A, B and C are heterotrophic plants. ‘A’ has no sex organs but produces sexual spores exogenously. ‘B’ produces sexual spores endogenously and ‘C’ has no sexual stage but reproduces asexually. Based on these characters, identify A, B and C respectively.


Options:

1. Rhizopus, Aspergillus, Alternaria
2. Colletotrichum, Albugo, Pencillium
3. Ustilago, Neurospora, Trichoderma
Choose the correct pair of taxa showing following sets of characters in sequence.

i) Trachaeophytic heterosporous plants with siphonogamous oogamy
ii) Trachaeophytic heterosporous plants with archegonia
iii) Archegoniates with zooidogamous oogamy

A) Marchantia and Selaginella
B) Salvinia and Pinus
C) Polytrichum and Eucalyptus
D) Cycas and Eucalyptus

Options:
1. D, B, A
2. C, D, B
3. B, D, A
4. D, A, C
Match the following.

<table>
<thead>
<tr>
<th>List-I</th>
<th>List-II</th>
<th>List-III</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scientist</td>
<td>Period of Discovery</td>
<td>Discovery</td>
</tr>
<tr>
<td>A) Stephen Hales</td>
<td>i) 20th Century</td>
<td>I) Root pressure</td>
</tr>
<tr>
<td>B) J.B. Sumner</td>
<td>ii) 19th Century</td>
<td>II) Sexual reproduction in plants</td>
</tr>
<tr>
<td>C) Camerarius</td>
<td>iii) 18th Century</td>
<td>III) Ecology</td>
</tr>
<tr>
<td>D) Haeckel</td>
<td>iv) 17th Century</td>
<td>IV) Urease</td>
</tr>
</tbody>
</table>

The correct answer is: **A**

Options:

A B C D

1. ii, II i, IV iii, III iv, I
   A B C D

2. iii, I i, IV iv, II ii, III
   A B C D

3. ii, II i, IV iv, II iii, III
Choose the correct statement.

Options:

1. Red colour of the red sea is due to dinoflagellates.

2. Heterocysts of cyanobacteria fix atmospheric nitrogen.

3. Mycoplasmas are pleomorphic due to the presence of cell wall.

4. Presence of mycolic acid in the cell wall of diatoms is the reason for the left over cell deposits in large amounts in their habitats.
Match the following.

List-I  
A) Acropetal arrangement  
B) Margin of thalamus enclosed the ovary  
C) Single ovule attached to the base of ovary  
D) Lamiaceae

List-II  
i) Dichasial cyme and monochasial cyme  
ii) Inferior ovary  
iii) Simple raceme  
iv) Persistant pappus like calyx

List-III  
I) Mangifera  
II) Cypsella  
III) False whorl  
IV) Guava

The correct answer is

Options :

A B C D

1. iii. I ii. IV iv. II i. III

A B C D

2. iii. I iv. IV ii. III i. II

A B C D

3. ii. IV iii. I iv. II i. III
4.

Options:

A. modified protective bract and edible pedicel
B. food storing floral bud and leaf bases
C. photosynthetic stem and petiole.

Read the following statements and identify the correct pairs of plants

(A) *Oryza and Cocos; Aloe and Agave; Nepenthes and Australian acacia*

(B) *Colacasia and Apple; Dioscorea and Opuntia; Australian acacia and Euphorbia*

(C) *Musa and Ficus; Dioscorea and Bryophyllum; Australian acacia and Bougainvillea*

(D) *Cocos and Anacardium; Agave and Allium; Casuarina and Australian acacia*
Identify the correct ratio of haploid, diploid and triploid conditions of cells and tissues listed in the given table.

<table>
<thead>
<tr>
<th>Pollengrain</th>
<th>Nucellus</th>
<th>Sporogenous tissue</th>
</tr>
</thead>
<tbody>
<tr>
<td>Endosperm</td>
<td>Perisperm</td>
<td>Egg cell</td>
</tr>
<tr>
<td>Synergid</td>
<td>Zygote</td>
<td>Scutellum</td>
</tr>
</tbody>
</table>

A total of 168 pollengrains with 14 chromosomes in each pollen grain are released from a mature microsporangium. Mention the correct ratio of pollen mother cells, generative cells, vegetative cells and male gametes produced by the microsporangium.

Options:
1. 5:3:1
2. 3:5:1
3. 4:4:1
4. 2:6:1
Choose the correct matching.

List-I
A) Dioecious plant with Archegoniophore  I) Papaya
B) Monoecious plant with Oogonium  II) Chara
C) Homothallic plants  III) Fungi
D) Dioecious plants with pistillate flowers  IV) Maize
V) Marchantia

The correct answer is

Options:

1. V  II  III  I

2. V  III  II  I

3. V  IV  III  I
Choose correct pair from the given below related to the study of fertilization.

A) Aquatic algae  | Large no. of gametes released into the surrounding medium  | External Syngamy
B) Moss plants  | Large no. of gametes released into air  | External Syngamy
C) Seed plants  | Non motile male gamete reach the egg  | Internal Syngamy
D) Pteridophytes  | Motile male gamete reach the egg  | Internal Syngamy

Options:
1. B, C, D
2. A, B, C
3. A, C, D
4. A, B, D
Match the following.

<table>
<thead>
<tr>
<th>List-I</th>
<th>List-II</th>
<th>List-III</th>
</tr>
</thead>
<tbody>
<tr>
<td>A) Radical leaves</td>
<td>i) Anterior odd sepal</td>
<td>I) Protandrous</td>
</tr>
<tr>
<td>B) Exstipulate leaf</td>
<td>ii) Artificial system of classification</td>
<td>II) Persistant Calyx</td>
</tr>
<tr>
<td>C) Monocarpellary unilocular gynoecium</td>
<td>iii) <em>Allium</em></td>
<td>III) Geocarpy</td>
</tr>
<tr>
<td>D) Species plantarum</td>
<td>iv) Solid or hollow stem</td>
<td>IV) Linnaeus</td>
</tr>
</tbody>
</table>

The correct answer is

Options:

1. iii. I  iv. II  i. III  ii. IV
2. iv. I  iii. II  i. III  ii. IV
3. iii. II  iv. III  i. I  ii. IV
4. iii, I iv, III i, II ii, IV

Study the following statements.
I. Circular naked DNA is the genetic material.
II. Membrane bound cell organelles are present.
III. Cell membrane infoldings called mesosomes present.
IV. Nuclear membrane absent.

Arrange the given organisms based on their above respective characters and give the ratio
A) Bacillus  B) Nostoc  C) Noctiluca  D) Chlorella
E) Rhodospirillum  F) Trichodesmium  G) Amoeba  H) Euglena

ఒకే విధంగా విృద్ధి చేయడానికయినప్పటి,
I. జంతువుల వింటల డీనా పరిపాలన కలిసింది
II. వృక్షశాస్త్రానికి వాహనానికయసాయా కలిసింది
III. వృక్షశాస్త్రానికి వాహనానికయసాయా కలిసింది
IV. వృక్షశాస్త్రానికి వాహనానికయసాయా కలిసింది

వృక్షశాస్త్రానికి వాహనానికయసాయా కలిసినప్పటి, తరపు వింటల సధారణ పరిపాలన అయించి, సధారణం విస్తరించించాయి.
A) మాణు  B) మాధుర్  C) మాణు చిత్త  D) మాణు
E) థింగ్మంగం  F) థింగ్మంగం  G) బ్యాగ్  H) సంగము

Options:
1. 4:3:4:4
2. 4:4:3:4
3. 2:2:2:1
4. 2:2:1:2

Question Number : 13  Question Id : 1874635133  Question Type : MCQ  Option Shuffling : Yes  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical
Assertion (A): Syncytium is the result of karyokinesis not followed by cytokinesis.
Reason (R): In plant cell, middle lamella formation starts from centre and grows outwards of the cell and leads to cell wall formation.

Options:
1. (A) and (R) are true and (R) is the correct explanation of (A).
2. (A) and (R) are true, but (R) is not the correct explanation of (A).
3. (A) is true (R) is false.
4. (A) is false, (R) is true.
Identify the correct series of biomolecules which do not belong to the given category

- Homopolymer
- Secondary metabolite
- Neutral Aminoacid
- Aromatic aminoacid

Options:
- Inulin, Rubber, Valine, Tryptophan
- Protein, Scent, Tyrosine, Tryptophan
- Cellulose, Protein, Glutamic acid, Tyrosine
- Rubisco, Sugar, Lysine, Valine

Question Number : 15  Question Id : 1874635135  Question Type : MCQ  Option Shuffling : Yes  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical
Observe the following functions of the cell.

- Synthesis of protein and enzymes
- Synthesis of lipids
- Synthesis of Glycolipids
- Enzymes optimally active in acidic pH.

Arrange the given cell organelles with their respective functions.

a) Golgi apparatus  
b) Rough endoplasmic reticulum

c) Smooth endoplasmic reticulum  
d) Lysosome

e) Ribosome  
f) Mitochondria

Options:

1. b, a, c, e

2. e, a, c, d

3. b, c, e, f

4. e, c, a, d
Assertion (A): Ions and organic material concentration is higher in cytoplasm than vacuole.

Reason (R): Tonoplast facilitates the transport of ions and other materials against concentration gradient into the vacuole.

Options:

1. (A) and (R) are correct. (R) is the correct explanation to (A).

2. (A) and (R) are correct. (R) is not the correct explanation to (A).

3. (A) is true. (R) is false.

4. (A) is false. (R) is true.
Arrange the following aspect of a double stranded DNA molecule with the 3'AGT CGT CGAA5' sequence in ascending order.

A) Number of phosphodiester bond
B) Number of H₂ bonds
C) Number of total pyrimidines

3'AGT CGT CGAA5' నింద్ర శాంతి కార్య చేసిన ఒక క్వింట్ డీనీ తీ తో మోటకు ప్లేమన్ లను కంటేని

A) చాలా ఆష్టం నిలువు
B) చాలా మోటకు
C) మిగిలు నిలువు

Options:
1. A, B, C
2. C, A, B
3. B, A, C
4. C, B, A

The tissues from which cambium ring is originated in dicot root and dicot stem.

