

**SRI CHAITANYA EDUCATIONAL INSTITUTIONS, A.P.**

DERABAD ✪ Guntur ✪ VIJAYAWADA ✪ Visakhapatnam ✪ Tirupathi ✪ Eluru ✪ Bhimavaram ✪ Rajahmundry ✪
Kakinada ✪ Machilipatnam ✪ Tenali ✪ Srikakulam ✪ Ongole ✪ Anantapuram ✪ Nellore ✪ Amalapuram ✪ Chittoor ✪ Kurnool

CENTRAL OFFICE- MADHAPUR
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BOTANY

1. A cross between two tall garden pea plants produced all tall plants. The possible genotypes of the parents are

- I) TT, TT II) TT, Tt III) Tt, tt IV) Tt, Tt

The correct answer is

- 1) III, IV 2) I, IV 3) I, II 4) II, III

Ans : 3

2. Tall (T) is completely dominant over dwarf (t). Red flower colour (R) is incompletely dominant over white (r), the heterozygote being pink. Plant having genotype of Tt Rr is self pollinated. What would be the proportion of plants with dwarf and pink characters in its progeny ?

- 1) $\frac{2}{16}$ 2) $\frac{1}{16}$ 3) $\frac{9}{16}$ 4) $\frac{3}{16}$

Ans : 1

3. If the codon GGU is reversed, the resulting codon will code for this amino acid

- 1) Tyr 2) Trp 3) Leu 4) Thr

Ans : 2

4. Study the following lists

List - I

- A) Exon
B) Capping
C) Tailing
D) Promoter

List – II

- I) Site for binding of RNA polymerase
II) Coding sequence
III) Lagging strand
IV) Methyl guanosine triphosphate
V) Adenylate residues

The correct match is

- | | | | | | | | |
|--------|----|----|----|-------|----|-----|---|
| A | B | C | D | A | B | C | D |
| 1) II | IV | V | I | 2) II | IV | I | V |
| 3) III | I | II | IV | 4) IV | II | III | I |

Ans : 1

5. Identify the correct pair of combinations



- I) ^{14}C - Distinction between PS I and PS II
 II) ^{15}N - Semiconservative replication of DNA
 III) ^{35}S - Polypeptide synthesis
 IV) ^{32}P - Identification of chemical nature of genetic material
- 1) II, III 2) II, IV 3) I, II 4) I, III

Ans : 2

6. Some foreign DNA fragment is attached to Cla I site of pBR322. This recombinant vector is used to transform Escherichia coli host cells. The cells subjected to transformation are plated on two different media – one containing ampicillin and the other containing tetracycline. The transformed cells containing the recombinant vector

- 1) will grow on both tetracycline containing and ampicillin containing media
 2) will not grow on either tetracycline containing or ampicillin containing media
 3) will grow on tetracycline but not on ampicillin containing medium
 4) will grow on ampicillin but not on tetracycline containing medium

Ans : 1

7. Assume that the occurrence of nitrogen bases in adjacent positions in a DNA strand is random. Identify the minimum number of nucleotides in a DNA strand where GAAT can occur once on the basis of probability ?

- 1) 512 2) 256 3) 4096 4) 1024

Ans : 2

8. Study the following lists

List - I

- A) RNA I
 B) ELISA
 C) PCR
 D) Cry I Ab

List – II

- I) Cotton bollworms
 II) Early detection of HIV
 III) Meloidogyne resistance
 IV) Antigen – antibody interaction
 V) Corn borer

The correct match is

- | | | | | | | | |
|--------|-----|----|----|-------|-----|-----|----|
| A | B | C | D | A | B | C | D |
| 1) III | IV | II | V | 2) IV | III | I | V |
| 3) II | III | V | IV | 4) V | I | III | II |

Ans : 1

9. Identify the correct pair of combinations

- I) Parbhani Kranti - Resistance to virus - Bhindi
 II) Pusa Gaurav - Resistance to aphids - Mustard



III) Pusa Sadabahar - Resistance to fruit borer - Cow pea

IV) Pusa Shubhra - Resistance to white rust - Cauliflower

1) II, III

2) II, IV

3) I, II

4) I, III

Ans : 3

10. Study the following lists

List - I

A) BOD

B) KVIC

C) LAB

D) STPS

List - II

I) Treatment of sewage

II) Measure of organic matter in water

III) Biological methods for controlling plant diseases

IV) Increases vitamin B₁₂

V) Production of biogas

The correct match is

A B C D

1) IV III II V

3) II I IV V

A B C D

2) V II III I

4) II V IV I

Ans : 4

11. Assertion (A) : The RQ value of fats is less than one

Reason (R) : The amount of CO₂ released is less than the O₂ consumed when fats are used in respiration

1) A is true but R is false

2) A is false but R is true

3) Both A and R are true and R is the correct explanation of A

4) Both A and R are true but R is not the correct explanation of A

Ans : 3

12. Study the following lists

List - I

A) Early seed production in conifers

B) Seed development and maturation

C) Lateral shoot growth

D) Root hair formation

List - II

I) Indole substance

II) Terpene substance

III) Volatile substance

IV) Adenine derivative

V) Carotenoid derivative

The correct match is

A B C D

1) III I V II

3) II I V IV

A B C D

2) II V IV III

4) IV III II I

Ans : 2



13. In flowering plants, the site of perception of light/dark duration is

- 1) Stem 2) Leaves 3) Shoot apex 4) Floral meristem

Ans : 2

14. Beggiota is a

- 1) Chemoautotroph 2) Photoautotroph 3) Photoheterotroph 4) Chemoheterotrophic

Ans : 1

15. Identify the correct pair of combination

- I) Viroid – Bovine spongiform encephalitis II) Prion – Creutzfeldt – Jakob disease
- III) Measles virus – Glycoprotein projections IV) Rabies virus – Polyhedral symmetry
- 1) III, IV 2) I, III 3) I, II 4) II, III

Ans : 4

16. A taxon is observed. Himgiri variety which is resistant to hill bunt disease belongs to this taxon. In this taxon, pollen grains lose viability within 30 minutes of their release from anthers. The taxon belongs to the order

- 1) Sapindales 2) Polemoniales 3) Rosales 4) Poales

Ans : 4

17. Identify the wrong combination

- 1) Dryopteris – Rhizome 2) Cycas – Coralloid roots
- 3) Volvox – Colonial form 4) Marchantia – Pseudo – elaters

