

21

The Competition in

Science & Research Skills

***Science & Research
Test I & II
MODEL PAPERS***

Class : X



Eduranet

Intellectual Olympiad Foundation

(Promoted by Eduranet Educational Society (Regd. 309/09))

Hyderabad | India

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SYLLABUS**I) Physics**

1. Motion
2. Force and Laws of Motion
3. Gravitation
4. Work and Energy
5. Sound

II) Chemistry

1. Matter in Our Surroundings
2. Is Matter Around us Pure
3. Atoms and Molecules
4. Structure of the Atom
5. Natural Resources

III) Biology

1. The fundamental Unit of life
2. Tissues
3. Diversity in Living Organisms
4. Why do we Fall ill ?
5. Improvement in Food Resources.

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SCIENCE & RESEARCH TEST-I

CODE: 2101

PRELIMS

Max. Marks : 75

Duration : 75 Mins.

General Instructions :

1. Please find the Answer Sheets (OMR) with in the envelop given to you.
2. Mention your Test Code, Student ID, Name, Class, Section and School Name on the OMR Sheet as per Question Paper and Hall Ticket.
3. This question paper contains 75 Questions, duration is 75 minutes.
4. Do rough work in the empty sheet provided along with this question paper.
5. Answer questions in OMR sheet only.
6. Don't write or tick anything on the question paper.
7. Use only Black or Blue Ball Point Pen or Dark Percil to answer the question in OMR sheet.
8. Indicate the correct answer by darkening one of the 4 or 5 responses provided.
9. Submit only OMR sheet to the invigilator

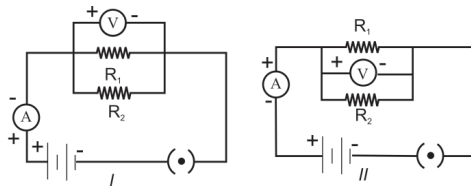
1. **When viewed vertically a fish appears to be 4 meter below the surface of the lake. If the index of refraction of water is 1.33, then the true depth of the fish is**
 - a) 5.32 metres
 - b) 3.32 metres
 - c) 4.32 metres
 - d) 6.32 metres
2. **An object is placed in front of a concave mirror of focal lenth 50.0 cm and a real image is formed 75 cm in front of the mirror. How far is the object from the mirror**
 - a) 25 cm
 - b) 30 cm
 - c) 150 cm
 - d) -150 cm

3. What is magnification of an object if it is placed at a distance of 30 cm in front of a concave lens of focal length 60 cm
- a) $3/2$ b) $2/3$ c) $-2/3$ d) $-3/2$
4. If the correct camera exposure for a certain scene is $\frac{1}{100}$ of a second when the diaphragm is set at $\frac{f}{3}$ what exposure time is required at $\frac{f}{12}$?
- a) 0.14 s b) 0.16 s c) 0.18 s d) 0.20 s
5. Suppose a small angled prism of 6° deviates a ray through 3° , then the refractive index is:
- a) 0.1 b) 0.5 c) 1.0 d) 1.5
6. You are under the water in a clear lake looking at the surface and see the image of a fish due to total internal reflection. What is the minimum angle that the light leaving the fish makes with the normal to the surface of the lake?
- a) 42° b) 53° c) 49° d) 37°
7. The following 'precautions' were listed by a student in the experiment on study of 'dependence of current on potential difference':
- a) Use copper wires as thin as possible for making connections.
- b) All the connections should be kept tight.
- c) The positive and negative terminals of the voltmeter and the ammeter should be correctly connected.
- d) The 'key' in the circuit, once plugged in, should not be taken out till all the observations have completed.

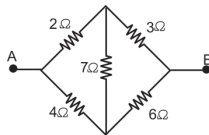
The 'precautions' that need to be corrected and revised are:

- a) (A), (C) and (E) b) (C) and (E)
- c) (B) and (E) d) (A) and (E)

8. Two students are using the circuits shown here. They are doing the experiment to find the equivalent resistance of a

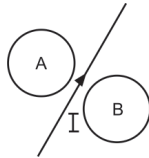


- a) Series combination and a parallel combination, respectively of the two given resistors
 b) parallel combination and a series combination respectively of the two given resistors
 c) series combination of two given resistors in both the cases
 d) parallel combination of the two gives resistors in both the cases
9. Five resistances are connected as shown in the figure. The effective resistance between points A and B is:

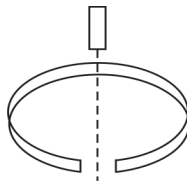


- a) $\frac{10}{3} \Omega$ b) $\frac{20}{3} \Omega$ c) 15Ω d) 6Ω
10. An electric kettle is rated at 230 V, 1000 W. What is the resistance of its element and what maximum current can pass through it?
- a) 4.35 A b) 6.46 A c) 7.40 A d) 9.36 A
11. If a charge of 1.6×10^{-19} coulomb flows per second through any cross section of any conductor, the current constituted will be
- a) 2.56×10^{-19} A b) 6.25×10^{-19} A
 c) 1.6×10^{-19} A d) 3.2×10^{-19} A

18. Consider the situation shown in figure. If the current I in the long straight wire XY is increased at a steady rate then the induced emf's in loops A and B will be-



- a) clockwise in A, anticlockwise in B
 - b) anticlockwise in A, clockwise in B
 - c) clockwise in both A and B
 - d) anticlockwise in both A and B
19. A copper ring having a cut such as not to form a complete loop is held horizontally and a bar magnet is dropped through the ring with its length along the axis of the ring. Then acceleration of the falling magnet is - (neglect air friction)



- a) g
 - b) less than g
 - c) more than g
 - d) 0
20. Which quantity is conserved in nuclear reaction?
- a) Mass number
 - b) Atomic number
 - c) (a) and (b)
 - d) None

21. Choose the incorrect statement

- a) We are encouraged to plant more trees so as to ensure clean environment and also provide bio-mass fuel
- b) Gobar-gas is produced when crops, vegetable wastes etc., decompose in the absence of oxygen.
- c) The main ingredient of bio-gas is ethane and it gives a lot of smoke and also produces a lot of residual ash
- d) Bio-mass is a renewable source of energy.

22. Study the following statements and choose the correct answer.

- i) Nuclear forces obey inverse square law
 - ii) positron is antiparticle of electron.
- a) (i) is true, (ii) is false
 - b) (i) is false, (ii) is true
 - c) both (i) and (ii) are false
 - d) both (i) and (ii) are true

23. The dependence of density [d] of nuclear matter on the mass number A is

- a) $d \propto A$
- b) $d \propto \sqrt{A}$
- c) $d = \text{const.}$
- d) $d \propto 1/A$

24. If N_0 is the original mass of the substance of half-life period $t_{1/2} = 5$ years, then the amount of substance left after 15 years is

- a) $N_0/8$
- b) $N_0/16$
- c) $N_0/2$
- d) $N_0/4$

25. Which of the following cannot be emitted by radioactive substances during their decay?

- a) Protons
- b) Neutrinos
- c) Helium nuclei
- d) Electrons

- 26. The hormone which helps in the osmoregulation is**
- a) antidiuretic
 - b) thyroxine
 - c) epinephrin
 - d) norepinephrine
- 27. The chief inorganic substance present in the urine is**
- a) sodium chloride
 - b) potassium
 - c) Calcium
 - d) Magnesium
- 28. FSH is produced by**
- a) posterior lobe of pituitary gland
 - b) middle lobe of pituitary gland
 - c) anterior lobe of pituitary gland
 - d) none of the above
- 29. Which of the following tissues provide control and coordination in animals?**
- a) Muscular and skeletal
 - b) Skeletal and nervous
 - c) Nervous and muscular
 - d) Muscular and transport
- 30. Growth - related movements are known as:**
- a) Tropic movements
 - b) Nastic movements
 - c) Directional movements
 - d) Both (a) and (c)
- 31. 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.
 - d) axonal end of one neuron to dendritic end of another neuro.
- 32. Embryo sac is found in**
- a) endosperm
 - b) ovule
 - c) embryo
 - d) seed

33. The mechanism in mitosis ensuring genetical continuity is

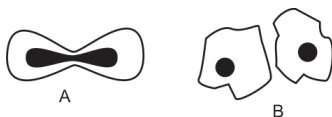
- a) having chromosome number between two daughter cells
- b) formation of unequal daughter cells
- c) segregation of paternal and maternal characters
- d) formation of two daughter cells with identical DNA

34. A feature of reproduction that is common to amoeba, Spirogyra and Yeast is that

- a) they reproduce asexually.
- b) they are all unicellular.
- c) they reproduce only sexually.
- d) they are all multicellular.