చామురి లో శియమి మాట్లాడే వాతావరణం తో వైస్పు కాంబియం లో కంతి కంటేని

Options:
Cambium between xylem and phloem: Pericycle and medullary rays
చామురి లో శియమి మాట్లాడే వాతావరణం తో వైస్పు కాంబియం 
పెరిసికల్ లో మోటకు మాట్లాడే వాతావరణం తో వైస్పు కాంబియం లో 
1.
2. Tissues below phloem bundles and portion of pericycle tissue

3. Cambium, pericycle tissue

4. Pericycle tissues

Options:

Phloem fibres, Intercalary meristem, Albuminous cells, Collenchyma

Phloem parenchyma, Phloem, Companion cells, Cork cells
Companion cells, Phloem parenchyma, Sieve tubes, Sclereids

3. Companion cells, Sievetubes, Albuminous cells, Sclereids

4.

Question Number : 20  Question Id : 1874635140  Question Type : MCQ  Option Shuffling : Yes  Display Question Number : Yes
Single Line Question Option : No  Option Orientation : Vertical

Assertion (A) : A mature leafy tree produces as much oxygen in a season as 10 People inhale in a year.

Reason (R) : Forests provide a vast bank for CO₂ and a huge amount of CO₂ is deposited in timber.

 Wynkoop (A) : అది పెద్ద చిహ్నం 10 మంది ప్రతి జనం  యొక్క విశేషం నిర్ధిష్టం చేయడం అవసరం
అది వాయుని శాపం ఉంటుంది అంటే 10 నాళ్ళపై దానం నిర్ధిష్టం

Reason (R) : అది పొందు కోసం మంది ప్రతి వరకు ఉన్నది దానం చేయడం అవసరం ఉంది కాబట్టా
మంది ప్రతి నాళ్ళపై CO₂ ఉపయోగించడం

Options :

1. (A) and (R) are true and (R) is the correct explanation of (A).

2. (A) and (R) are true but (R) is not the correct explanation of (A).

3. (A) is true, (R) is false.

4. (A) is false, (R) is true.

Question Number : 21  Question Id : 1874635141  Question Type : MCQ  Option Shuffling : Yes  Display Question Number : Yes
Single Line Question Option : No  Option Orientation : Vertical
Identify the correct phenomenon with reference to transport in plants.

Options:

1. Hormones are chemical stimulators always transport towards growing points.
2. Transport of water and minerals through non living conducting tissue is multidirectional.
3. Transport of solutes through living conducting tissue is unidirectional.
4. Diffusion and cytoplasmic streaming supplemented by active transport is necessary for movement of substances to shorter distance.
Deficiency of a set of three mineral ions induced by excessive absorption of manganese lead to the following set of metabolic disorders. Identify the set of deficit mineral ions.

A) Transfer of electrons by ferredoxin and Cytochromes
B) Synthesis of DNA and RNA
C) Normal functioning of the cell membrane

Identify the set of deficit mineral ions.

Options:

1. Iron, Zinc and Calcium
2. Iron, Molybdenum and Magnesium
3. Iron, Magnesium and Calcium
4. Iron, Magnesium and Nickel
Choose the correct combination.

<table>
<thead>
<tr>
<th>Enzyme reaction</th>
<th>Enzyme name</th>
<th>Enzyme class</th>
</tr>
</thead>
<tbody>
<tr>
<td>A) Glutamic acid → Glutamine</td>
<td>Glutamate synthetase</td>
<td>Ligase</td>
</tr>
<tr>
<td>B) Fru 1, 6 BP → Fru 6 M.P.</td>
<td>Phosphatase</td>
<td>Hydrolase</td>
</tr>
<tr>
<td>C) Glucose → Glu 6 P</td>
<td>Hexokinase</td>
<td>Transferase</td>
</tr>
<tr>
<td>D) Argino acid → Arginine</td>
<td>Argino succinase</td>
<td>Lyase</td>
</tr>
</tbody>
</table>

Options:
1. A, B, C, D
2. B, C
3. C, D
4. A, B
Which of the following statement is correct with reference to absorption spectra and action spectra

A) In blue light, Chl. a shows maximum absorption peak than Chl. b
B) In Red light, Chl. a shows maximum absorption than Chl. b
C) Absorption spectrum of chlorophyll is maximum in blue light, whereas action spectrum is maximum in red light.
D) Rate of photosynthesis is measured by O₂ release.

The correct answer is

Options :

1. A, B, C
2. A, B
3. A, B, D
4. B, C, D
Identify the wrong statements with respect to ATP synthesis in Chloroplast based on Chemiosmotic hypothesis

A) Proton gradient across the thylakoid membrane increases due to Quinone cycle
B) The movement of protons through $F_0$ leads to decreased pH in stroma of Chloroplast
C) Breakdown of proton gradient is a cause for release of energy
D) Splitting of water molecules produce protons in stroma of chloroplasts

చాలా వివరణలు లేదా సమాచారాలు అయితే ATPసృష్టికి వాటావరణం పెంచడానికి కనిపించడం ఉండాలా అంటే ఈ సమాచారాలను పరిమిచ్చడం ద్వారా ATPసృష్టికి వాటావరణం పెంచడానికి కనిపించడం ఉండాలా

A) కురుగక్షను పెంచడానికి కనిపించడం ఉండాలా
B) $F_0$ కొరకు పెంచడానికి కనిపించడం ఉండాలా
C) లేదా ఉండాలా
D) జూనియతుడు పెంచడానికి కనిపించడం ఉండాలా

Options :
1. A, B
2. B, C
3. B, D
4. A, D

Question Number : 26 Question Id : 1874635146 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical
Arrange the following steps in ascending order based on no. of ATP molecules gained when one glucose molecule participate in aerobic respiration.

I) Total no. of ATP in Krebs cycle
II) Succinyl CO A → Succinic acid
III) Pyruvic acid → Acetyl CO A
IV) PGAL → BPGA

The correct answer is

Options:
1. II, IV, III, I
2. I, II, III, IV
3. I, IV, III, II
4. II, III, I, IV
Based on plant growth regulation ability choose the correct combinations.

A) Carotenoid - ABA - Tolerance of stress
B) Terpene - IBA - Root elongation
C) Adenine derivative - KN - Production of new leaves
D) Purine derivative - C₂H₄ - Fruit ripening

Choose the correct mathematical expressions of linear growth and sigmoid growth and no. of progeny undergo division in both growth curves.

Options:
1. \( L_t = L_0 + rt; \quad W_1 = W_0 e^{rt} \)   1, 2
2. \( L_t = L_0; \quad W_1 = W_0 \)   1, 1
3. \( L_t = L_0 + rt; \quad W_1 = W_0 e^{rt} \)   2, 1
\[ L_t = L_O + r_O; \quad W_1 = W_0 e^t; \quad 2, 2 \]

Match the following.

List-I
A) Photoautotrophs
B) Photoheterotrophs
C) Chemoautotrophs
D) Saprophytes

List-II
i) Oxidation of inorganic substances
ii) Organic detritus
iii) Organic \( \text{CO}_2 \)
iv) Atmospheric \( \text{CO}_2 \)

List-III
I) \( \text{Bacillus} \)
II) \( \text{Beggitoa} \)
III) \( \text{Chromatium} \)
IV) \( \text{Rhodospirillum} \)

The correct answer is

Options:

1. iv, III, iii, IV, i, II, ii, I
   A B C D

2. iv, III, i, II, iii, IV, ii, I
   A B C D

3. iv, I, i, IV, iii, II, ii, III
Assertion (A): Enveloped viruses like measles, Rubella and Adenovirus attached to the susceptible host by spikes.

Reason (R): Influenza virus is an enveloped virus attached to susceptible host by spikes.

Options:
1. Both (A) and (R) are true and (R) is the correct explanation of (A).
2. Both (A) and (R) are true but (R) is not the correct explanation of (A).
3. (A) is true, but (R) is false.
4. (A) is false, but (R) is true.
Find the incorrect statement.

A) Chromosomal alternations are caused either by deletion or gain.
B) Genes with low recombination show linkage whereas loosely arranged genes show higher recombination.
C) Frequency of recombinations between gene pairs on the same chromosome indicates their activity.
D) Segregation of genes occur in a less frequency in sexual reproduction.
Identify the true statements regarding a Double standard DNA molecules of length 170 Å and possess purine and pyrimidines in a ratio of 40% and 60% on one standard.

A) No. of Hydrogen bonds 130.
B) No. of phosphodiester bonds in one strand are 49.
C) No. of dicyclic rings are 20.
D) No. of thymines are 20.

The correct answer is

Options:
1. A, B, C
2. B, C, D
3. A, B, D
4. A, C, D

Question Number : 33  Question Id : 1874635153  Question Type : MCQ  Option Shuffling : Yes  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical

Identify the correct statement.

Capping of hn RNA means the addition of adenylate residues at 5' end.

hn RNA 5' ఎండి అడుగుల కారకం అడుగులతో సంపాదన వచ్చి ఉంది.

Options:
1.
y gene of lac operon encodes transacylase enzyme.

In Eukaryotes structural genes are interrupted by coding sequences.

The lac operon has two regulatory genes and three structural genes.

A student isolated a new virus which is able to infect *E.coli*. The following experiment has to follow to confirm the hereditary material of new virus.

Options:

1. Hershy Chase experiment – Growth on radioactive Phosphorous medium – infection to *E.coli*.

2. Mathew Meselon and Franklin Stahl experiment – $^{15}$NH$_4$Cl, $^{14}$N medium – centrifugation.

3. Mathew Meselson and Franklin Stahl experiment – Digestion with protease - CsCl$_2$ gradient centrifugation.
Hershy Chase experiment – Growth on radioactive sulphur medium – infection to E.coli.

4.