Ans : 4

18. Study the following lists

- | | |
|--|-----------------------|
| List - I | List – II |
| A) Micrographia | I) Skoog |
| B) Technique of plant tissue culture | II) Bessey |
| C) Phylogenetic classification | III) Joseph Priestley |
| D) Absorption of toxic gases by plants | IV) Robert Hooke |
| | V) Stephen Hales |

The correct match is

- | | |
|----------------|----------------|
| A B C D | A B C D |
| 1) IV III II I | 2) II I IV V |
| 3) IV I II III | 4) III II V IV |

Ans : 3

19. Trichoderma erythrium which gives colour to red sea is a

- 1) Green alga 2) Blue green alga 3) Red alga 4) Brown alga

Ans : 2



20. Identify the characters of mustard, chilli, cauliflower respectively

- 1) Inferior ovary, zygomorphic flower, corymb
- 2) Whorled phyllotaxy, unilocular ovary, production of flowers at the same node of the peduncle
- 3) Hypoynous flower, unilocular ovary, corymb
- 4) Axile placentation, tricarpeal gynoecium, sessile flowers

Ans : 3

21. Four plants A, B, C, D are observed. A has cartilaginous endocarp in the fruit and fleshy thalamus as chief edible part. B has caryopsis fruit with endosperm as the chief edible part. In 'C' each carpel of apocarpous gynoecium develops into a fruitlet and its mesocarp and endocarp are the chief edible parts. 'D' has syconus fruit with edible fleshy peduncle. To which families A, B, C and D belong respectively ?

- 1) Annonaceae, Rosaceae, Moraceae, Rutaceae
- 2) Solanaceae, Cucurbitaceae, Anacardiaceae, Moraceae
- 3) Rutaceae, Anacardiaceae, Rosaceae, Fabaceae
- 4) Rosaceae, Poaceae, Annonaceae, Moraceae

Ans : 4

22. Match the following lists

List - I

- A) Alstonia
- B) Ananus sativus
- C) Sugarcane
- D) Bombax ceiba

List – II

- I) Roots at lower nodes of the stem
- II) Leaflets are attached at a common point in the leaf
- III) Swollen placenta
- IV) More than two leaves at every node
- V) Underground lateral branches producing aerial leafy shoots

The correct match is

- | A | B | C | D | A | B | C | D |
|-------|-----|----|----|-------|-----|---|----|
| 1) IV | V | I | II | 2) V | III | I | II |
| 3) V | III | II | IV | 4) IV | II | V | I |

Ans : 1

23. Identify the wrong pair of statements

- I) Number of stamens in 5 flowers of Allium is equal to those in 5 flowers of Solanum
- II) The microsporangia of Hibiscus and Asparagus are having 80 pollen grains each. Then the ratio of the number of pollen grains produced from each stamen of these two plants is 1 : 1
- III) The ratio of the number of stamens in the flowers of Pisum and Datura is 2 : 1
- IV) The number of carpels in a flower of Smilax is equal to the number of carpels in a cyathium inflorescence

- | | | | |
|------------|----------|----------|------------|
| 1) III, IV | 2) I, IV | 3) I, II | 4) II, III |
|------------|----------|----------|------------|



Ans : 3

24. Wind pollinated plants generally do not show the following character

- | | |
|-------------------------|------------------------------------|
| 1) Feathery stigma | 2) Single ovule in the ovary |
| 3) Well exposed stamens | 4) Flowers are large and colourful |

Ans : 4

25. Identify the pair of wrong statements in the following

- I) Intine of pollen grain is made up of sporopollenin
II) Pollen grains are well preserved as fossils because of the presence of sporopollenin
III) Enzymes can degrade the organic material of the exine of pollen grain
IV) Sporopollenin can withstand high temperatures, strong acids and alkali
- | | | | |
|------------|-----------|----------|------------|
| 1) III, IV | 2) I, III | 3) I, II | 4) II, III |
|------------|-----------|----------|------------|

Ans : 2

26. In Bentham and Hooker's classification, the sub – class Polypetalae and Gamopetalae have the cohorts in the ratio of

- | | | | |
|----------|----------|----------|----------|
| 1) 1 : 1 | 2) 2 : 1 | 3) 2 : 3 | 4) 3 : 2 |
|----------|----------|----------|----------|

Ans : 1

27. In which of the following plants, pollen is released before the stigma becomes receptive in the same flower ?

- | | | | |
|-----------|--------------|-----------|------------|
| 1) Allium | 2) Colchicum | 3) Datura | 4) Solanum |
|-----------|--------------|-----------|------------|

Ans : 1

28. Chromosome number in the endosperm cell of plant 'A' and in the root apical meristem cell of plant 'B' together equal the chromosome number in the shoot apical meristem cell of Apple. Plants A and B respectively are

- | | |
|-----------------------|-----------------|
| 1) Maize, Haplopappus | 2) Rice, Potato |
| 3) Rice, Haplopappus | 4) Rice, Maize |

Ans : 1

29. There are 20% Adenines among the bases in a DNA fragment measuring 6.8nm in length. The number of pentoses, nitrogen base pairs, phosphate groups and hydrogen bonds in this DNA fragment are respectively

- | | | | |
|-------------------|-------------------|-------------------|-------------------|
| 1) 52, 20, 20, 40 | 2) 40, 52, 40, 20 | 3) 20, 40, 52, 40 | 4) 40, 20, 40, 52 |
|-------------------|-------------------|-------------------|-------------------|

Ans : 4

30. Study the following lists

List - I

List – II

A) G_1 phase

I) Replication of NA

B) S phase

II) Quiescent stage

C) G₂ phase

III) Condensation of chromatin

D) G₀ phase

IV) Protein synthesis

V) Interval between mitosis and initiation of DNA replication

The correct match is

A B C D

1) III V I II

3) V I IV II

A B C D

2) V IV I III

4) V II III IV

Ans : 3

31. Study the following lists

List - I

A) Golgi apparatus

B) Glyoxysomes

C) Peroxisomes

D) Endoplasmic reticulum

List – II

I) Conversion of lipids to carbohydrates

II) Catabolism of long chain fatty acids

III) Formation of glycoproteins and glycolipids

IV) Synthesis of lipids

V) Osmoregulation

The correct match is

A B C D

1) IV V I II

3) III I II IV

A B C D

2) V IV II III

4) II III V I

Ans : 3

32. Which one of the following characters is not found in transverse section of monocot stem ?

1) Sclerenchyma bundle sheath

2) Lysigenous cavity

3) Sclerenchymatous hypodermis

4) Starch sheath

Ans : 4

33. Identify the correct pair of statements

I) Functions of sieve tubes are controlled by the nucleus of companion cells

II) Albuminous cells are present in angiosperms

III) In dicot root, the vascular cambium is completely secondary in origin

IV) Cylindrical meristems contribute to the formation of primary plant body

1) I, III

2) III, IV

3) I, II

4) II, III

Ans : 1

34. Identify the wrong pair of statements

I) During plant succession, some species colonise an area and populations become more numerous, whereas populations of other species decline and even disappear