35. The given slides A and B were identified by four students, I,II, III and IV as stated below:

Slide A	Slide B
I. Binary fission in Amoeba II. Budding in yeast III. Binary fission in Amoeba IV. Budding in yeast	Daughter cells of Amoeba Buds of yeast Buds of yeast Daughter cells in Amoeba



- a) I
- b) II
- c) III
- d) IV

36. Good example for multiple allelism is

- a) blood groups
- b) skin colour in man
- c) haemophilia
- d) colour blindness

37. Which of the following was central point in Darwin's theory of evolution by natural selection?

- a) The biological structures of an organism is most likely to inherit from its parents are those that have become better suited to the environment through constant use
- b) Mutations occur to help future generations adapt to their environment
- c) Slight variations among individuals significantly affect the chance that a given individual will survive in its environment and be able to reproduce
- d) Genes change in order to help organisms cope with problems encountered within their environment.

38. If A and B have n characteristics common while A and C have n/2 characteristics common, then which of the two organisms are more closely related?

- a) A and C
- b) A and B
- c) Characteristics need to be known
- d) None of these

39. Limbs of a frog, lizard, bird, human are

- a) analogous
- b) homologous
- c) analogous and homologous
- d) used to fly

40. The pollutant present in coal mine exhaust is

- a) carbon monoxide
- b) carbon dioxide
- c) water vapour
- d) ash

41. Radioactive wastes from nuclear plants affect man by causing

- a) sterility
- b) genetic defects
- c) somatic effects
- d) nervous disorders

42. Excessive exposure of humans to UV-rays results in

- i) damage to immune system ii) damage to lungs
iii) skin cancer iv) peptic ulcers
a) (i) and (ii) b) (ii) and (iv)
c) (i) and (iii) d) (iii) and (iv)

43. Which is the missing organism in this food chain ?

— ? — → Small fish → Big fish
→ Crane

- a) Water b) Oxygen c) Plants d) Air

44. Which of the following is necessary for speciation to occur ?

- a) A large number of mutations accumulating within a population
b) Reproductive isolation of two population of organisms
c) A reduction in the number of individuals in a population
d) Matings between two populations of organisms produce offspring with low survivorship

45. Which of the following canals brought about greenery in Rajasthan?

- a) Jawaharlal Canal b) Rajiv Gandhi Canal
c) Mahatma Gandhi Canal d) Indira Gandhi Canal

46. Among the statements given below, select the ones that correctly describe the concept of sustainable development

- i) Planned growth with minimum damage to the environment
ii) Growth irrespective of the extent of damage caused to the environment
iii) Stopping all developmental work to conserve te environment.
iv) Growth that is acceptable to all the stateholders.
a) (i) and (iv) b) (ii) and (iii)
c) (ii) and (iv) d) (iii) only.

47. Expand the abbreviation GAP.

- a) Governmental Agency for Pollution Control
- b) Ganga Assimilation by Photosynthesis
- c) Ganga Action Plan
- d) Governmental Agency for Animal Protection.

48. The breakdown of pyruvate to give carbon dioxide, water and energy takes place in

- a) Cytoplasm
- b) Mitochondrion
- c) Chloroplast
- d) Nucleus

49. Raisins are soaked in water for determining the percentage of water absorbed by raisins.

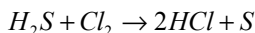
The formula, used by a student, for calculating the percentage of water absorbed, is:

- a) $\frac{\text{Initial weight} - \text{Final weight}}{\text{Initial weight}} \times 100$
- b) $\frac{\text{Final weight} - \text{Initial weight}}{\text{Initial weight}} \times 100$
- c) $\frac{\text{Final weight} - \text{Initial weight}}{\text{Final weight}} \times 100$
- d) $\frac{\text{Initial weight} - \text{Final weight}}{\text{Final weight}} \times 100$

50. Light is not needed by plants in which phase of Photosynthesis

- a) Light reaction
- b) Dark reaction
- c) Light reaction and dark reaction
- d) Only light reaction

51. Consider the reaction:



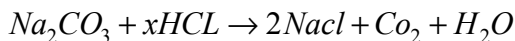
The statement which is not correct for the given reaction is :

- a) Cl_2 get reduced to HCl b) H_2S get oxidised to S
c) Cl_2 is the oxidising agent d) H_2S is the oxidising agent

52. Which of the following is not an example of single displacement reaction ?

- a) $CuO + H_2 \rightarrow H_2O + Cu$ b) $Zn + CuSO_4 \rightarrow ZnSO_4 + Cu$
c) $4NH_3 + 5O_2 \rightarrow 4NO + 6H_2O$ d) $Zn + 2HCl \rightarrow H_2 + ZnCl_2$

53. In the following equations:



the value of x is -

- a) 1 b) 2
c) 3 d) 4

54. For the reaction $2A + B \rightarrow 3C + D$

which of the following does not express the reaction rate ?