<table>
<thead>
<tr>
<th>List-I</th>
<th>List-II</th>
<th>List-III</th>
</tr>
</thead>
<tbody>
<tr>
<td>A) HindIII</td>
<td>i) Agarose gel</td>
<td>I) Six base pairs</td>
</tr>
<tr>
<td>B) pBR322</td>
<td>ii) Agrobacterium</td>
<td>II) Selectable marker</td>
</tr>
<tr>
<td>C) T-DNA</td>
<td>iii) Ampicillin</td>
<td>III) Elution</td>
</tr>
<tr>
<td>D) DNA</td>
<td>iv) Recognition sequence</td>
<td>IV) Transgenic plant</td>
</tr>
</tbody>
</table>

The correct answer is

Options:

1. iv, I, iii, II, ii, IV
   - A B C D
2. iv, I, iii, II, i, III, ii, IV
   - A B C D
A, B and C are transformed host cells with r-DNA made of pBR322. ‘A’ has foreign DNA insert at BamH1 site, ‘B’ has foreign DNA insert at pVU1 and ‘C’ has DNA insert in Lac 2. When they are grown on media for selection following changes are observed.

A) ‘C’ transformant produces blue coloured colonies
B) ‘C’ transformant colonies do not produce blue colour
C) ‘A’ transformant survive on the medium containing ampicillin and ‘B’ survive on tetracyclin containing medium
D) Due to insertional inactivation, ‘A’ survive on Tetracyclin containing medium and ‘B’ survive on medium with ampicillin

Identify incorrect statements

Options:
1. A, D
Choose the correct sequence of steps in PCR

Options:

1. Annealing - Denaturation - Extension - Amplification

2. Amplification - Annealing - Denaturation - Extension

3. Denaturation - Annealing - Extension - Amplification

4. Denaturation - Amplification - Extension - Annealing

Assertion (A): Blood cholesterol is lowered with statins produced by yeast.
Reason (R): Statins inhibit synthesis of cholesterol through competitive inhibition.

Options:
Both (A) and (R) are true and (R) is the correct explanation of (A).

(A) పెర్చు (R) అనేసి, పెర్చు (R) కలిగి (A) లేదు ఉంచడు.

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

(A) పెర్చు (R) అనేసి, సమ (R) కలిగి (A) లేదు ఉంచడు రాయం.

(A) is true, but (R) is false.

(A) పెర్చు (R) అనేసి రాయం.

(A) is false, but (R) is true.

(A) పెర్చు (R) అనేసి రాయం.

Match the following.

<table>
<thead>
<tr>
<th>List-I</th>
<th>List-II</th>
<th>List-III</th>
</tr>
</thead>
<tbody>
<tr>
<td>A) Biological nitrogen fixation</td>
<td>i) Trichoderma</td>
<td>I) Bacterium</td>
</tr>
<tr>
<td>B) Mycorrhiza</td>
<td>ii) Propionibacterium</td>
<td>II) Free living fungus</td>
</tr>
<tr>
<td>C) Biocontrol</td>
<td>iii) Azospirillum</td>
<td>III) Fungus</td>
</tr>
<tr>
<td>D) Swiss cheese</td>
<td>iv) Glomus</td>
<td>IV) Free living bacterium</td>
</tr>
</tbody>
</table>

The correct answer is

Options:
Choose the correct statements.

I) IR8 is a semi dwarf variety of rice developed in India.
II) Hybrid sugarcane show high sugar and high yield.
III) Hybrid millets are resistant to water stress.
IV) Sonalika is a high yielding and disease resistant hybrid variety.

Options:

1. I, II, III
2. II, III, IV
3. I, III, IV
Question Number : 41  Question Id : 1874635161  Question Type : MCQ  Option Shuffling : Yes  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical

Assertion (A) : The tropical Amazon rain forest in South America has the greatest Biodiversity on the earth

Reason (R) : The tropical latitudes have long evolutionary time

Options :

1. Both (A) and (R) are correct and (R) is the correct explanation of (A)
   (A) ఆంధ్రప్రదేశ్ లో ప్రపంచంలో పొడవు లేదా పొడవు ఆంధ్రప్రదేశ్ లో పొడవు (R) చిత్ర (R) చిత్ర (A) చిత్ర (A) చిత్ర

2. Both (A) and (R) are correct but (R) is not the correct explanation of (A)
   (A) బావిప్రదేశ్ లో ప్రపంచంలో పొడవు ఆంధ్రప్రదేశ్ లో పొడవు (R) చిత్ర (A) చిత్ర (R) చిత్ర (R) చిత్ర

3. (A) is correct but (R) is not correct
   (A) బావిప్రదేశ్ లో ప్రపంచంలో పొడవు ఆంధ్రప్రదేశ్ లో పొడవు (R) చిత్ర (R) చిత్ర

4. (A) is not correct but (R) is correct
   (A) బావిప్రదేశ్ లో ప్రపంచంలో పొడవు (R) చిత్ర (R) చిత్ర
Assertion (A): In old age, bones become more brittle
Reason (R): During ageing, the quantity of organic matter increases in a bone

Options:
1. Both (A) and (R) are correct and (R) is the correct explanation of (A)
2. Both (A) and (R) are correct but (R) is not the correct explanation of (A)
3. (A) is correct but (R) is not correct
4. (A) is not correct but (R) is correct
Study the following statements
A) Triploblastic animals are usually biradially symmetrical
B) Certain organs in vertebrates are covered by parietal peritoneum only on their ventral side.
C) Pancreas is an example for holocrine gland
D) Elastic cartilage is found in the wall of Eustachian tubes

Among the above identify the correct statements

Options :
1. A, B
2. B, C
3. C, D
4. B, D
Match the following:

<table>
<thead>
<tr>
<th>List - I</th>
<th>List - II</th>
</tr>
</thead>
<tbody>
<tr>
<td>A) Cuttle Fish</td>
<td>I) Green glands</td>
</tr>
<tr>
<td>B) Devil Fish</td>
<td>II) Medusoid form</td>
</tr>
<tr>
<td>C) Cray Fish</td>
<td>III) External shell</td>
</tr>
<tr>
<td>D) Jelly Fish</td>
<td>IV) Internal shell</td>
</tr>
<tr>
<td></td>
<td>V) Shell is absent</td>
</tr>
</tbody>
</table>

The correct answer is

Options:

1. (A) (B) (C) (D)
   III V II I
2. (A) (B) (C) (D)
   IV V II I
3. (A) (B) (C) (D)
   IV V I II
4. (A) (B) (C) (D)
   III II I V
Study the following regarding arthropods

A) In some spiders respiration is performed by both book lungs and trachea
B) Development of king crab includes trilobite larva
C) Blood of arachnids contain haemocyanin
D) In diplopods mandibles are modified into gnathochilarium

From the above, identify the incorrect statement(s)

Options:
1. A & C
2. B & D
3. C
4. D

Teeth in mammals are

Options: 
1. Acrodonl, homodont and polyphiodont
2. Acrodonl, heterodont and polyphiodont
Thecodont, heterodont and polyphiodont

Thecodont, heterodont and diphyodont

---

Study the following and choose the correct combinations

<table>
<thead>
<tr>
<th></th>
<th>Group</th>
<th>Example</th>
<th>Character</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Chondrichthyes</td>
<td>Torpedo</td>
<td>Dorsal muscle modified into electric organ</td>
</tr>
<tr>
<td>B</td>
<td>Rhynchocephalia</td>
<td>Sphenodon</td>
<td>Copulatory organ is hemipenis</td>
</tr>
<tr>
<td>C</td>
<td>Urodela</td>
<td>Salamandra</td>
<td>Amphicoelous vertebrae</td>
</tr>
<tr>
<td>D</td>
<td>Chelonia</td>
<td>Testudo</td>
<td>Edentate</td>
</tr>
</tbody>
</table>

---

Options:
1. A, C
2. B, C
3. A, D
4. C, D
Match the following

<table>
<thead>
<tr>
<th>List - I</th>
<th>List - II</th>
</tr>
</thead>
<tbody>
<tr>
<td>A) Isogamy</td>
<td>I) <em>Trichonympha</em></td>
</tr>
<tr>
<td>B) Anisogamy</td>
<td>II) <em>Euglena</em></td>
</tr>
<tr>
<td>C) Hologamy</td>
<td>III) <em>Plasmodium</em></td>
</tr>
<tr>
<td>D) Conjugation</td>
<td>IV) <em>Monocystis</em></td>
</tr>
<tr>
<td></td>
<td>V) <em>Paramoecium</em></td>
</tr>
</tbody>
</table>

The correct answer is

Options:

1. (A) (B) (C) (D)
   IV III V I

2. (A) (B) (C) (D)
   IV III I V

3. (A) (B) (C) (D)
   IV II III V

4. (A) (B) (C) (D)
   III IV I V
The following chemical is commonly called smack.

1. Morphine
2. Diacetylmorphine
3. Cocaine
4. Cannabinoids

Assertion (A) : Microfilaria exhibits nocturnal periodicity
Reason (R) : Intermediate host of *Wuchereria* is active only during night time

Options :
1. Both (A) and (R) are correct and (R) is the correct explanation of (A)
2. Both (A) and (R) are correct but (R) is not the correct explanation of (A)
3. (A) is correct but (R) is not correct
4. The following are events in life cycle of *Plasmodium* in female *Anopheles*

- Syngamy
- Oocyst formation
- Ookinete
- Formation of gametes
- Sporocyst formation
- Zygote

Arrange them in correct sequence:

Options:
1. d, c, e, f, a, b
2. b, a, f, c, e, d
3. b, a, f, e, c, d
4. b, f, a, e, c, d
Study the following statements regarding filarial worm

A) The inflammation in the lymph vessels is called lymphadenitis
B) Swelling in the extremities of limbs, scrotum and mammary glands is called lymphoedema
C) Sausage shaped larva undergoes three moultings and transforms into infective 3rd stage microfilaria
D) 3rd stage microfilaria larva enters the blood vessels of man and undergoes the 3rd and 4th moultings to produce young filarial worm

From the above, identify the correct statement(s)

Options:
1. B
2. B, C & D
3. B & D
4. A, B, C & D

Question Number : 53  Question Id : 1874635173  Question Type : MCQ  Option Shuffling : Yes  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical
Identify the mismatched pairs

A) Trophocytes - Symbiotic bacteria
B) Mycetocytes - Store food
C) Urate cells - Nitrogenous wastes
D) Oenocytes - Secrete lipids

Options:
1. C, D
2. A, C
3. A, B
4. A, D
Match the following which are related to cockroach

<table>
<thead>
<tr>
<th>List - I</th>
<th>List - II</th>
</tr>
</thead>
<tbody>
<tr>
<td>A) Adductor muscles</td>
<td>I) Depression of wings</td>
</tr>
<tr>
<td>B) Dorsal longitudinal muscles</td>
<td>II) Respiration</td>
</tr>
<tr>
<td>C) Alary muscles</td>
<td>III) Mandibles</td>
</tr>
<tr>
<td>D) Dorsoventral muscles</td>
<td>IV) Excretion</td>
</tr>
<tr>
<td></td>
<td>V) Blood circulation</td>
</tr>
</tbody>
</table>

The correct answer is

Options:

1. III II V I

2. I III V II

3. III I V II

4. IV I III II
If 20 joules of energy is available at the producer level as net primary productivity, then amount of energy available in secondary carnivore in joules.