II) Both hydrarch and xerarch successions lead to mesic conditions



- III) Secondary succession is a slow process when compared to primary succession
- IV) In the successive seral stages, there is no change in the diversity of species of organisms
- 1) II, III 2) I, II 3) III, IV 4) I, III

Ans : 3

35. Study the following lists

List - I

- A) Salvinia
- B) Lichens
- C) Rhizophora
- D) Utricularia

List – II

- I) Submerged, suspended hydrophyte
- II) Amphibious plant
- III) Heterosporous plant
- IV) Soil formation
- V) Halophyte

The correct match is

- | | |
|-------------------|-----------------|
| A B C D | A B C D |
| 1) III II V I | 2) V III IV I |
| 3) V II I III | 4) III IV V I |

Ans : 4

36. Study the following table showing the components of water potential of four cells of an actively transpiring plant

Cell	Solute potential (MPa)	Pressure potential (MPa)
A	- 0.68	0.42
B	- 0.75	0.36
C	- 0.83	0.47
D	- 0.57	0.29

Identify the four cells as root hair, cortical cell, endodermal cell (lacking casparian strips) and pericycle cell respectively in the young root (assuming symplastic water flow through them)

- 1) B, D, C, A 2) D, A, C, B 3) A, D, C, B 4) A, C, B, D

Ans : 3

37. Study the following lists

List - I

- A) Die – back in citrus
- B) Mottled leaf
- C) Mouse ear in pecan
- D) Whip tail in cauliflower

List – II

- I) Urease
- II) Hexokinase
- III) Nitrogenase
- IV) Cytochrome ‘C’ oxidase
- V) Carboxypeptidase

The correct match is

- | | |
|---------------|---------------|
| A B C D | A B C D |
|---------------|---------------|



1) III II IV I

2) IV V I III

3) IV I III V

4) V III II IV

Ans : 2

38. identify the correct pair of statements

I) Niacin containing coenzyme facilitates the oxidation of malate in the matrix of mitochondria

II) Haem is the prosthetic group for the enzyme which catalyses the carboxylation of RuBP in the stroma of chloroplast

III) The electron carrier between cytochrome 'C' reductase and cytochrome 'C' oxidase is attached to the inner surface of inner membrane of mitochondria

IV) Water splitting reaction in the lumen of thylakoid requires chlorine

1) I, II

2) I, IV

3) II, III

4) III, IV

Ans : 2

39. Assertion (A) : Higher yields in case of bell pepper can be achieved by growing them in carbondioxide enriched green houses

Reason (R) : Due to higher intracellular CO₂ concentration in bundle sheath cells RuBisCo mainly acts as carboxylating enzyme

1) A is true but R is false

2) A is false but R is true

3) Both A and R are true and R is the correct explanation of A

4) Both A and R are true but R is not the correct explanation of A

Ans : 1

40. The form of carbon used for the carboxylation of phosphoenol pyruvate in C₄ plants is1) H₂CO₃2) C₂H₄3) CH₄4) HCO₃⁻

Ans : 4

ZOOLOGY

41. Proteus anguinus is an example for

1) Circannular Rhythms

2) Effect of light on Pigmentation

3) Phototaxis

d) Photokinesis

Ans : 2

42. A Molluscan with calcareous spicules is

1) Lepidopleurus

2) Doris

3) Neopilina

4) Chaetoderma

Ans : 4

43. In the following functional human lung studies, identify the total lung capacity

A) Inspiratory capacity (IC)

B) Functional residual capacity (FRC)



- C) Vital capacity (VC)
- D) Inspiratory reserve volume (IRV)
- E) Residual volume (RV)
- F) Expiratory reserve volume (ERV)
- G) Tidal volume (TV)

The correct answer is

- 1) (D) + (F) 2) (A) + (D) 3) (B) + (C) 4) (C) + (E)

Ans : 4

44. The protozoan with heliopodia as locomotory structures

- 1) Actinophrys 2) Entamoeba 3) Elphidium 4) Euglypha

Ans : 1

45. Males produces sperms by mitosis in

- 1) Periplaneta Americana 2) Apis mellifera
- 3) Drosophila melanogaster 4) Lepisma

Ans : 2

46. Match the following

List – I

- A) Jim Corbett National Park
- B) Kaziranga National Park
- C) Mahavir Harina Vanasthali National Park
- D) Keoladeo Ghana National Park

List – II

- I) Gujarat
- II) Andhra Pradesh
- III) Rajasthana
- IV) Uttarkhand
- V) Assam

The correct match is

- | | | | |
|----------------|----------------|--------------|----------------|
| A B C D | A B C D | A B C D | A B C D |
| 1) II V IV III | 2) II I III IV | 3) IV I II V | 4) IV V II III |

Ans : 4

47. The inner lining of the ducts of sweat glands and pancreatic duct is formed by this epithelium

- 1) Stratified cuboidal 2) Stratified non-kerantinised squamous
- 3) Transitional 4) Pseudostratified

Ans : 1

48. Match the following

List – I

- A) African sleeping sickness

List – II

- I) Sacculina



- | | |
|-------------------------|---------------------------|
| B) Dumdum fever | II) Haemophilus influenza |
| C) Pneumonia | III) Leishmania donovani |
| D) Parasitic castration | IV) Trypanosoma gambiense |
| | V) Leishmania tropica |

The correct match is

- | | | | |
|----------------|----------------|----------------|---------------|
| A B C D | A B C D | A B C D | A B C D |
| 1) IV III II I | 2) III IV II I | 3) III I II IV | 4) IV III I V |

Ans : 1

49. Skin color in man is an example of

- | | |
|----------------------------|--------------------------|
| 1) Sex –linked inheritance | 2) Multiple allelism |
| 3) Pieiotropy | 4) Polygenic inheritance |

Ans : 4

50. In Egg the waves which are quite low in frequency and having high amplitude are

- | | | | |
|----------------|----------------|---------------|----------------|
| 1) Theta waves | 2) Delta waves | 3) Beta waves | 4) Alpha waves |
|----------------|----------------|---------------|----------------|

Ans : 2

51. Match the following

List -I

- A) Down syndrome
- B) Edward syndrome
- C) Klinefelter's syndrome
- D) Patau syndrome
- E) Turner's syndrome