- a) $-\frac{d[B]}{dt}$ b) $\frac{d[D]}{dt}$ c) $-\frac{1}{2} \frac{d[A]}{dt}$ d) $-\frac{1}{3} \frac{d[C]}{dt}$

55. According to Le-chatelier's principle, adding heat to a $solid \rightleftharpoons liquid$ equilibrium will cause the

- a) temperature to increase
b) temperature to decrease
c) amount of liquid to decrease
d) amount of solid to decrease

56. An acid used in lead storage batteries is:

- a) H_2SO_4 b) HNO_3 c) HCl d) CH_3COOH

57. Of the aqueous solutions listed below, which would be the best conductor of an electric current ?

- a) 1.00 M HCl b) 1.00 M $HC_2H_3O_2$
c) 1.00 M C_2H_5OH d) 1.00 M $HClO$

58. A Student was given four unknown colourless samples labelled as A, B, C and D and asked to test their pH using pH paper. He observed that the colour of pH paper turned to light green, dark red, light orange and dark blue with samples A, B, C and D respectively.

The correct sequence of increasing order of the pH value for samples is :

- a) $A < B < C < D$ b) $A < D < C < B$
c) $C < B < A < D$ d) $B < C < A < D$

59. Conjugate acid of NH_2^- is :

- a) NH_4^+ b) NH_3 c) NH_2 d) NH

60. Calculate the pOH of a solution at 25°C that contains 1×10^{-10} M of hydronium ions, i.e. H_3O^+ .

- a) 4.000 b) 9.0000 c) 1.000 d) 7.000

61. In Ag - $CuSO_4$ cell silver electrode will serve as

- a) anode b) cathode
c) Both anode and cathode d) None of these

62. By convention potential of standard hydrogen electrode at all temperature is

- a) 0V b) 1V c) 10V d) 100V

63. The slag formed in the extraction of copper from copper pyrites is :

- a) CaSiO_3 b) FeSiO_3 c) FeS d) $\text{Ca}_3(\text{PO}_4)_2$

64. Which of the following reactions can be used to join railway tracks ?

- a) $3\text{MnO}_2 + 4\text{Al} \rightarrow 3\text{Mn} + 2\text{Al}_2\text{O}_3$
b) $\text{Fe}_2\text{O}_3 + 2\text{Al} \rightarrow 2\text{Fe} + \text{Al}_2\text{O}_3$
c) $\text{Zn} + \text{CuSO}_4 \rightarrow \text{ZnSO}_4 + \text{Cu}$
d) $\text{Fe} + \text{CuSO}_4 \rightarrow \text{FeSO}_4 + \text{Cu}$

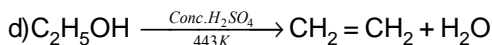
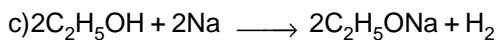
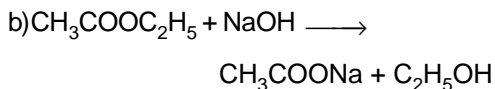
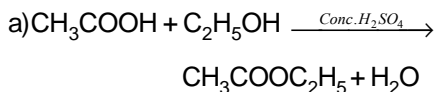
65. Of the following, which cannot be obtained by electrolysis of the aqueous solution of their salt is

- a) Ag b) Mg and Al c) Cu d) Cr

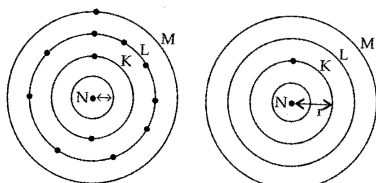
66. Oxidation of a primary alcohol with $\text{KMnO}_2 / \text{OH}$ gives a/an :

- a) carboxylic acid b) ether
c) ketone d) ester

67. Which one of the following reactions represents 'esterification' ?

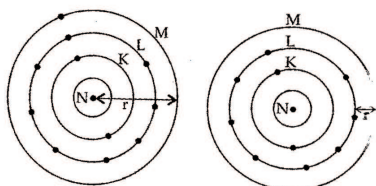


73. If element *a* belongs to group III, and second period of the periodic table, which of the following sets of properties would it exhibit ?
- Liquid, most metallic
 - Gaseous, moderately metallic
 - Solid, nonmetallic
 - Solid, less metallic
74. Which one of the following depict the correct representation of atomic radius(*r*) of an atom ?



