncontrolled nuclear fusion
d. none
- The main constituent of biogas is
a. methane b. butane
c. propane d. hexane
- The laws of reflection hold good for
a. plane-mirror only b. concave mirror only
c. convex mirror only
d. all mirrors irrespective of their shape

CHEMISTRY

- The Chemical reaction:
$$\text{HNO}_3 + \text{KOH} \rightarrow \text{KNO}_3 + \text{H}_2\text{O}$$

is an example of
a. neutralisation b. double displacement
c. neutralisation and double displacement
d. combination
- The formula of rust is
a. Fe_3O_4 b. $\text{FeSO}_4 \cdot 7\text{H}_2\text{O}$
c. $\text{FeCl}_3 \cdot x \text{H}_2\text{O}$ d. $\text{Fe}_2\text{O}_3 \cdot x \text{H}_2\text{O}$
- In the reaction,
$$\text{SO}_2(\text{g}) + 2\text{H}_2\text{S}(\text{g}) \rightarrow 2\text{H}_2\text{O}(\text{l}) + \text{S}(\text{s})$$

the reducing agent is
a. SO_2 b. H_2O c. H_2S d. S
- When in the blue solution of copper sulphate, zinc strip is dipped, after some time the colour changes to:
a. Pink b. Green
c. Colourless d. Remains blue

25. The pH of a solution is 3. When its pH changes to 5, then H^+ ion concentration
 a. increases two times b. decreases two times
 c. increases 100 times d. decreases 100 times
26. Plaster of paris is:
 a. $CaSO_4$ b. $CaSO_4 \cdot H_2O$
 c. $CaSO_4 \cdot 2H_2O$ d. $CaSO_4 \cdot 1/2 H_2O$
27. The substances having pH more than 7 are
 (i) common salt (ii) washing soda
 (iii) vinegar (iv) sodium hydroxide
 a. (i), (ii) and (iv) b. (ii) and (iv)
 c. (i), (iii) and (iv) d. (iv) only
28. The acid obtained from curd is
 a. Oxalic acid b. Tartaric acid
 c. Acetic acid d. Lactic acid
29. are alloys of Iron, Aluminium, Nickel and Cobalt.
 a. brass b. bronze c. solder d. alnicos
30. The liquid metal is:
 a. Bismuth b. Magnesium
 c. Mercury d. Sodium
31. A metal which does not liberate hydrogen gas on reaction with acids is
 a. Cu b. Fe c. Mn d. Zn
32. Complete the reaction:
 $Mg(s) + H_2SO_4(aq) \rightarrow$
 a. $MgSO_4 + H_2O$ b. $MgSO_4 + H_2O + O_2$
 c. $MgSO_4 + H_2$ d. no reaction
33. Which of the following formula represents alkenes ?
 a. C_nH_{2n} b. C_nH_{2n+2} c. C_nH_{2n-1} d. C_nH_{2n+1}
34. The functional group in an alcohol is?

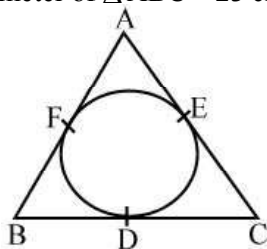
$\begin{array}{c} O \\ \\ a. - C - O \end{array}$	$\begin{array}{c} O \\ \\ b. - C - OH \\ H \\ \\ d. - C = O \end{array}$
c. - OH	
35. The main constituent of LPG is
 a. butane b. methane
 c. propane d. ethane
36. IUPAC name of the first member of homologous series of ketones is
 a. Ethanone b. propanol
 c. Methanone d. Propanone
37. Which of the following sets of elements do not belong to the same group?
 a. F, Cl, Br b. Na, K, Rb
 c. P, S, Cl d. C, Si, Ge
38. There are periods in the modern periodic table.
 a. 7 b. 18 c. 9 d. 12
39. Which of the following have equal number of electrons ?
 a. Cl^- and Br^- b. Na^+ and Mg^{2+}
 c. Ar and Ne d. Mg^{2+} and Ca^{2+}
40. Which of the following is most non-metallic element?
 a. Br b. Cl c. P d. S