List –II

- I) 45 X
- II) 47 , XX, + 13
- III) 47, XX, + 18
- IV) 47, XX, + 21
- V) 47, XXY

The correct match is

- | | | | |
|------------------|------------------|------------------|------------------|
| A B C D E | A B C D E | A B C D E | A B C D E |
| 1) III IV II I V | 2) II III IV V I | 3) IV III V II I | 4) IV II V III I |

Ans : 3

52. Choose the wrong statement with reference to subspecies

- 1) They do not interbreed with individual of other species
- 2) They are new species in the making
- 3) Geographically isolated population of a species
- 4) They show minor variations from parent population

Ans : 1

53. Erythropoietin is a hormone produced from



- 1) Thymus 2) Pituitary 3) Heart 4) Kidney

Ans : 4

54. Intra abdominal testes are found in

- 1) Panthera and Equus 2) Macaca and Macropus
- 3) Balaenoptera and Delphinus 4) Canis and Felis

Ans : 3

55. Match the following

List – I

(Part of nephron)

- A) Proximal convoluted tubule
- B) Distal convoluted tubule
- C) Descending limb of Henle’s loop
- D) Ascending limb of Henle’s loop

List –II

(Function)

- I) Impermeable to sodium ions
- II) Impermeable to water
- III) Facultative reabsorption of water Na^+
- IV) Reabsorption of nutrients and Na^+

The correct match is

- | | | | |
|----------------|----------------|----------------|----------------|
| A B C D | A B C D | A B C D | A B C D |
| 1) III IV II I | 2) III IV I II | 3) IV III I II | 4) IV II I III |

Ans : 3

56. In Alpha Thalassaemia the gene HBA1 is located on this chromosome

- 1) 8 2) 22 3) 9 4) 16

Ans : 4

57. Dense regular connective tissue is present in

- 1) Ligament and tendons 2) Joint capsule and Wharton’s jelly
- 3) Periosteum and endosteum 4) Pericardium and heart valves

Ans : 1

58. The secondary stem cells that product Neutrophils is

- 1) Granulocyte-monocyte progenitor 2) B-cell committed progenitor
- 3) Megakaryoblast 4) Erthrocyte committed progenitor

Ans : 1

59. Match the following

Set – I

- A) Natural active immunity
- B) Natural passive immunity
- C) Artificial active immunity

Set – II

- I) Develops due to vaccination
- II) Anti-rabies serum
- III) Acquired after smallpox infection



D) Artificial passive immunity

IV) Transferred from mother to child

The correct match is

- | | | | |
|----------------|----------------|----------------|----------------|
| A B C D | A B C D | A B C D | A B C D |
| 1) IV III I II | 2) III I IV II | 3) III IV I II | 4) III IV II I |

Ans : 3

60. Match the following

List – I

List – II

- A) Zygomatic bone
- B) Lacrimal bones
- C) Parietal bones
- D) Sphenoid bone

- I) Keystone bone of cranium
- II) Cheek bone of cranium
- III) Smallest bone of face
- IV) Roof of cranium
- V) Floor of cranium

The correct match is

- | | | | |
|---------------|----------------|----------------|----------------|
| A B C D | A B C D | A B C D | A B C D |
| 1) I III V II | 2) II III IV I | 3) II IV I III | 4) II III IV V |

Ans : 2

61. The muscles of human eye receive impulses by the innervations of these cranial nerves

- | | | | |
|---------------|---------------|----------------|--------------|
| 1) VI, III, X | 2) III, IV, X | 3) III, IV, VI | 4) IX, X, IV |
|---------------|---------------|----------------|--------------|

Ans : 3

62. Match the following

List – I

List – II

- A) Leydig cells
- B) Sertoli cells
- C) Rete testis
- D) Corpus luteum

- I) Carry sperms from seminiferous tubules to vasa efferentia
- II) Nurish sperms
- III) Secretion of testosterone
- IV) Secretion of progesterone

The correct match is

- | | | | |
|----------------|----------------|----------------|---------------|
| A B C D | A B C D | A B C D | A B C D |
| 1) II III V IV | 2) III II I IV | 3) III II V IV | 4) II III I V |

Ans : 2

63. In the cycle of Ascaris lumbricoides rhabditiform larva undergoes 2nd and 3rd moultings in

- | | | | |
|----------|----------|---------------------|--------------------|
| 1) Liver | 2) Heart | 3) Alveoli of lungs | 4) Small intestine |
|----------|----------|---------------------|--------------------|

Ans : 3

64. Statement (S) : Lancelets are jawless, primitive fish like vertebrates



Statements (R : In lancelets notochord, tubular nerve cord and pharyngeal gills slits are Present throughout their life.

- 1)(S) is correct but R) is wrong
- 2) (S) is wrong but R) is correct
- 3) Both (S) and R) are correct and R) is the correct explanation to S)
- 4) Both S) and R) are correct and R) is not the correct explanation to S)

Ans : 2

65. Match the following with reference to Adaptations

List – I

A) Sea gulls

B) Kangaroo rat

C) Turtles

D) Salmon

List – II

I) Chloride secreting glands

II) Water cells in rumen

III) Salt excreting glands

IV) Oxidation of fats to generate water

V) Anadromous migration

The correct match is

A B C D

1) II IV III I

A B C D

2) III II I V

A B C D

3) II III IV I

A B C D

4) III IV I V

Ans : 4

66. Which of the following helps to maintain species diversity in a community?

- 1) Omnivores
- 2) Predators
- 3) Herbivores
- 4) Facultative parasites

Ans : 2

67. Which one of the following is the first in allopatric speciation ?

- 1) Geographic isolation
- 2) Hybridization
- 3) Genetic drift
- 4) Polyploidy

Ans : 1

68. In Periplaneta, which one of the following helps to nourish the sperms?

- 1) Ejaculatory duct
- 2) Vas deferens
- 3) Utriculi majores
- 4) Utriculi minores

Ans : 4

69. In Periplaneta, ductus ejaculatorius of male reproductive system lies in

- 1) 7th segment
- 2) 8th segment
- 3) 5th segment
- 4) 6th segment

Ans : 1

70. The type of syngamy seen in Trypanosoma is



- 1) Hologamy 2) Anisogamy 3) Isogamy 4) Conjugation

Ans : 1

71. The biochemical procedure used to detect human chorionic gonadotrophin (hCG) is

- 1) WIDAL 2) CAT 3) MRI 4) ELISA

Ans : 4

72. With reference to Phylum Echinodermata, identify the classes which have Pedicellariae

- 1) Crinoidea and Holothuroidea 2) Holothuroidea and Echinoidea
3) Asteroidea and Echinoidea 4) Ophiuroidea and Holothuroidea