Question Number : 56  Question Id : 1874635176  Question Type : MCQ  Option Shuffling : Yes  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical

Options :
1. 2
2. 0.02
3. 0.2
4. 0.002

Assertion (A) :  Circannular rhythms are controlled by biological clocks
Reason (R) :  Temperature has a role in setting the biological clocks

Options :
1. Both (A) and (R) are correct and (R) is the correct explanation of (A)
2. Both (A) and (R) are correct but (R) is not the correct explanation of (A)
3. (A) is correct but (R) is not correct
4. (A) is not correct but (R) is correct
Study the following statements and identify the incorrect statements.

Options:

1. Deeper region of dermis is made up of dense irregular connective tissue
2. Tendon is a dense regular connective tissue
3. Pisiform bone is a visceral bone
4. Megakaryocytes produce blood platelets
Fresh water fishes acquired several adaptations to withstand endosmosis problem. They are

A) Their agglomerular kidneys excrete large quantities of water through urine
B) They compensate the salt loss by absorbing salts through chloride cells
C) They retain urea in blood to keep the body fluid isotonic to aquatic medium
D) Their glomerular kidneys excrete large quantities of urine

Choose correct statements

Options:
1. A & B
2. C & D
3. B & D
4. B & C

Imagine the lion population of 40 in a forest cannot continue to grow exponentially due to lack of space. The carrying capacity for their space in the forest is 80. Assume ‘r’ value of Lion population is 0.2 Lions/month per capita. Predict the total population in this logistic growth situation after one month.
The disease occurs due to deposition of iron particles in tissues is

హోపాలోపా నాను హోపాలోపా నిర్మాయ ప్రక్రియలు తీరిత

Options:
1. Silicosis
   శిలీకసి
2. Siderosis
   సిడరేసిస
3. Emphysema
   ఎమ్ఫియెసమా
4. Pneumonia
   ప్యంమోనియా
Study the following (consider maximum values)
A) Inspiratory Reserve Volume (IRV)
B) Tidal Volume (TV)
C) Vital capacity (VC)
D) Total Lung Capacity (TLC)
E) Residual Volume (RV)

పరిమితి నిషిద్ధి శక్తి (సంశోభ విశ్వస్త్ర అభియోగం)
A) భ్రమణ చోటు వాయుపరంపరు (IRV)
B) దీనికి చౌళని (TV)
C) జీవు పరమాణు (VC)
D) మొత్తం వాయుపరంపరు (TLC)
E) ఉద్భిద వాయుపరంపరు (RV)

Arrange the above volumes of air in ascending order
అభియోగం సంచిత శక్తి వద్ద సాధు ఆధ్యమిక వయస్త్రం అభియోగం

Options:
1. B → E → C → A → D

2. E → C → B → A → D

3. B → E → A → C → D

4. B → E → A → D → C
The above ECG indicates the following disorder

Options:
1. Hypercalcimia
2. Hypocalcimia
3. Hypokalemia
4. Hyperkalemia
Assertion (A): In human heart, deoxygenated blood always flows from right ventricle into pulmonary arch only

Reason (R): Mitral valve present at the base of pulmonary arch prevents the reverse flow of blood

Options:

1. Both (A) and (R) are correct and (R) is the correct explanation of (A)

2. Both (A) and (R) are correct but (R) is not the correct explanation of (A)

3. (A) is correct but (R) is not correct

4. (A) is not correct but (R) is correct

Question Number : 64  Question Id : 1874635184  Question Type : MCQ  Option Shuffling : Yes  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical
Study the following table

<table>
<thead>
<tr>
<th>Part of heart</th>
<th>Location</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>A) Fossa ovalis</td>
<td>Interatrial septum</td>
<td>Directs blood from right atrium to left atrium</td>
</tr>
<tr>
<td>B) Sinoatrial node</td>
<td>Wall of right atrium</td>
<td>Initiation of systole</td>
</tr>
<tr>
<td>C) Atrio-ventricular node</td>
<td>Interventricular septum</td>
<td>Acts as pace maker</td>
</tr>
<tr>
<td>D) Bicuspid valve</td>
<td>Left atrio-ventricular aperture</td>
<td>Directs blood to flow from left atrium to left ventricle</td>
</tr>
</tbody>
</table>

The correct combinations are

1. B, C
2. A, B
3. A, D
4. B, D
Study the following statements
A) Atria and ventricles are externally separated by atrio-ventricular septum
B) Two ventricles are externally separated by an oblique interventricular groove
C) The muscular pouch like projection from each atrium is called auricular appendix
D) In embryonic stage, the interventricular septum has fossa ovalis

Identify the correct statements

Options:
1. A, B
2. B, C
3. C, D
4. A, D

Identify the correct order of stages in muscle contraction

Options:
Stimulus → Release of acetylcholine → release of Ca²⁺ ions → Excitation of triad system → sliding of thin filaments → Z-membranes brought closer

1.
Study the following

A) Action potential  
B) Threshold stimulus  
C) Under shoot / Hyperpolarisation  
D) Influx of Na⁺ ions  
E) Efflux of K⁺ ions

Arrange the above in a correct sequence of nerve impulse generation and conduction.
Match the following

List - I
A) Complement proteins
B) Interferons
C) Interleukins
D) Integrase

List - II
I) Promotes apoptosis
II) Incorporates viral DNA
III) Membrane attack complex
IV) Antiviral proteins
V) Differentiation of immune cells

The correct answer is

Options:
(A) (B) (C) (D)

1. III IV V II
Study the following statements
A) Calcitonin regulates the metabolism of calcium
B) Oxytocin stimulates contraction of uterine muscles
C) Graves disease is due to malfunctioning of adrenal gland
D) ADH stimulates water secretion and increases urine formation

Identify the incorrect statements
A) సిటోసిట్ మీదుగా పరిమాణం సేకరిస్తుంది
B) ఓస్పటిన్ పండుగా కనుక్రమేస్తుంది (చిత్రనాము)
C) స్రావకు నోటి కార్య మల్లాంటినించడం కిలివేదు మారు కావాలంటాడు
D) ADH వైనే సంఖ్య (విసిరు ఉత్పత్తి మార్గం) కంప్యూటర్ కావాలంటాడు

Options:
1. A, B
2. C, D
3. A, C
4. B, D
The unique feature observed in the foetus during fifth month of pregnancy

Options:

1. Development of limbs

2. Appearance of hair on head

3. Formation of heart
Study the following about contraception

<table>
<thead>
<tr>
<th>List - I</th>
<th>List - II</th>
<th>List - III</th>
</tr>
</thead>
<tbody>
<tr>
<td>A) IUDS</td>
<td>Lippes loop</td>
<td>Medicated</td>
</tr>
<tr>
<td>B) OCPS</td>
<td>Saheli</td>
<td>Non steroid</td>
</tr>
<tr>
<td>C) Contraceptive injections</td>
<td>DMPA</td>
<td>Prevents pregnancy for 3 months</td>
</tr>
<tr>
<td>D) Barrier method</td>
<td>Vaginal ring</td>
<td>Release of progesteron</td>
</tr>
<tr>
<td>E) Surgical method</td>
<td>Vasectomy</td>
<td>Removal of fallopian tube</td>
</tr>
</tbody>
</table>

From the above, identify the incorrect combinations

Options:
1. A, D & E
2. A, C & D
3. C, D & E
4. B, D & E

Question Number : 72  Question Id : 1874635192  Question Type : MCQ  Option Shuffling : Yes  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical
Study the following parts of the male reproductive system.

A) Retestis
B) Epididymis
C) Urethra
D) Seminiferous tubules
E) Vas deferens
F) Ejaculatory duct
G) Vasa efferentia

The correct sequence of parts through which sperms pass out is

Options:
1. A, B, C, D, E, F, G
2. D, A, G, B, E, F, C
3. D, A, G, E, B, F, C
4. D, G, A, B, E, F, C

The usage of technique gel electrophoresis is

Options:

- Separation of DNA into individual bands
- DNA का निविकाय करना व विनिविकाय
2. Separation of double helix DNA into single strand

3. Production of many copies of DNA

4. Cutting of DNA into small fragments

Question Number : 74  Question Id : 1874635194  Question Type : MCQ  Option Shuffling : Yes  Display Question Number : Yes
Single Line Question Option : No  Option Orientation : Vertical

Assertion (A) : Klinefelter individual is Barr body positive
Reason (R) : Klinefelter individual carries two X chromosomes

Options :

1. Both (A) and (R) are correct and (R) is the correct explanation of (A)

(A) క్లైనెఫెంటర్ వ్యక్తి బార్రు బోడీ పాటు (R) క్లైనెఫెంటర్ వ్యక్తి రెంట్యూస్స్ ద్వారా (A) ఎంచుకోనది

2. Both (A) and (R) are correct but (R) is not the correct explanation of (A)

(A) క్లైనెఫెంటర్ వ్యక్తి బార్రు బోడీ పాటు (R) క్లైనెఫెంటర్ వ్యక్తి రెంట్యూస్స్ ద్వారా (A) ఎంచుకోనది

3. (A) is correct but (R) is not correct

(A) క్లైనెఫెంటర్ వ్యక్తి బార్రు బోడీ పాటు (R) ఎంచుకోనది

4. (A) is not correct but (R) is correct

(A) క్లైనెఫెంటర్ వ్యక్తి బార్రు బోడీ పాటు (R) ఎంచుకోనది

Question Number : 75  Question Id : 1874635195  Question Type : MCQ  Option Shuffling : Yes  Display Question Number : Yes
Single Line Question Option : No  Option Orientation : Vertical
Study the following statements and identify the incorrect statement

ఐదు వారిలో ఒకపట్టిక వున్నది ఎదుచుకోడా

Options:

The DNA is fragmented by restriction enzymes
DNA కి పరిపాలన చేసే సిటి వాటి వ్యాఖ్యత్వం

1. Fragments are separated by centrifugation
రాగిలో పాటు చేసే సిటి వాటి వ్యాఖ్యత్వం

2. DNA is denatured by alkali treatment or heating
ఫాసను శాయలకి చేసే సిటి వాటి వ్యాఖ్యత్వం

3. Fragments of single strand DNA are transferred to nitrocellulose sheets and are identified with probes
ప్రత్లా సిటి వాటి వ్యాఖ్యత్వం

4.