(i)

(ii)



(iii)

(iv)

- (i) and (ii)
 - (ii) and (iii)
 - (iii) and (iv)
 - (i) and (iv)
75. If the two members of a Dobereiner triad are phosphorus and antimony, the third member of this triad is
- arsenic
 - sulphur
 - iodine
 - calcium

KEY TO MODEL PAPER - I

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

SCIENCE & RESEARCH TEST-II

FINALS

CODE: 2102

Max. Marks : 60

Duration : 60 Mins.

General Instructions :

1. Please find the separate Answer Sheets along with the question paper.
2. Mention your Test Code, Student ID, Name, Class, Section, Contact no. and School Name on the Answer Sheet as per Question Paper and Hall Ticket.
3. This question paper contains VII sections, duration is 60 minutes.
4. Please read the instructions carefully before attempting the question.
5. Answer questions in Answer Sheet only.
6. Don't write or tick anything on the question paper.
7. Use only Black or Blue Ball Point Pen to answer the question in Answer Sheet.
8. Submit only answer sheet(s) to the invigilator.

SECTION - I

10 × 1 = 10m

DIRECTIONS : (1 - 10) – Each question contains statements given in two columns which have to be matched. Statements in column A have to be matched with statements in column B and write in the answer sheet.

Column A

- 1) Work done by the magnetic force may be
- 2) Work done by the pseudo force may be
- 3) Frictional work
- 4) NaHCO_3

Column B

- A) zero
- B) \pm ve, zero
- C) Conservative
- D) Acidic salt

- | | |
|----------------------------|---|
| 5) MgSO_4 | E) Neutral salt |
| 6) Change in kinetic | F) $\text{PH} > 7$ (aqueous solution) |
| 7) Oxalic acid | G) Non conservative |
| 8) Nicd battery | H) Chargeable battery |
| 9) No pollution | I) Lead storage battery |
| 10) PbO_2 Cathode | J) Weak electrolyte |
| | K) $\text{H}_2 - \text{O}_2$ Fuel cell. |
| | L) $\text{PH} < 7$ (aqueous solution) |

SECTION - II**10 × 1 = 10 m**

DIRECTIONS : (11 - 20) – Read the following statements and write your answer as true or false with reasons or solutions in the answer sheet.

11. Thorium series is also called 4n series.
12. Producer gas is obtained as one of the products of dry distillation of coal.
13. A transformer is an electrical device that works on the principle of self - induction.
14. The focal length of a given lens depends on the surrounding medium.
15. Aluminium chloride (AlCl_3) is a Lewis acid because it can donate electrons.
16. Standard hydrogen electrode is represented as $\text{Pt} (s) | \text{H}^+ (aq) | \text{H}_2 (g)$
17. Roasting is done for sulphide ores
18. Fungi like bread moulds, yeast and mushroom break down the food material outside the body and then absorb it
19. In the thoracic cavity, the trachea divides into two tubes called bronchioles.

20. The Chipkomovement was the result of grass roots level effort to end the alienation of people from forest.

SECTION - III**10 × 1 = 10m**

DIRECTIONS : (21 - 30) – Complete the following statements with an appropriate word/term to be written in the answer sheet.

21. The SI unit of power of a lens is
22. Copper is a preferred material for making wire because of its low
23. Magnetic field lines emerge from the pole of a solenoid or a permanent magnet.
24. In our houses we receive AC electric power of with a frequency of
25. When an element displaces another element from its compound, a reaction occurs.
26. For the reaction

$$CaCo_3 \rightleftharpoons CaO + CO_2; \Delta n \text{ ____}$$
27. Anhydrous sodium carbonate is commonly known as
28. _____ hormone secreted by the posterior lobe of the pituitary gland helps in osmoregulation.
29. _____receptors detects taste and _____ receptors detects smell.
30. The ruptured ovarian follicle is called _____

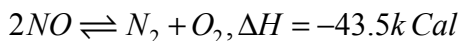
SECTION - IV**10 × 1 = 10m**

DIRECTIONS : (31 - 40) – Identify the correct answer from the given options and write in the answer sheet.