Ans : 3

73. Choose the correct statements with reference to organic evolution

- A) Flippers of whale and wing of bat exhibit analogy
B) Wing of butterfly and wing of bird exhibit homology
C) Organs with dissimilar structure are called analogogous organs
D) Organs with similar structure and origin are called homologous organs

- 1) A) and C) 2) B) and D) 3) A) and B) 4) C) and D

Ans : 4

74. In which “Assisted Reproductive Technology” (ART), “Test Tube Baby” procedure is applied?

- 1) Gamete intrafallopian transfer (GIFT)
2) Intracytoplasmic sperm injection (ICSI)
3) In vitro fertilization and embryo transfer (IVFET)
4) Zygote –intrafallopian transfer (ZIFT)

Ans : 3

75. The factor which initiations the intrinsic pathway of blood clotting and triggers cascade reaction is

- 1) Anti-haemophilic factor 2) Christmas factor
3) Stuart-Prower factor 4) Hageman’s factor

Ans : 4

76. Emulsified fats are digested by

- 1) Gastric juice and pancreatic juice 2) Bile juice and intestinal juice
3) Pancreatic juice and bile juice 4) Pancreatic juice and intestinal juice

Ans : 4

77. Minisatellites or VNTR’s are used in

- 1) DNA fingerprinting 2) Polymerase chain reaction (PCR)



3) gene therapy

4) gene mapping

Ans : 1

78. Note the following features and choose the ones applicable to wucheria bancroft

A) Coelozoic parasite

B) Histozoic parasite

C) Monogenetic parasite

D) Digenetic parasite

E) Monomorphic acoelomate parasite

F) Dimorphic pseudocoelomate parasite

1) B), C), F)

2) B) D), F)

3) A) C) F)

4) B), C) E

Ans : 2

79. Choose the functions of sympathetic nervous system

1) Constricts bronchi and pupil of eye

2) Increase heart rate, relaxes bronchi

3) Decreases heart rate, increase peristalsis

4) Dilates blood vessels, stimulates salivary secretions

Ans : 2

80. Male heterogametic sex, XX, XO type of sex determination is found in

1) Butterflies

2) Moths

3) Grasshoppers

4) Drosophila

Ans : 3

PHYSICS

81. The nuclear fusion reaction between deuterium and tritium takes place

1) at low temperature and low pressure

2) at very high temperature and very high pressure

3) when the temperature is near absolute zero

4) at ordinary temperature and pressure

Ans : 2

82. For the action of a CE transistor, (E = emitter, B = base, C = collector) the required CB, EB junction bias conditions are

1) Both EB and CB junctions – forward bias

2) Both EB and CB junctions – reverse bias

3) EB junction – forward bias, CB junction – reverse bias

4) EB junction – reverse bias, CB junction – forward bias

Ans : 3

83. The truth tables of logic gates A, B, C, D are given here. Identify them correctly

A)

B)

C)

D)



89. The length of a steel rod is 5cm than that of a brass rod. If this difference in their lengths is to remain the same at all temperatures, then the length of brass rod will be (Coefficient of linear expansion for steel and brass are $12 \times 10^{-6}/^{\circ}C$ and $18 \times 10^{-6}/^{\circ}C$ respectively)

- 1) 20 cm 2) 15 cm 3) 5 cm 4) 10 cm

Ans : 4

90. A block of ice of mass 50kg is sliding on a horizontal plane. It starts with speed $5m/s$ and stops after moving through some distance. The mass of ice that has melted due to friction between the block and the surface is (Assuming that no energy is lost and latent heat of fusion of ice is $80cal/g$, $J = 4.2J/cal$)

- 1) 2.86g 2) 3.86g 3) 0.86g 4) 1.86g

Ans : 4

91. A carnot engine extracts heat from water at $0^{\circ}C$ and rejects it to room at $24.4^{\circ}C$. The work required by the refrigerator for every 1kg of water converted into ice (latent heat of ice = $336kJ/kg$ $336kJ/kg$) is

- 1) 30 kJ 2) 336 kJ 3) 11.2 kJ 4) 24.4 kJ

Ans : 1

92. Heat is supplied to a diatomic gas at constant pressure. The ratio between heat energy supplied and work done is (γ for diatomic gas = $7/5$)

- 1) 3 : 4 2) 2 : 1 3) 7 : 2 4) 2 : 5

Ans : 3

93. A closed pipe and an open pipe of same length produce 2 beats, when they are set into vibration simultaneously in their fundamental mode. If the length of the open pipe is halved, and that of closed pipe is doubled, and if they are vibrating in the fundamental mode, then the number of beats produced is

- 1) 4 2) 7 3) 2 4) 8

Ans : 2

94. A concave lens of focal length f forms an image which is $\frac{1}{3}$ times the size of the object. Then, the distance of object from the lens is

- 1) $2f$ 2) f 3) $\frac{2}{3}f$ 4) $\frac{3}{2}f$

Ans : 1

95. An astronomical telescope arranged for normal adjustment has a magnification of 6. If the length of the telescope is 35cm, then the focal lengths of objective and eye piece respectively are

- 1) 30cm, 5cm 2) 5cm, 30cm 3) 40cm, 5cm 4) 30cm, 6cm



Ans : 1

96. In young double slit interference experiment using two coherent waves of different amplitudes, the intensity ratio between bright and dark fringes is 3. Then the value of the ratio of the amplitude of the waves that arrive there is

- 1) $\left[\frac{\sqrt{3}+1}{\sqrt{3}-1} \right]$ 2) $\left[\frac{\sqrt{3}-1}{\sqrt{3}+1} \right]$ 3) $\sqrt{3} : 1$ 4) $1 : \sqrt{3}$

Ans : 1, 2

97. Work done in carrying an electric charge Q_1 once round a circle of radius R with a charge Q_2 at the centre of the circle is

- 1) $\frac{QQ_2}{4\pi\epsilon_0 R}$ 2) ∞ 3) $\frac{Q_1 Q_2}{4\pi\epsilon_0 R^2}$ 4) 0

Ans : 4

98. The capacitance of two concentric spherical shells of radii R_1 and R_2 ($R_2 > R_1$) is

- 1) $4\pi\epsilon_0 R_2$ 2) $4\pi\epsilon_0 \frac{R_2 - R_1}{R_1 R_2}$ 3) $4\pi\epsilon_0 \frac{R_2 R_1}{R_2 - R_1}$ 4) $4\pi\epsilon_0 R_1$