Study the following statements and identify the incorrect statement regarding genetic drift

ఐదు వారిలో ఒకపట్టిక వున్నది ఎదుచుకోడా

Options:

Chances of losing a particular allele from small population is more
సంఖ్య నిలిచే జనసాధారణా సమాధానం చేసే సిటి వ్యాఖ్యత్వం

1. End result of genetic drift is either fixation or loss of allele.
ఎదుచుకోడా నిలిచే సంఖ్య నిలిచే జనసాధారణా సమాధానం చేసే సిటి వ్యాఖ్యత్వం

2. Genetic drift tends to increase variations
ఎదుచుకోడా నిలిచే సంఖ్య నిలిచే జనసాధారణా సమాధానం చేసే సిటి వ్యాఖ్యత్వం

3.
4.

**Bottleneck effect illustrates genetic drift**

** Assertion (A) :** Geographical isolation brings about the sympatric speciation

**Reason (R) :** If one species diverges to become two or more species, it is called cladogenesis

**Options :**

Both (A) and (R) are correct and (R) is the correct explanation of (A)

(A) **statement (R) αν διαφορά **(R) **statement (A) σε **

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

(A) **statement (R) αν διαφορά **(R) **statement (A) σε **

(A) is correct but (R) is not correct

(A) **statement (R) αν διαφορά **(R) **statement (A) σε **

(A) is not correct but (R) is correct

(A) **statement (R) αν διαφορά **(R) **statement (A) σε **

4.

**Question Number : 78**  Question Id : 1874635198  Question Type : MCQ  Option Shuffling : Yes  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical

Which statement is correct regarding cancer cells

**Options :**

They exhibit contact inhibition

1.
Cells are joined by cadherins

Cancer cells undergo apoptosis

They starve the normal cells by competing for vital nutrients

---

Match the following

<table>
<thead>
<tr>
<th>List - I</th>
<th>List - II</th>
</tr>
</thead>
<tbody>
<tr>
<td>A) Sandwich assay</td>
<td>I) Enzyme catalysed colour production</td>
</tr>
<tr>
<td>B) Indirect ELISA</td>
<td>II) Pregnancy test</td>
</tr>
<tr>
<td>C) Competitive ELISA</td>
<td>III) Used to detect antibodies</td>
</tr>
<tr>
<td>D) Direct ELISA</td>
<td>IV) Used to measure the amount of antigen</td>
</tr>
<tr>
<td></td>
<td>V) Used to detect antigens</td>
</tr>
</tbody>
</table>

---

The correct answer is

Options:

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

IV  III  I  V
Study the following statements

A) In germ line gene therapy functional genes are introduced into somatic cells
B) Synthetic oligo deoxynucleosides are used for silencing the disease causing genes
C) The transgenic animal product α-lactalbumin is used to treat emphasema
D) Viral vectors are used to send genetically modified DNA by a process called transfection

From the above, identify the correct statements

Options:

1. A, C
2. B, C
3. B, D
4. A, D

**Physics**

**Question Number : 81  Question Id : 1874635201  Question Type : MCQ  Option Shuffling : Yes  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

The sides of a rectangular plate are \((9.0 \pm 0.3)\) cm and \((3.0 \pm 0.1)\) cm. The area of the plate with error limits is

\[ A = (9.0 \pm 0.3) \times (3.0 \pm 0.1) \text{ cm}^2 \]

Options :

1. \((27.0 \pm 0.1)\) cm\(^2\)
2. \((27.0 \pm 0.3)\) cm\(^2\)
3. \((27.0 \pm 1.8)\) cm\(^2\)
4. \((27.0 \pm 0.2)\) cm\(^2\)

**Question Number : 82  Question Id : 1874635202  Question Type : MCQ  Option Shuffling : Yes  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

A particle first accelerates from rest and then retards to rest during the time interval of 8 s. If the retardation is 3 times the acceleration, then the time for which it accelerated is

\[ t_a = \frac{2}{3} \times 8 = \frac{16}{3} \text{ s} \]

Options :

1. \(2 \text{ s}\)
Two balls are projected from same place simultaneously. One ball is projected vertically upwards and the other at an angle of \(30^\circ\) with the horizontal. If these two reach the ground at the same time then the ratio of their initial velocities is

\[ \frac{1}{\sqrt{2}} : \frac{1}{\sqrt{3}} \]

Options:
1. \(\sqrt{2} : \sqrt{3}\)
2. \(\sqrt{2} : 1\)
3. \(1 : \sqrt{3}\)
4. \(1 : 2\)

A boy can throw a ball obliquely to a maximum horizontal distance ‘\(X\)’ while standing on the ground. If he throws the same ball from the top of a tower of height ‘\(X\)’ at an angle of \(45^\circ\) above the horizontal from the foot of the tower, the ball hits the ground at a distance

(Assume same initial speeds)

\[ \frac{1}{\sqrt{2}} : \frac{1}{\sqrt{3}} \]

Options:
A body slides down in a time ‘t’ from rest along a smooth inclined plane making an angle of 45° with the horizontal. When the same body slides down from rest along a rough inclined plane of same length making the same angle, it takes time ‘pt’ then the coefficient of friction between the body and the rough plane is (p is a constant)

Options:
1. \( p^2 - 1 \)
2. \( 1 - \frac{1}{p^2} \)
3. \( \frac{1}{p^2} \)
4. \( \frac{2p^2}{1 - p^2} \)
A car moves along a horizontal circular road of radius ‘R’ with a tangential acceleration ‘a_t’. The coefficient of friction between the road and the tyre is ‘μ’. The maximum speed of the car to move without skidding is

\[ R^2 \mu g^2 - a_t^2 \]

Options:
1. \[ R^2 \mu g^2 - a_t^2 \]
2. \[ R^2 (\mu g^2 - a_t^2) \]
3. \[ R^2 (\mu g^2 - a_t^2) \]
4. \[ R^2 (\mu g^2 - a_t^2) \]

From a point on a smooth horizontal plane, a body is projected with a velocity 20 ms\(^{-1}\) at an angle of 45° to the horizontal. If the coefficient of restitution is 0.5, the total horizontal distance it travels before coming to rest after several rebounds is

\( \text{(Acceleration due to gravity } = 10 \text{ ms}^{-2} \)\)

\( \text{భార్య ఒప్పందం నుండి అండాకార ప్రభుత్వం నుండి ప్రయాణం చేసే వేగం } 20 \text{ m/s} \text{ అంధకార ద్రవ్యం } 45° \text{ ప్రభుత్వం నుండి ప్రయాణం చేసేది, ఎగువచ్చు కొద్ది సంఖ్య, స్పష్టంగా జీని చేసి, అది ఉంధే భార్య వేగం నుండి త్రవ్వ వేగం నుండి సంచలించి ఉంటుంది అంటే అది వేగం నుండి త్రవ్వ వేగం నుండి సంచలించి ఉంటుంది అంటే అది వేగం నుండి త్రవ్వ వేగం నుండి సంచలించి ఉంటుంది (\text{ఆమెట్స్యున్యుల్ట్యులు} = 10 \text{ m/s}^{-2}) \)

Options:
1. 40 m
2. 60 m
A ball B of mass ‘m’ is tied to a 90 cm thread of negligible mass and is pivoted from a rigid point ‘O’. The ball B is pulled aside through 60° and then released. When the ball B reaches its lowest position, it collides elastically with another ball P of mass ‘2m’ at rest on a rough horizontal table of coefficient of kinetic friction 0.1, as shown in the figure. After collision, the ball P travels a distance ‘d’ before it comes to rest and the ball B reaches a maximum height ‘h’. Then, the value of \( \left( \frac{d}{h} \right) \) is

(Acceleration due to gravity = 10 ms\(^{-2}\))

\( 'm' \) నుండి కనుగొనండం లేకుంటే బాల B ను తోటు చేసి ''O' ను తూర్పు చేసి నిర్ధిష్టంగా 90 సమాంతర పైకి నిర్ధిష్టంగా సంపూర్ణ ప్రతిరోధం పైకి. అయితే B ను 60° దిశాపై నిర్ధిష్ట పంచబ్యవానం చేసి తూర్పు చేసి. అయితే B ను ప్రతిరోధం నిర్ధిష్టంగా, అయితే మధ్యంగా నిర్ధిష్టం పైకి 0.1 కీసిస్తుంది మధ్యంగా కనుగొనండం లేకుంటే '2m' నుండి కనుగొనండం లేకుంటే తూర్పు చేసి బాల P ను ప్రతిరోధం నిర్ధిష్టంగా అడుగుండానికి. అయితే ప్రతిరోధం, అయితే P ను తూర్పు చేసి బాల ను ప్రతిరోధం నిర్ధిష్టంగా ఆకర్షించితో సాధించండి దూరం 'd' నిర్ధిష్టం లేకుంటే B ను తూర్పు చేసి నిర్ధిష్టం 'h'. అయితే, \( \left( \frac{d}{h} \right) \) నిర్ధిష్టం

(గతానుసారం=10 ms\(^{-2}\))

Options:
1. 40
2. 32
A 15 gram ball is shot from a spring gun whose spring has a force constant of 600 Nm⁻¹. The spring is compressed by 5 cm. The greatest possible horizontal range of the ball for this compression is

(Acceleration due to gravity = 10 ms⁻²)