MATHEMATICS

41. The product of a non- zero rational and an irrational number is :
 a. always irrational b. always rational
 c. rational or irrational d. one
42. Zeroes of the polynomial $p(x) = 2x^2 - 9 - 3x$ are
 a. $3, \frac{3}{2}$ b. $-\frac{3}{2}, 3$ c. $2, \frac{3}{2}$ d. $6, \frac{3}{2}$
43. The sum and product of zeroes of the quadratic polynomial are -5 and 3 respectively, then the quadratic polynomial is equal to
 a. $x^2 + 2x + 3$ b. $x^2 - 5x + 3$
 c. $x^2 + 5x + 3$ d. $x^2 + 3x - 5$
44. If (6,k) is a solution of the equation $3x + y - 22 = 0$, then the value of k is :
 a. 4 b. 3 c. -4 d. -3
45. Graphically, the pair of equations :
 $6x - 3y + 10 = 0$
 $2x - y + 9 = 0$
 represents two lines which are :
 a. intersecting at exactly one point
 b. intersecting at exactly two points
 c. Coincident
 d. parallel
46. The sum of the roots of the equation $x^2 - 6x + 5 = 0$ is
 a. 5 b. -5 c. 6 d. -6
47. The sum of 10 terms of the A.P 2, 7, 12, is :
 a. 345 b. 145 c. 245 d. 250
48. The sum of first 20 odd natural numbers is :
 a. 100 b. 210 c. 400 d. 420
49. The distance between P ($10 \cos\theta, 0$) and Q ($0, 10 \sin\theta$) is :
 a. 10 units b. 5 units
 c. $\sqrt{10}$ units d. $10 \sin\theta \cos\theta$
50. The mid - point of the line segment joining the points A (-2, 8) and (-6, -4) is :
 a. (2, 6) b. (4, 2)
 c. (-4, 2) d. (-4, -6)
51. If $\sin A = 3/5$ the value of $\tan A$ is :
 a. $\frac{4}{3}$ b. $\frac{3}{4}$ c. $\frac{3}{5}$ d. $\frac{5}{4}$
52. Value of $\frac{2\tan 45^\circ}{1 + \tan^2 45^\circ}$ is :
 a. $\sin 90^\circ$ b. $\sin 60^\circ$
 c. $\cos 60^\circ$ d. $\cos 30^\circ$
53. A pole 6m high casts a shadow $2\sqrt{3}$ m long on the ground, the sun's elevation is :
 a. 60° b. 45° c. 30° d. 90°
54. A wire is in the form of a circle of radius 42cm,. It is bent into a square. The side of the square of side is :
 a. 33cm b. 66 cm
 c. 88 cm d. 112 cm

55. In the fig, if the semi-perimeter of $\triangle ABC = 23$ cm, then $AF + BD + CE$ is :

- a. 23 cm
- b. 11.5 cm
- c. 46 cm
- d. 34.5 cm



56. The diameter of a circle whose area is equal to the sum of the two circles of radii 40 cm and 9 cm is :

- a. 41 cm
- b. 49 cm
- c. 82 cm
- d. 62 cm

57. A garden roller has circumference of 4m. The number of revolutions it makes in moving 40 metres is :

- a. 12
- b. 16
- c. 8
- d. 10

58. The surface areas of two spheres are in the ratio 16:9. The ratio of their volumes is :

- a. 64 : 27
- b. 16 : 9
- c. 4 : 3
- d. $16^3 : 9^3$

59. A solid piece of iron in the form of a cuboid of dimensions 49 cm x 33 cm x 24 cm, is moulded to form a solid sphere. The radius of the sphere is :

- a. 21 cm
- b. 23 cm
- c. 25 cm
- d. 19 cm

60. The probability of a sure event is :

- a. 0
- b. $\frac{1}{2}$
- c. 1
- d. non-existent

BIOLOGY

61. Substances necessary for autotrophic nutrition are:

- a. CO_2 and H_2O
- b. Chlorophyll
- c. Sunlight
- d. All of these

62. WBCs and RBCs are found in human blood in the ratio of:

- a. 1:60
- b. 1:600
- c. 1:6,000
- d. 1:60,000

63. Site of ultrafiltration of urine formation is:

- a. PCT
- b. DCT
- c. Bowman's capsule
- d. Loop of Henle

64. The gap between two neurons is called a:

- a. Dendrite
- b. Synapse
- c. Axon
- d. Impulse

65. Which plant hormone promotes ripening of fruits?

- a. Ethylene
- b. Auxin
- c. Gibberellin
- d. Cytokinin

66. Which of the following acts as a childbirth hormone?

- a. ADH
- b. Insulin
- c. Progesterone
- d. Oxytocin

67. Double fertilization is a unique feature of:

- a. Bryophytes
- b. Angiosperms
- c. Algae
- d. Gymnosperms

68. Endocrine cells of human testes are called :

- a. Interstitial cells
- b. Seminiferous tubules
- c. Follicular cells
- d. Endometrial cells