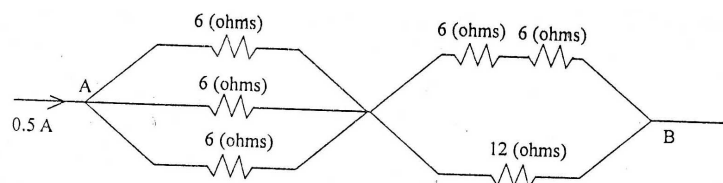
Ans : 3

99. A wire of resistance 4Ω is stretched to twice its original length. In the process of stretching, its area of cross section gets halved. Now, the resistance of the wire is

- 1) 8Ω 2) 16Ω 3) 1Ω 4) 4Ω

Ans : 2

100. Five resistance are connected as shown in figure. If total current flowing is 0.5A, then the potential difference $V_A - V_B$ is



- 1) 8 V 2) 6 V 3) 2 V 4) 4 V

Ans : 4

101. A particle with charge q is moving along a circle of radius R with uniform speed V. The associated magnetic moment μ is given by

- 1) $\frac{1}{2} V^2 R$ 2) $\frac{1}{4} qVR$ 3) $\frac{1}{2} qVR$ 4) $\frac{1}{2} q^2 VR$

Ans : 3



102. A wire of length L meters carrying a current I amperes is bent in the form of a circle. The magnitude of the magnetic moment is

- 1) $\frac{L^2 I^2}{4\pi}$ 2) $\frac{LI}{4\pi^2}$ 3) $\frac{L^2 I}{4\pi}$ 4) $\frac{LI}{4\pi}$

Ans : 3

103. A paramagnetic sample shows a net magnetization of $0.8 A/m$, when placed in an external magnetic field of strength $0.8T$ at a temperature $5K$. When the same sample is placed in an external magnetic field of $0.4T$ at a temperature of $20K$, the magnetization is

- 1) $0.8 Am^{-1}$ 2) $0.8 Am^{-2}$ 3) $0.1 Am$ 4) $0.1 Am^{-1}$

Ans : 4

104. The magnetic susceptibility of a material of a rod is 200 . Permeability of vacuum (μ_0) is $4\pi \times 10^{-7} Hm^{-1}$. Absolute permeability of the material of the rod is

- 1) $3771 \times 10^{-7} Hm^{-1}$ 2) $3771 \times 10^{-5} Hm^{-1}$ 3) $3770 \times 10^{-6} Hm^{-1}$ 4) $3771 \times 10^{-8} Hm^{-1}$

Ans : 1

105. An alternating emf given by equation $E = 300 \sin[(100\pi)t]$ volt is applied to a resistance 100 ohms.

The rms current through the circuit is (in amperes)

- 1) $\frac{3}{\sqrt{2}}$ 2) $\frac{9}{\sqrt{2}}$ 3) 3 4) $\frac{6}{\sqrt{2}}$

Ans : 1

106. A plane electromagnetic wave travels in free space. Then the ratio of the magnitudes of electric and magnetic fields at a point is equal to

- 1) Inverse of the velocity of the electromagnetic wave
2) Inverse of the energy of electromagnetic wave
3) Velocity of electromagnetic wave
4) Energy of electromagnetic wave

Ans : 3

107. When monochromatic light falls on a photosensitive material, the number of photoelectrons emitted per second is n and their maximum kinetic energy is K_{\max} . If the intensity of incident light is doubled, then

- 1) n is doubled but K_{\max} remains same 2) K_{\max} is doubled but n remains same
3) both n and K_{\max} are doubled 4) both n and K_{\max} are halved

Ans : 1

108. If the wavelength of light that is emitted from hydrogen atom when an electron falls from orbit $n = 2$ to orbit $n = 1$ is $122nm$, then minimum wavelength of the series is



1) 9150 \AA

2) 812 \AA

2) 915 \AA

4) 405 \AA

Ans : 3

109. The major contribution of Sir C.V. Raman is

1) Principle of buoyancy

2) Scattering of light by molecules of a medium

3) Electromagnetic theory

4) Explanation of photoelectric effect

Ans : 2

110. If the absolute errors in two physical quantities A and B are a and b respectively, then the absolute error in the value of A – B is

1) $b - a$

2) $a \neq b$

3) $a + b$

4) $a - b$

Ans : 3

111. A particle starts moving from rest with uniform acceleration. It travels a distance x in first 2 seconds and distance y in the next 2 seconds. Then

1) $y = 3x$

2) $y = 4x$

3) $y = x$

4) $y = 2x$

Ans : 1

112. At time $t = 0$, two bodies A and B are at the same point. A moves with constant velocity V and B starts from rest and moves with constant acceleration. Relative velocity of B with respect to A when the bodies meet each other is

1) $\frac{V}{2}$

2) $\frac{V}{3}$

3) V

4) $2V$

Ans : 3

113. A body is projected horizontally from the top of a tower with a velocity of $10m/s$. If it hits the ground at an angle of 45° , the vertical component of velocity when it hits ground in m/s is

1) $10\sqrt{2}$

2) $5\sqrt{2}$

3) 5

4) 10

Ans : 4

114. A body is projected with an angle θ . The maximum height reached is h . If the time of flight is 4 sec and $g = 10m/s^2$, the value of $g = 10m/s^2$, then the value of h is

1) 40 m

2) 20 m

3) 5 m

4) 10 m

Ans : 2

115. The linear momentum of a particle varies with time t as $P = a + bt + ct^2$. Then which of the following is correct ?

1) Velocity of particle is inversely proportional to time

2) Displacement of the particle is independent of time

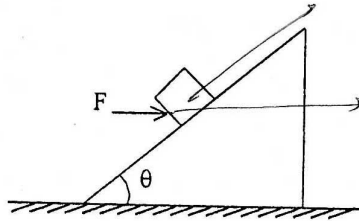
3) Force varies with time in a quadratic manner



4) Force is dependent linearly on time

Ans : 4

116. A horizontal force F is applied to a block of mass m on a smooth fixed inclined plane of inclination θ to the horizontal as shown in the figure. Resultant force on the block up the plane is



- 1) $F \sin \theta + mg \cos \theta$ 2) $F \sin \theta - mg \cos \theta$ 3) $F \sin \theta + mg \cos \theta$ 4) $F \cos \theta - mg \sin \theta$

Ans : 4

117. A body of 200 g begins to fall from a height where its potential energy is 80 J. Its velocity at a point where kinetic and potential energies are equal is