Options:
1. 5 m
2. 15 m
3. 20 m
4. 10 m
Two particles P and Q are moving in a circular path of radius 5 cm. At $t = 0$, they are at the ends of a diameter and have equal angular velocity of $\frac{\pi}{3}$ rad s$^{-1}$. The angular acceleration of Q is twice that of P. If both the particles move in clockwise direction they meet after 3 s. If P moves in clockwise direction and Q moves in anti-clockwise direction then they meet after

5 cm అరుణగిరి కాబట్టి ఆరుడి భాగాన్ని ప్రాచుర్యం చేసుకుని P మిగిలి Q చెన్నాడు చేసుకుని. $t = 0$

మధ్య, అంటే ఆరుడి భాగాన్ని వెంబడి వాయింది $\frac{\pi}{3}$ rad s$^{-1}$మేరుగు మధ్య అడవి కంటే. Q మిగిలి

చెన్నాడు P తో ఎక్కడే చెయించడం జోగుతుంది. మిగిలి రేఖలు లభించింది బడించినా, అనేక 3 s స్థానం మారడంలోనే. P మిగిలి చెన్నాడు, హెచ్చు Q మిగిలి చెన్నాడు, అనే

_options:

1. 0.5 s
2. 1 s
3. 1.5 s
4. 2 s

Question Number : 91 Question Id : 1874635211 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Consider a pair of identical pendulums, which oscillate with equal amplitude independently such that when one pendulum is at its extreme position making an angle of $4^\circ$ to the right with the vertical, the other pendulum makes an angle of $2^\circ$ to the left of the vertical. The phase difference between the pendulums is

చేతిపోయి చేతి ఎండమైనా $4^\circ$ దిశాలో ఉన్నా అది ఆరోహణం లేదు చేతిపోయి చేతి ఎండమైనా $2^\circ$ దిశాలో ఉన్నా. అంటే ఇది చేతిపోయి కాలం

_options:
1. $\frac{\pi}{4}$

2. $\frac{2\pi}{3}$

3. $\frac{\pi}{3}$

4. $\frac{\pi}{2}$

The time period of moon around the earth is 28 days. If the mass of the earth is doubled, without any change in the distance of the moon from the earth, new time period of revolution of the moon is

మూడు సంవత్సరాలు మూడు సంవత్సరాలు సంఖ్యలు 28 చివరం. పనికి ద్వారా మూడు సంవత్సరాలు కూడా మరింత మంది చేయడానికి, పనిగి పూడి సంఖ్యలు

Options:

1. $28\sqrt{2}$ days
2. $28\sqrt{2}$ సంవత్సరాలు
3. 7 days
4. 7 సంవత్సరాలు
5. $14\sqrt{2}$ days
6. $14\sqrt{2}$ సంవత్సరాలు
7. 14 days
8. 14 సంవత్సరాలు

Question Number : 93  Question Id : 1874635213  Question Type : MCQ  Option Shuffling : Yes  Display Question Number : Yes Single Line Question Option : No  Option Orientation : Vertical
A composite steel rod PQR is made of two rods PQ and QR as shown in figure. The lengths of two rods PQ and QR are 20 cm and 10 cm respectively. The area of cross-section of the longer rod is $2 \times 10^{-4}$ m$^2$ and that of the shorter rod is $1 \times 10^{-4}$ m$^2$. If the composite rod is stretched with a force of $50 \times 10^3$ N, the total elongation produced is

(Young’s modulus of steel = $20 \times 10^{10}$ Nm$^{-2}$)

Options:

1. 5 mm
2. 0.5 mm
3. 25 mm
4. 2.5 mm
Match the following List-I with List-II

**List - I**

A) Equation of continuity  
B) Bernoullie’s theorem  
C) Turbulent flow  
D) Stream line flow

**List - II**

I) Less than critical velocity  
II) Formation of eddies and vortices  
III) Law of conservation of mass  
IV) Law of conservation of energy

ఎంపిక వర్గ వర్గికలు సూచిస్తుందాం

**ఎంపిక - I**

A) సాధియత గణనాంకి
B) బేరోంద వితరణ
C) తండ్రీయ గుత్తారక
D) స్ట్రమ్మ గుత్తారక

**ఎంపిక - II**

I) హిమాచల్ సాధియత గణనాంకి
II) విదేశాల, కుమాన వాతావరణ
III) సాధియత గణనాంకి ఉపనిషాద్
IV) హిమాచల్ విదేశాలు

The correct answer is

ఎంపిక వర్గికలు సాధియత గణనాంకి

Options:

A  B  C  D

1. IV II I III

A  B  C  D

2. III I IV II

A  B  C  D

3. II III IV I

A  B  C  D

4. III IV II I
A body cools from 60 °C to 40 °C in the first 7 minutes and to 28 °C in the next 7 minutes. The temperature of the surroundings is

డాన్ను 7 మినిట్లుల మధ్య 60 °C నుండి 40 °C ని స్థాయిస్తుంది. మరియు 7 మినిట్లుల మధ్య 28 °C
tమినిట్లుల మధ్య ని స్థాయిస్తుంది.

Options:
1. 10 °C
2. 20 °C
3. 5 °C
4. 30 °C

Two identical rods are joined as shown in the figure. The temperatures shown at the ends are in steady state. If there is no heat loss through lateral surfaces of the rods, then the temperature at the junction is

డాన్ను ఇతర విశ్లేషణ ప్రతి విభాగంలో లతల నుండి ఫుమిస్తుంది. దాన్ను ఇతర విశ్లేషణ ప్రతి విభాగంలో లతల నుండి ఫుమిస్తుంది

Options:
1. 50.0 °C
2. 75.0 °C
Two moles of a monatomic gas at 27 °C and three moles of a diatomic gas at the same temperature expand adiabatically. If the work done by each gas during the expansion is 4157 J, the ratio of the final temperatures of the monatomic gas to that of the diatomic gas is

(Universal gas constant $= 8.314 \text{ Jmol}^{-1}\text{K}^{-1}$)

Options:
1. 3 : 5
2. 4 : 7
3. 2 : 3
4. 3 : 7
Carbon monoxide \( \left( \gamma = \frac{7}{5} \right) \) is carried around a closed cyclic process abc, in which ‘bc’ is an isothermal process as shown in figure. The gas absorbs 6000 J of heat as its temperature is increased from 200 K to 800 K in going from ‘a’ to ‘b’. The quantity of heat ejected by the gas during the process ‘ca’ is

\[
\begin{align*}
\text{Options:} \\
1. & \quad 6000 \text{ J} \\
2. & \quad 2400 \text{ J} \\
3. & \quad 8400 \text{ J} \\
4. & \quad 4800 \text{ J}
\end{align*}
\]
Mass of each molecule of gas ‘A’ containing ‘N’ molecules is ‘m’ and mass of each molecule of gas ‘B’ containing ‘2N’ molecules is ‘2m’. These two gases are contained in a vessel which is maintained at a temperature T. The mean square velocity of the molecules of gas B is denoted by \(v^2\) and the mean square X-component of the velocity of gas A is denoted by \(w^2\). The value of \(\frac{w^2}{v^2}\) is

Options:

1. \(\frac{4}{3}\)
2. \(\frac{2}{3}\)
3. \(\frac{1}{3}\)
4. \(\frac{3}{4}\)
A string fixed at both ends is vibrating in the lowest mode for which a point of maximum displacement lies at $\left(\frac{1}{4}\right)^{th}$ of its length from one end. The frequency of vibration is 100 Hz. If this point is to be again the point of maximum displacement, then the frequency of the next mode of vibration is

Options:
1. 400 Hz
2. 600 Hz
3. 300 Hz
4. 200 Hz

The frequency of a note emitted by a source changes by 10% as it moves away from a stationary observer. If it moves towards the stationary observer with the same speed, the apparent change in the frequency is

Options:
1. 10%
2. 7.5%
A double convex lens made up of a material of refractive index 1.6 is on a plane mirror. The space between the lens and the mirror is filled with water. When a point object is placed at 30 cm above the lens system, then its image coincides with the object. Then the focal length of the lens is

Options:

1. \( \frac{20}{3} \) cm
2. \( \frac{65}{3} \) cm
3. \( \frac{15}{2} \) cm
4. 18 cm

In Young’s double slit experiment, the distance between the slits is 0.5 mm and the distance between the screen and sources is 50 cm. If a light of wavelength 5000 Å is used and the total set up is immersed in a liquid of refractive index 1.5, then the fringe width is

Options:
Question Number : 104  Question Id : 1874635224  Question Type : MCQ  Option Shuffling : Yes  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical

Assertion (A) : When a body acquires negative charge, its mass decreases.
Reason (R) : A body acquires negative charge when it gains electrons.

Options :
Both (A) and (R) are correct and (R) is the correct explanation of (A)

1. (A) పదము (R) లేదు ప్రత్యేకంగా ఔషధీ (R) కాబట్టి (A) లేదు పండుతుంది

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

2. (A) పదము (R) లేదు ప్రత్యేకంగా ఔషధీ (R) కాబట్టి (A) లేదు పండుతుంది

(A) is correct but (R) is not correct

3. ప్రదేశం లేదు (R) లేదు పండుతుంది

(A) is not correct but (R) is correct

4. ప్రదేశం లేదు (R) లేదు పండుతుంది
When two point charges are at some separation in air, the force between them is $F_1$. If the space between them is filled with a dielectric of dielectric constant 4, then the force becomes $F_2$. If half of the distance between them is filled with the same dielectric, then the force becomes $F_3$. Then the ratio of $F_1$, $F_2$ and $F_3$ is

\[ \frac{F_1}{F_2} : \frac{F_2}{F_3} = \frac{1}{4} : \frac{1}{8} \]

Options:

1. 16 : 9 : 4
2. 9 : 36 : 16
3. 4 : 1 : 2
4. 36 : 9 : 16

Electric potential at a point $(x, 0, 0)$ is given by $V = \left[ \frac{1000}{x} + \frac{1500}{x^2} + \frac{500}{x^3} \right]$ volt. Then the intensity of electric field at $x = 1\text{m}$ (in $\text{Vm}^{-1}$) is

\[ \left. V = \left[ \frac{1000}{x} + \frac{1500}{x^2} + \frac{500}{x^3} \right]\right|_{x = 1}\text{m} \]

Options:

1. $-5500\hat{i}$
2. $5500\hat{i}$
3. $\sqrt{5500}\hat{i}$
Two circular plates each of radius ‘r’ and charge ‘q’ form a parallel plate capacitor. Then the force of attraction between the plates is
(Medium between the plates is air).