69. The normal cells of an organism bears 32 Chromosomes, the number of chromosomes in its germ cells will be :

- a. 14
- b. 15
- c. 16
- d. 28

70. According to the evolutionary theory, formation of a new species is generally due to:

- a. Sudden creation by nature
- b. Accumulation of variations over several generations
- c. Clones formed during asexual reproduction
- d. Movement of individuals from one habitat to another

71. Select F_2 phenotypic ratio obtained in a dihybrid cross:

- a. 3:1
- b. 1:1:1:1
- c. 9:3:3:1
- d. 12:3:1

72. Identify the nucleoside from the following:

- a. sugar + phosphate
- b. Nitrogen base + Sugar
- c. Nitrogen base + Phosphate
- d. Nitrogen base + Sugar + phosphate

73. A pair of contrasting expressions is called :

- a. Phenotype
- b. Genotype
- c. Alleles
- d. Gene

74. The three R's that will help us to conserve natural resources for long term use are :

- a. Recycle, regenerate, reuse
- b. Reduce, regenerate, reuse
- c. Reduce, reuse, redistribute
- d. Reduce, recycle, reuse

75. Nature's cleaners are:

- a. Decomposers
- b. Producers
- c. Consumers
- d. Carnivores

76. Stomata are surrounded by

- a. Subsidiary cell
- b. Mesophyll cells
- c. Guard cells
- d. Epidermal cells

77. Chlorofluorocarbons are known to cause :

- a. Depletion of ozone layer
- b. Global warming
- c. Both of these
- d. None of these

78. In peas, a pure tall plant (TT) is crossed with a short plant (tt). The ratio of pure tall plants to short plants in F_2 is :

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

79. In a flower, the parts that produce male and female gametes are

- a. Stamen and anther
- b. Filament and stigma
- c. Anther and ovary
- d. Stamen and style

80. A sexual reproduction in plants which produces seed without fertilization is known as:

- a. Parthenogenesis
- b. Sporulation
- c. Apomixis
- d. Vegetative reproduction

PART -II (ENGLISH)

COMPREHENSIVE ESSAY

Attempt essay on the topics given below.

**Maximum page limit should be 2.
Each question carries 10 Marks.**

- 1. Causes and effects of Water Pollution.**
- 2. Advantages and disadvantages of Internet.**

ANSWER KEY

PHYSICS

- | | | | | |
|-------|-------|-------|-------|-------|
| 1. d | 2. c | 3. b | 4. b | 5. d |
| 6. d | 7. d | 8. a | 9. a | 10. b |
| 11. b | 12. a | 13. b | 14. d | 15. d |
| 16. b | 17. a | 18. c | 19. a | 20. d |

CHEMISTRY

- | | | | | |
|-------|-------|-------|-------|-------|
| 21. a | 22. d | 23. c | 24. c | 25. d |
| 26. d | 27. b | 28. d | 29. d | 30. c |
| 31. a | 32. c | 33. a | 34. c | 35. a |
| 36. d | 37. c | 38. a | 39. b | 40. b |

MATHEMATICS

- | | | | | |
|-------|-------|-------|-------|-------|
| 41. a | 42. b | 43. c | 44. a | 45. d |
| 46. c | 47. c | 48. c | 49. a | 50. c |
| 51. b | 52. a | 53. a | 54. b | 55. b |
| 56. c | 57. d | 58. a | 59. a | 60. c |

BIOLOGY

- | | | | | |
|-------|-------|-------|-------|-------|
| 61. d | 62. b | 63. c | 64. b | 65. a |
| 66. d | 67. b | 68. a | 69. c | 70. b |
| 71. c | 72. b | 73. c | 74. d | 75. a |
| 76. c | 77. c | 78. c | 79. c | 80. a |