- 1) 4 m/s 2) 400 m/s 3) 20 m/s 4) $10\sqrt{8}$

Ans : 3

118. A bullet moving with a velocity of $30\sqrt{2}$ m/s is fired into a fixed target. It penetrated into the target to the extent of S meters. If the same bullet is fired into a target of thickness $\frac{S}{2}$ meters and of the same material with the same velocity, the bullet comes out of the target with velocity

- 1) 20 m/s 2) 30 m/s 3) $20\sqrt{2}$ m/s 4) $10\sqrt{2}$

Ans : 2

119. Keeping the mass of earth as constant, if its radius is reduced to $\frac{1}{4}$ th of its initial value, then the period of revolution of earth about its own axis, and passing through the centre, in hours, is (Assume earth to be a solid sphere and its initial period of rotation as 24 hrs)

- 1) 12 2) 3 3) 6 4) 1.5

Ans : 4

120. Three uniform circular discs, each of mass M and radius R are kept in contact with each other as shown in figure. Moment of inertia of the system about the axis AB is



Ans : 3

124. A saturated solution of $\text{Ca}_3(\text{PO}_4)_2$ contains $2.0 \times 10^{-8} \text{ M}$ of Ca^{2+} and $1.6 \times 10^{-5} \text{ M}$ of PO_4^{3-} at a certain temperature. The solubility product (K_{sp}) of $\text{Ca}_3(\text{PO}_4)_2$ at that temperature is

- 1) 2.048×10^{-34} 2) 2.048×10^{-33} 3) 3.20×10^{-34} 4) 8.00×10^{-34}

Ans : 2

125. The wavelength in metres, of an object of mass 1.0 g moving with a velocity of $1.0 \times 10^4 \text{ cm s}^{-1}$ ($h = 6.626 \times 10^{-34} \text{ J s}$)

- 1) 6.626×10^{-26} 2) 6.626×10^{-31} 3) 6.626×10^{-33} 4) 6.626×10^{-27}

Ans : 3

126. The ratio of ground state energy of Li^{2+} , He^+ and H is

- 1) 1 : 2 : 3 2) 3 : 2 : 1 3) 1 : 4 : 9 4) 9 : 4 : 1

Ans : 4

127. Elements A, B and C belong to the same period in the long form of the periodic table. The nature of the oxides of A, B and C is amphoteric, basic and acidic respectively. The correct order of the atomic numbers of these elements is

- 1) $C > B > A$ 2) $C > A > B$ 3) $A > B > C$ 4) $B > A > C$

Ans : 2

128. Which one of the following is the correct order of the size of the ions ?

- 1) $\text{Na}^+ > \text{Mg}^{2+} > \text{F}^- > \text{O}^{2-}$ 2) $\text{O}^{2-} > \text{F}^- > \text{Na}^+ > \text{Mg}^{2+}$
3) $\text{Mg}^{2+} > \text{Na}^+ > \text{F}^- > \text{O}^{2-}$ 4) $\text{O}^{2-} > \text{F}^- > \text{Mg}^{2+} > \text{Na}^+$

Ans : 2

129. If E = the number of lone pairs of electrons on Xe,

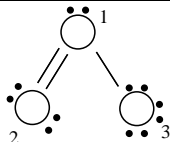
B = the number of bonding pairs of electrons,

S = shape of the molecule,

then, what is the correct set of E, B and S of XeF_4 ?

- | | E | B | S |
|----|---|---|---------------|
| 1) | 3 | 3 | octahedral |
| 2) | 3 | 3 | square planar |
| 3) | 2 | 4 | square planar |
| 4) | 4 | 2 | square planar |

Ans : 3



130. molecules, the formal charges of oxygen atoms 1,2,3 are respectively

- 1) 0, -1, +1 2) 0, +1, -1 3) +1, 0, -1 4) -1, 0, +1

Ans : 3

131. If 240ml, of a gas x diffuses through a porous membrane in 20min whereas the same volume of methane diffuses in 10 min at the same temperature and pressure, the molar mass in g mol^{-1} of gas x is

- 1) 8 2) 64 3) 32 4) 128

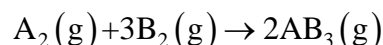
Ans : 2

132. The rms speed of helium in ms^{-1} (atomic mass = 4.0 g mol^{-1}) at 400k is

- 1) 15.8 2) 20.28 3) 158 4) 1580

Ans : 4

133. In a closed vessel, 5 moles of $\text{A}_2(\text{g})$ and 7 moles $\text{B}_2(\text{g})$ are reacted in the following manner



What is the total number of moles of gases present in the container at the end of the reaction ?

- 1) $22/3$ 2) $7/3$ 3) $14/3$ 4) $8/3$

Ans : 1

134. Identify the compounds from the following which form primary amines under suitable reduction conditions

1. $\text{C}_2\text{H}_5\text{NC}$ 2. C_2H_6 3. $\text{C}_2\text{H}_5\text{CONH}_2$ 4. $\text{C}_6\text{H}_5\text{NO}_2$
 1) 1, 4 2) 3, 4 3) 1, 3, 4 4) 2, 3, 4

Ans : 2

135. Acetaldehyde undergoes reaction in the presence of dil. NaOH to give _____

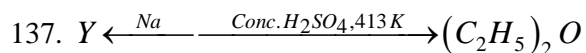
- 1) Ethyl acetate 2) Butanoic acid 3) Acetic acid 4) 3-Hydroxy butanal

Ans : 4

136. Which one of the following methods can be used to separate a mixture of ortho- and paranitrophenols ?

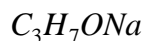
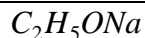
- 1) Crystallization 2) Solubility 3) Sublimation 4) Steam distillation

Ans : 4



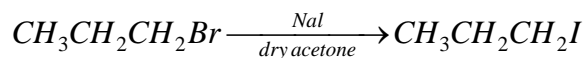
What are X and Y in the above reactions ?