Options:

1. \( \frac{q}{2\varepsilon_0 r} \)

2. \( \frac{q}{2\pi\varepsilon_0 r^2} \)

3. \( \frac{2\pi\varepsilon_0 r^2}{q} \)

4. \( \frac{q^2}{2\pi\varepsilon_0 r^2} \)
An electrical circuit consists of A, B, C, D bulbs and a battery V as shown in the figure. When the switch is closed

Options:
1. Brightness of bulb B decreases
2. Brightness of bulb A decreases
3. Brightness of bulb D increases
4. Brightness of bulb D decreases
In the circuit shown, the current through 20 V cell is

\[ \begin{array}{c|c|c|c|c}
10 V & 4 V & 15 V & 25 V & 20 V \\
10 \Omega & 6 \Omega & 5 \Omega & 9 \Omega & \end{array} \]

Options:
1. 11 A
2. 12 A
3. 22 A
4. 5.5 A

A current carrying conductor has \(8 \times 10^{22}\) free electrons per meter length having drift velocity \(10^{-4}\) ms\(^{-1}\). If a magnetic field of 5 T is applied perpendicular to the conductor, then the force per unit length of the conductor in Nm\(^{-1}\) is

Options:
1. 64
2. 3.2
3. 16
4. 6.4
An ionised gas is subjected to an electric field along positive X-axis and a magnetic field along positive Z-axis simultaneously. Then

Options:
1. All ions deflect towards positive Y-axis
2. All ions deflect towards negative Y-axis
3. Positive ions deflect towards negative Y-axis and negative ions towards positive Y-axis

Question 112
If the earth's magnetic field at the equator is 0.4 G, then the earth's dipole moment is nearly (Radius of the earth = 6400 km)

Options:
1. $0.73 \times 10^{22}$ Am$^2$
2. $1.5 \times 10^{22}$ Am$^2$
3. \(0.87 \times 10^{23} \text{ Am}^2\)

4. \(1.05 \times 10^{23} \text{ Am}^2\)

Question Number: 113  Question Id: 1874635233  Question Type: MCQ  Option Shuffling: Yes  Display Question Number: Yes  Single Line Question Option: No  Option Orientation: Vertical

The current flowing in a coil of inductance 2 mH varies as \(i = t^2 e^{-t}\) ampere (where 't' is time in seconds). The time in which the induced emf in the coil becomes zero is

\[\text{ఎంమీ} 2 \text{ mH కై ఇంకాస్ సర్సరి ప్యాట్రి ద్వారా } i = t^2 e^{-t} \text{ అంప్రేం కేడా ప్రవేశం ద్వారా} \text{ రూపం సృష్టించాం. కాది ఇంకాస్ సర్సరి రూపాంధ్రం ప్రవేశం క్రియను వయి వాటా ఉంటుంది} \]

Options:
1. 4 s
2. 6 s
3. 2 s
4. 8 s

Question Number: 114  Question Id: 1874635234  Question Type: MCQ  Option Shuffling: Yes  Display Question Number: Yes  Single Line Question Option: No  Option Orientation: Vertical

If a direct current of 'a' units is superimposed with an alternating current \(I = b \sin \omega t\), then the effective value of resulting current is

\[\text{రుమీ} \frac{\sqrt{a^2 + b^2}}{2}\]

Options:
1. \[I_{\text{rms}} = \left(\frac{a^2 + b^2}{2}\right)^{\frac{1}{2}}\]
2. \[I_{\text{rms}} = \left(\frac{a^2}{2} + b^2\right)^{\frac{1}{2}}\]
\[ I_{\text{rms}} = \left( \frac{a^2 + b^2}{2} \right)^{\frac{1}{2}} \]

The horizontal and vertical components of the electric field of an electromagnetic wave in free space are respectively:

\[ E_x = 2 \sin (\omega t + \beta z) \]
\[ E_y = 2 \cos (\omega t + \beta z) \]

Then the displacement current density is (Take \( j = \sqrt{-1} \))

\[ \text{Options:} \]

1. \( j \omega \varepsilon_0 \)
2. \( 2 j \omega \varepsilon_0 \)
3. \( j \omega^2 \varepsilon_0 \)
4. \( j \omega^2 \)
The ratio of de Broglie wavelengths of molecules of Hydrogen and Helium in two different gas jars at temperatures of 127 °C and 227 °C respectively is

127 °C నిమ్మ 227 °C నిమ్మ ద్వారా జాతి సమృద్ధి నిర్మాణం కోసం హెలియం మొమ్మత్త నిమ్మ వంటి మూడు సమృద్ధి ఘనమైన అన్వయం ప్రకారం దుస్తు వల్లయను నిలచింది చిన్నారు వల్లయను నిలచింది

Options:

1. \( \sqrt{\frac{2}{5}} \)
2. \( \sqrt{\frac{5}{2}} \)
3. \( \sqrt{\frac{3}{5}} \)
4. \( \sqrt{\frac{8}{5}} \)

If the wavelength of a photon emitted due to transition of electron from third orbit to first orbit in a hydrogen atom is \( \lambda \), then the wavelength of a photon emitted due to transition of electron from fourth orbit to second orbit will be

ప్రత్యేకమైనారు 3 మ్యూక్ కోలిం 1 మ్యూక్ వాటితో లేదు ఆధారం వంటి మూడు సమృద్ధి ఘనమైన అన్వయం ప్రకారం, 4 మ్యూక్ కోలిం 2 మ్యూక్ వాటితో లేదు ఆధారం వంటి మూడు సమృద్ధి ఘనమైన అన్వయం ప్రకారం

Options:

1. \( \frac{25}{9} \lambda \)
2. \( \frac{128}{27} \lambda \)
A radioactive element disintegrates for an interval of time equal to its mean life time. The fraction that has disintegrated is

\[ \frac{36}{7} \lambda \]

\[ \frac{125}{11} \lambda \]

Questions:
1. \( \frac{1}{e} \)
2. \( \frac{e-1}{e} \)
3. \( \frac{e}{e-1} \)
4. \( \frac{e}{2} \)

Question Number : 119  Question Id : 1874635239  Question Type : MCQ  Option Shuffling : Yes  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical
If \( A = 1, B = 0 \) and \( C = 1 \) in the following logic circuit, the values of \( X \) and \( Y \) are respectively

\[ \text{Options:} \]
1. 0, 1
2. 1, 0
3. 1, 1
4. 0, 0

The amplitude of the modulating wave is \( \left(\frac{2}{5}\right)^n \) of the amplitude of the carrier wave. The percentage of modulation is

\[ \text{Options:} \]
1. 20%
2. 40%
3. 50%
The energy of an electron in the excited state of hydrogen atom is $-1.36 \times 10^{-19}$ J. Then according to Bohr’s theory, the angular momentum of this electron in Js is $-1.36 \times 10^{-19}$ J. Then according to Bohr’s theory, the angular momentum of this electron in Js is

Options:
1. $4.21 \times 10^{-34}$
2. $2.11 \times 10^{-34}$
3. $1.05 \times 10^{-34}$
4. $3.16 \times 10^{-34}$

The wave number of the spectral line in the atomic spectrum of hydrogen is equal to $\frac{8}{9} R_{H} m^{-1}$. The energy associated with that spectral line is $(R_{H} =$ Rydberg constant) $\frac{8}{9} R_{H} m^{-1}$ for $m$.

Options:
The oxidation state and covalency of aluminium in $\left[\text{Al(H}_2\text{O})_3\text{Cl}\right]^{2+}$ are respectively

$\left[\text{Al(H}_2\text{O})_3\text{Cl}\right]^{2+}$ అంరోగ్గమనం మూడు పండ్ల, రెండు పండ్లు ఉండి

Options:
1. +2, 3
2. +3, 3
3. +2, 5
4. +3, 6

The number of lone pairs of electrons present on the central atom and number of bond pairs in the following species are respectively

అంచె లోనె పండ్లు ఉండి మరియు అంచె పండ్లు ఉండి

<table>
<thead>
<tr>
<th>Species</th>
<th>(A) XeF$_4$</th>
<th>(B) [PCl$_4$]$^+$</th>
<th>(C) SnCl$_2$</th>
<th>(D) [BeF$_4$]$^{2-}$</th>
</tr>
</thead>
</table>

Options:
In which of the following group of molecules, bond angles are in the increasing order?

Options:

1. $\text{CH}_4$, $\text{NH}_3$, $\text{H}_2\text{O}$

2. $\text{H}_2\text{O}$, $\text{BeCl}_2$, $\text{BF}_3$

3. $\text{H}_2\text{S}$, $\text{CH}_4$, $\text{SO}_2$

4. $\text{BF}_3$, $\text{NH}_3$, $\text{SF}_6$
Assertion (A) : In an ideal gas all the molecules travel with same velocity
Reason (R) : Ideal gas molecules neither attract nor repel each other

The correct answer is

Options :

1. Both (A) and (R) are correct and (R) is the correct explanation of (A)
   (A) హోస్పైను రాహిస్తుంటాయి (R) అవసరమైన అతినాటికి (R) సిద్ధం (A) లో ఉండవచ్చు వాస్తవం

2. Both (A) and (R) are correct and (R) is not the correct explanation of (A)
   (A) హోస్పైను రాహిస్తుంటాయి (R) అవసరమైన అతినాటికి (R) సిద్ధం (A) లో ఉండవచ్చు వాస్తవం

3. (A) is correct but (R) is not correct
   (A) హోస్పైను రాహిస్తుంటాయి (R) సంపూర్ణమైన రాయలు

4. (A) is not correct but (R) is correct
   (A) హోస్పైను రాహిస్తుంటాయి (R) సంపూర్ణమైన రాయలు

Question Number : 127 Question Id : 1874635247 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

50 mL of 0.1 M Na₂CO₃ (molar mass 106 g mol⁻¹) taken in a litre volumetric flask is made up to the mark by distilled water. What volume of this solution is required to exactly neutralise 20 mL of 0.02 N oxalic acid dihydrate (molar mass 126 g mol⁻¹) solution?