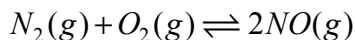
31. An object is situated at a distance of $f/2$ from a convex lens of focal length f . Distance of image will be -
- | | |
|----------------|----------------|
| a) + ($f/2$) | b) + ($f/3$) |
| c) + ($f/4$) | d) – f |

32. The formation of a dipole is due to two equal and unlike point charges placed at a
- a) Short distance
 - b) long distance
 - c) above each other
 - d) none of these
33. According to Faraday's law of electrolysis, the amount of decomposition is proportional to
- a) 1/time for which current passes
 - b) electrochemical equivalent of the substance
 - c) 1/ current
 - d) 1/ electrochemical equivalent
34. A magnet is placed vertically on a paper. Then the number of neutral points obtained on the paper is
- a) Zero
 - b) one
 - c) two
 - d) three
35. A balanced chemical equation is in accordance with –
- a) avogadro's law
 - b) law of multiple proportion
 - c) law of conservation of mass
 - d) law of gaseous volumes.
36. In the Harber process for the manufacture of ammonia the following catalyst is used
- a) platinized asbestos
 - b) iron with molybdenum as promoter
 - c) copper oxide
 - d) alumina

37. For the gas phase reaction



Which one of the following is true for



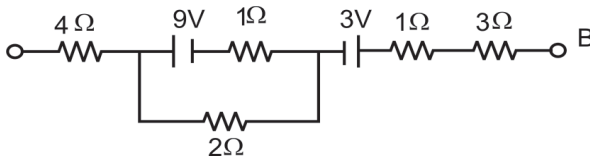
- a) K is independent of T
 - b) K decreases as T decreases
 - c) K increases as T decrease
 - d) K varies with addition of NO
38. 5 g of raisins were placed in distilled water for 24 hours. The weight of soaked raisins was found to be 7g. The correct percentage of water observed by raisins is:
- a) 20%
 - b) 25%
 - c) 40%
 - d) 45%
39. Oxygen is needed for
- a) breakdown of glucose
 - b) breakdown of glucose to release energy
 - c) obtaining evergy
 - d) none of the above.
40. A Mendelian experiment consisted of breeding tall pea plants bearing violet flowers with short pea plants suggests that the genetic make up of the tall parent can be depicted as.
- a) TTWW
 - b) TTww
 - c) TtWW
 - d) TtWw.

SECTION - V

12 × 1 = 12m

DIRECTIONS : (41 – 50) – This section contains multiple choice questions. Each question has 4 choices (a), (b), (c) and (d) out of which ONE OR MORE may be correct. choose the correct answers and write in the answer sheet.

41. The radius of curvature of a plane mirror can't be
- a) zero
 - b) infinite
 - c) negative
 - d) finite
42. S_1 and S_2 are two equipotential surfaces on which the potentials are not equal:
- a) S_1 and S_2 both cannot intersect
 - b) S_1 and S_2 both cannot be plane surfaces
 - c) in the region between S_1 and S_2 , the field is maximum where they are closest to each other
 - d) a line of force from S_1 to S_2 must be perpendicular to both
43. The potential difference between the points A and B in the circuit shown here is 16 volts. Then :



- a) the current through the 2Ω resistance is 3.5 amp
- b) the current through the 4Ω resistance is 2.5 amp
- c) the current through the 3Ω resistance is 1.5 amp
- d) the potential difference between the terminals of the 9V battery is 7V

44. A conducting loop is placed in a uniform magnetic field with its plane perpendicular to the field. An emf is induced in the loop if
- a) it is translated b) it is rotated about its axis
c) it is rotated about its axis d) it is expanded
45. Which of the following reaction will be favoured at low pressure?
- a) $H_2 + I_2 \rightleftharpoons 2HI$ b) $N_2 + 3H_2 \rightleftharpoons 2NH_3$
c) $PCl_5 \rightleftharpoons PCl_3 + Cl_2$ d) $2SO_3 \rightleftharpoons 2SO_2 + O_2$
46. Aqueous solution of acetic acid contains
- a) CH_3COO^- b) H_3O^+
c) CH_3COOH d) H^+
47. Which of the following is (are) non - disposable batteries?
- a) dry cell b) mercury cell
c) lead acid battery d) Ni-cd battery
48. Find out the correct sentence:
- a) Hybridisation means crossing between genetically dissimilar plants
b) Cross between two varieties is called as interspecific hybridisation
c) Introducing genes of desired character into a plant gives genetically modified crop
d) Cross between plants of two species is called intervarietal hybridisation.
49. Low visibility during cold weather is due to
- a) formation of fossil fuel
b) unburnt carbon particles or hydrocarbons suspended in air
c) lack of adequate power supply
d) formation of smog