- | | |
|------------------------------------|----------------------------------|
| X | Y |
| 1) H_3COH | H_3CONa |
| 2) $\text{C}_4\text{H}_9\text{OH}$ | $\text{C}_4\text{H}_9\text{ONa}$ |



Ans : 3

138. What is the name of the following reaction ?



1) Sandmeyer Reaction

2) Gatterman Reaction

3) Finkelstein Reaction

4) Swarts Reaction

Ans : 3

139. Match the following

List – I

A) Sucralose

B) Iodine

C) Sodium benzoate

D) Ranitidine

List – II

I) Antioxidant

II) Artificial sweetener

III) Antacid

IV) Antiseptic

V) Food preservative

The correct answer is

A B C D

A B C D

A B C D

A B C D

1) II IV I III

2) II IV V III

3) II III V I

4) II I III IV

Ans : 2

140. Which one of the following sets of vitamins is fat soluble?

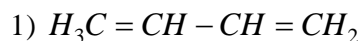
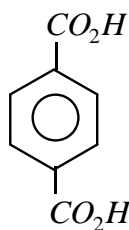
1) C, D, B₆, B₁₂

2) A, D, E, K

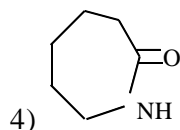
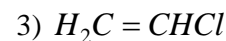
3) A, D, B₁, B₂4) D, B₁, B₂, E

Ans : 2

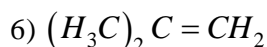
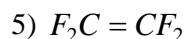
141. Identify from the following the monomers which undergo condensation polymerization



2)



4)



1) 3, 5

2) 1, 3

3) 1, 6

4) 2, 4

Ans : 4



142. In $[CoF_6]^{3-}$, Co^{3+} uses outer d orbitals (4d) in sp^3d^2 hybridization. The number of unpaired electrons present in complex ion is.

- 1) 0 2) 4 3) 2 4) 3

Ans : 2

143. Crystal field theory does not explain which of the following property of coordination compounds ?

- 1) The covalent character of the bond between metal and the ligand
2) Magnetic property 3) colour 4) Structure of coordination compounds

Ans : 1

144. Among the following inert gas elements, the elements that shows highest chemical reactivity is

- 1) Ne 2) Ar 3) He 4) Xe

Ans : 4

145. The correct arrangement of following acids of phosphorus in the increasing order of oxidation state of phosphorous is

- 1) Hypophosphorous acid < orthophosphorous acid < Pyrophosphoric acid
2) Hypophosphorous acid < Pyrophosphoric acid < orthophosphorous acid
3) Pyrophosphoric acid < hypophosphorous acid < orthophosphorous acid
4) Pyrophosphoric acid < orthophosphorous acid < hypophosphorous acid

Ans : 1

146. Which one of the following methods is used in the concentration of sulphide ore ?

- 1) Froth floatation 2) Smelting 3) Roasting 4) Leaching

Ans : 1

147. Which one of the following forms a negatively charged sol ?

- 1) $Al_2O_3 \cdot xH_2O$ 2) $Cr_2O_3 \cdot xH_2O$ 3) TiO_2 4) Cds

Ans : 4

148. The half life of a first order reaction is 100 seconds at 280 K. If the temperature coefficient is 3.0 its rate constant at 290 K in s^{-1} is

- 1) 2.08×10^{-3} 2) 2.08×10^{-2} 3) 6.93×10^{-3} 4) 6.93×10^{-2}

Ans : 2

149. The reduction potential of hydrogen electrode at pH 10 is

- 1) -0.059 V 2) -0.59V 3) 0.59 V 4) 0.0V

Ans : 2

150. The mole fraction of water in 98% (w/w) H_2SO_4 solution is

- 1) 0.1 2) 0.9 3) 0.8 4) 0.02

Ans : 1



151. van't Hoff factor, I , of a 0.5% (w/w) aqueous solution of KCl which freezes at -0.24°C is

$$\left(K_f \text{ of water} = 1.86 \text{ K kg mol}^{-1}, \text{ Mol. wt. of KCl} = 74.5\right)$$

- 1) 1.52 2) 2.32 3) 1.92 4) 1.32

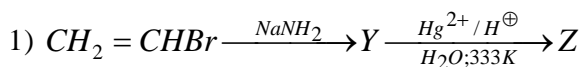
Ans : 3

152. The percentages of void space for simple cubic, body centred cubic and hexagonal close packed arranged respectively are

- 1) 48, 32, 26 2) 48, 26, 32 3) 26, 48, 32 4) 32, 48, 26

Ans : 1

153. What are Y and Z in the following reaction sequence ?



Y

Z

- 1) ethyne acetic acid
2) ethyne ethanal
3) ethylamine ethanal
4) ethane ethanol

Ans : 2

154. C-H and C-C bond lengths (in pm) in ethane are

- 1) 133, 154 2) 110, 136 3) 112, 154 4) 100, 154

Ans : 3

155. In the estimation of halogen, 0.18 g of an organic compound gave 0.12 g of silver bromide. What is the percentage of bromine in the compound ? (Molar mass of AgBr = 188; Atomic weight of Br = 80)

- 1) 35. 24 2) 34. 84 3) 28. 36 4) 30. 64

Ans : 3

156. Which one of the following sets contribute to the global warming ?

- 1) $\text{SO}_2, \text{SO}_3, \text{O}_2$ 2) $\text{N}_2, \text{C}_2\text{H}_6, \text{SO}_3$ 3) $\text{CO}_2, \text{CH}_4, \text{CFCs}$ 4) $\text{H}_2, \text{NO}_2, \text{SO}_2$

Ans : 3

157. Which of the following is used as black pigment in black ink?

- 1) carbon black 2) germanium 3) graphite 4) coke

Ans : 1

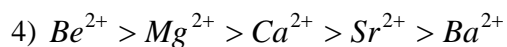
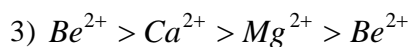
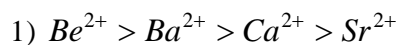
158. The correct increasing order of the stability of $\text{Al}^+, \text{Ga}^+, \text{In}^+, \text{Tl}^+$ ions is

- 1) $\text{Al}^+ < \text{Ga}^+ < \text{Tl}^+ < \text{In}^+$ 2) $\text{Al}^+ < \text{Ga}^+ < \text{In}^+ < \text{Tl}^+$
3) $\text{Tl}^+ < \text{In}^+ < \text{Ga}^+ < \text{Al}^+$ 4) $\text{Tl}^+ < \text{Al}^+ < \text{Ga}^+ < \text{In}^+$

Ans : 2

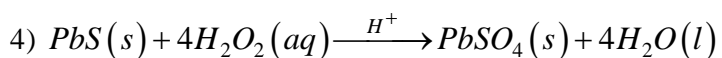
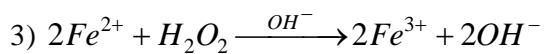
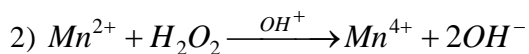
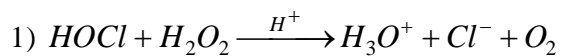


159. The decreasing order of hydration enthalpies earth metal ions is



Ans : 4

160. In which of the following reactions, H_2O_2 acts as a reducing reagent ?



Ans : 1