50. Medullated nerve fibre in axon covered by

- a) Neurolemma
- b) Medullary sheath
- c) Mitochondria
- d) None of the above

SECTION - VI

5 × 1 = 5m

DIRECTIONS: (51 - 55) – Fill in the blanks in the following passage from words given inside the box.

Friction	electrons	transferring	Negative charge
Positive charge			

Electric charge is developed due to actual transfer of51.....
When two substances are rubbed against each other, energy is provided from outside to overcome52..... between them. This energy is used to remove electrons from one substance and53..... them to the other. The transfer takes place from the material in which electrons are held less tightly to the material in which electrons are held more tightly. The material which loses electrons acquires54..... and which gains electrons acquires an equal55

SECTION - VII

5 × 1 = 5m

DIRECTIONS : (56 – 60) – Each of these questions contains an Assertion followed by reason. Read them carefully and answer the question on the basis of following options. You have to select the one that best describes the two statements and write in the answer sheet.

- a) If both **Assertion** and **Reason** are correct and Reason is the **Correct explanation** of Assertion.
- b) If both **Assertion** and **Reason** are correct, but Reason is **not the correct explanation** of Assertion.
- c) If **Assertion** is **correct** but **Reason** is **incorrect**
- d) If **Assertion** is **incorrect** but **Reason** is correct

56. **Assertion:** Hydrogenation is the process of converting an oil into a fat, called vegetable ghee.

Reason : Hydrogenation is carried out in presence of a catalyst usually finely divided nickel.

57. **Assertion :** 1-Butene on reaction with HBr in the presence of a peroxide produces 1- bromo-butane.

Reason: It involves the free radical mechanism.

58. **Assertion:** Diamond and graphite are allotropes of carbon

Reason: Some elements can have several different structural forms while in the same physical state. These differing forms are called allotropes.

59. **Assertion:** Cartilage (protein matrix) and bone (Calcium matrix) are rigid connective tissue.

Reason: Blood is connective tissue in which plasma is the matrix.

60. **Assertion:** Mitochondria and chloroplasts are semiautonomous organelles.

Reason: They are formed by division of pre-existing organelles as well as contain DNA but lack protein synthesizing machinery.

SOLUTIONS TO MODEL PAPER - II**SECTION – I****Match the Following**

- 1) → C ; 2) → B ; 3) → G ; 4) → D,F ;
5) → E, L ; 6) → A ; 7) → J ; 8) → H ;
9) → K ; 10) → I

SECTION – II**True / False**

- 11) True 12) False 13) False 14) True
15) False 16) False 17) True 18) True
19) False 20) True

SECTION – III**Fill in the Blanks**

- 21) diopetre 22) resistivity
23) North 24) 220 v, 50 Hz
25) displacement 26) 1
27) soda ash 28) Antidiuretic
29) Gusturoy, alfactory 30) corpus laterus

SECTION – IV**Multiple Choice Questions**

- 31) d 32) a 33) b 34) b
35) c 36) b 37) b 38) c
39) b 40) c

SECTION – V**More than one correct answers**

- 41) a, c, d 42) a, c, d 43) a, c, d 44) c, d
45) c, d 46) a, b, c 47) c, d 48) a, c
49) b, d 50) a, b

SECTION – VI**Fill in the Passage**

- 51) electrons 52) Friction
53) transterring 54) Positive charge
55) Negative charge

SECTION – VII**Assertion & Reason**

56. b) If both **Assertion** and **Reason** are correct, but **Reason** is **not the correct explanation** of Assertion.
57. a) If both **Assertion** and **Reason** are correct and **Reason** is the **Correct explanation** of Assertion
58. a) If both **Assertion** and **Reason** are correct and **Reason** is the **Correct explanation** of Assertion
59. b) If both **Assertion** and **Reason** are correct, but **Reason** is **not the correct explanation** of Assertion.
60. c) If **Assertion** is incorrect but **Reason** is incorrect.