విశాలంగం సంపదతో ప్రత్యేకండి ప్రత్యేకండి 50 mL అని 0.1 M Na₂CO₃ (మూలా గా 106 g mol⁻¹) లని పనిచేస్తుంది రెండు ల ప్రాంతంలో మిగిలించబడింది. 20 mL అని 0.02 N అయి ఏడాదే తీసుకుతీ (మూలా గా 126 g mol⁻¹) సమగ్ర మామూలు ప్రత్యేకండి ప్రత్యేకండి సమగ్ర మామూలు నిర్మాణ కాయలు వంటించబడింది?

Options :
At constant temperature T(K) and pressure enthalpy of combustion of ethyl alcohol is \(-x\) J mol\(^{-1}\). So, the enthalpy of combustion of ethyl alcohol at the same temperature and constant volume in J mol\(^{-1}\) will be

\[\text{Options:}
\begin{align*}
1. \text{RT} - x \\
2. -(RT + x) \\
3. x - RT \\
4. x + RT
\end{align*}\]

Which of the following mixtures acts as a buffer solution?

\[\text{Options:}
\begin{align*}
1. 0.5 \text{ L of 0.1 M CH}_3\text{COOH} + 0.5 \text{ L of 0.2 M NaHCO}_3 \\
2. 0.5 \text{ L of 0.1 M CH}_3\text{COOH} + 0.5 \text{ L of 0.2 M NaOH}
\end{align*}\]
3. \[0.5 \text{ L of } 0.1 \text{ M CH}_3\text{COOH} + 0.5 \text{ L of } 0.1 \text{ M HCl}\]

4. \[0.5 \text{ L of } 0.2 \text{ M CH}_3\text{COOH} + 0.5 \text{ L of } 0.1 \text{ M NaOH}\]

---

**Question Number : 130  Question Id : 1874635250  Question Type : MCQ  Option Shuffling : Yes  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

The decomposition of \(N_2O_4\) to \(NO_2\) is carried out at \(T(K)\) in chloroform. When equilibrium is reached 0.2 moles of \(N_2O_4\) and \(2 \times 10^{-3}\) moles of \(NO_2\) are present in a 2.0 L solution. The equilibrium constant for the reaction \(N_2O_4 \rightleftharpoons 2NO_2\) is

\(\text{T(K) } 2.0 \text{  N}_2\text{O}_4 \rightleftharpoons \text{ 0.2  NO}_2\)  

Options:

1. \(2.0 \times 10^{-5}\)
2. \(2.0 \times 10^{-4}\)
3. \(1.0 \times 10^{-5}\)
4. \(1.0 \times 10^{-4}\)

---

**Question Number : 131  Question Id : 1874635251  Question Type : MCQ  Option Shuffling : Yes  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

Which of the following is **not** representing the reducing property of hydrogen peroxide?

\(\text{హెఫసించిన ఎక్కడను ఎక్కడు తేరు చేసిన విధానం కనసింగా ఉండాడు క్షమి చేయండి?}\)

Options:

1. \(H_2O_2 + I_2 + 2OH^- \rightarrow 2I^- + 2H_2O + O_2\)
2. 
\[2\text{MnO}_4^- + 3H_2O_2 \rightarrow 2\text{MnO}_2 + 3O_2 + 3H_2O + 2OH^-\]
3. 
\[2\text{MnO}_4^- + 5H_2O_2 + 6H^+ \rightarrow 2\text{Mn}^{2+} + 5O_2 + 8H_2O\]
4. \[ \text{PbS} + 4\text{H}_2\text{O}_2 \rightarrow \text{PbSO}_4 + 4\text{H}_2\text{O} \]

Among \( \text{Li}_2\text{CO}_3, \text{Na}_2\text{CO}_3, \text{ZnCO}_3, \text{CaCO}_3 \) and \( \text{K}_2\text{CO}_3 \), the total number of carbonates which give carbon dioxide on heating is

\[ \text{Li}_2\text{CO}_3, \text{Na}_2\text{CO}_3, \text{ZnCO}_3, \text{CaCO}_3, \text{K}_2\text{CO}_3 \]

Options:
1. 3
2. 2
3. 4
4. 5

---

Question Number : 133  Question Id : 1874635253  Question Type : MCQ  Option Shuffling : Yes  Display Question Number : Yes  
Single Line Question Option : No  Option Orientation : Vertical

In vapour phase, aluminium chloride exists as a dimer with the structure given below. The correct relationship between the bond angles \( \theta_1, \theta_2 \) and \( \theta_3 \) indicated in the structure is

\[ \text{Cl} \quad \text{Al} \quad \text{Cl} \quad \theta_1 \quad \theta_2 \quad \theta_3 \quad \text{Cl} \quad \text{Al} \quad \text{Cl} \]

Options:
1. \( \theta_1 < \theta_2 < \theta_3 \)
2. \( \theta_3 < \theta_2 < \theta_1 \)
3. $\theta_2 < \theta_1 < \theta_3$

4. $\theta_2 < \theta_3 < \theta_1$

Question Number : 134  Question Id : 1874635254  Question Type : MCQ  Option Shuffling : Yes  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical

Graphite has layered structure in which each layer is made of planar hexagonal rings of carbon atoms and layers are held by van der Waals forces. The C-C bond length within the layer and distance between two adjacent layers are respectively

3. $\theta_2 < \theta_1 < \theta_3$

4. $\theta_2 < \theta_3 < \theta_1$

Question Number : 135  Question Id : 1874635255  Question Type : MCQ  Option Shuffling : Yes  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical

The reagent used in the determination of COD of polluted water is

3. $\theta_2 < \theta_1 < \theta_3$

4. $\theta_2 < \theta_3 < \theta_1$
4. \( \text{Na}_2\text{S}_2\text{O}_3 / H^+ \)

In the set of species \( \text{HS}^- \), \( \text{BF}_3 \), \( \text{R}_3\text{N} \), \( \text{NO}_2 \), \( \text{AlCl}_3 \), \( \text{H}_2\text{O} \), \( \text{C}_2\text{H}_2\text{O}^- \), the number of electrophiles and nucleophiles are respectively

\[ \text{HS}^-, \text{BF}_3, \text{R}_3\text{N}, \text{NO}_2, \text{AlCl}_3, \text{H}_2\text{O}, \text{C}_2\text{H}_2\text{O}^- \]

Options:
1. 3, 4
2. 4, 3
3. 2, 5
4. 5, 2

In the formation of \( Y \) and \( Z \) as major products, in the following reactions, the intermediates involved respectively are

\[ \text{CH}_3 = \text{C} \equiv \text{CH} \xrightarrow{\text{H}_2/Pd/C-\text{Quinoline}} \xrightarrow{\text{HBI}} \xrightarrow{\text{HB}} \text{Z} \]

Options:
The homologue of ethyne on addition of water in the presence of Hg\(^{2+}\) | H\(^+\) at 333 K gives an unstable compound X. This on isomerisation (tautomerisation) gives Y. The functional group in Y is

\text{Options :}
The percentages of $\text{Ni}^{2+}$ and $\text{Ni}^{3+}$ present in nickel oxide having the formula $\text{Ni}_{0.98}\text{O}$ are respectively:

$\text{Ni}_{0.98}\text{O}$ నికల్ ఒక రకము మిషన్ యొక్క నికల్ $\text{Ni}^{2+}$, $\text{Ni}^{3+}$ రకము మిషన్ యొక్క నికల్

Options:
1. 95.9, 4.1
2. 4.1, 95.9
3. 98.0, 2.0
4. 2.0, 98.0
At T(K), the vapour pressure of a pure solvent X is 0.8 atmospheres. What is the mole fraction of the non-volatile solute Y in the solution, which drops the vapour pressure of X to 0.6 atm?

Options:
1. 0.5
2. 0.75
3. 0.25
4. 0.65

2.5 g of phenol (molar mass 94 g mol\(^{-1}\)) dissolved in 200 g of benzene shows a depression in freezing point equal to 0.512 K. What is the percentage of association of phenol if it forms a dimer in solution?

(K\(_f\) of benzene = 5.12 K kg mol\(^{-1}\))

Options:
1. 50.4
2. 49.6
3. 73.2
4. 26.8
If the resistance of the conductivity cell filled with 0.02 M KCl solution is 516 Ω, the molar conductivity of the same solution in Sm² mol⁻¹ is (cell constant = 129 m⁻¹)

0.02 M KCl ఎంపాల నుండి మానిక సమీకరణ యొక్క విభాగం 516 Ω అంటే, తిన గాలానికి నుండి మానిక సమీకరణ Sm² mol⁻¹ అంటే (సమీకరణ గాలానికి = 129 m⁻¹)

Options:
1. 1.25 \times 10^{-2}
2. 2.50 \times 10^{-2}
3. 1.25 \times 10^{-3}
4. 2.50 \times 10^{-3}

If the time required for the completion of 75% of a first order reaction is 30 minutes, the time required for the completion of 93.75% of the reaction in minutes is

75 శాస్త్రీయం నుండి 30 మినుట్లు వచ్చింది, తిన నుండి 93.75 శాస్త్రీయం నుండి ఎంత మినుట్లు వచ్చింది?

Options:
1. 45
2. 30
3. 60
4. 75

In the coagulation of Fe₂O₃ \cdot xH₂O sol, the coagulating power of the anions follow the order

Fe₂O₃ \cdot xH₂O గుండా మూసపడిన అనియన్స్ గుండా మూసపడిన జాతిక జాతి వాదు కొండి జాతిక జాతి
Options:

1. Phosphate > Chloride > Sulphate

2. Chloride > Phosphate > Sulphate

3. Sulphate > Phosphate > Chloride

4. Phosphate > Sulphate > Chloride

The number of carbonate, sulphide ores respectively from the ores given below is:
Calamine, Copper glance, Fool’s gold, Sphalerite, Siderite, Chalcopyrites

Options:

1. 2, 4

2. 3, 3

3. 4, 2

4. 1, 5
\[
\text{HCl} + \text{O}_2 \xrightarrow{\text{CuCl}_2, 723\text{K}} \text{X} + \text{Y}
\]
\[
\text{X} + \text{Y} + \text{Na}_2\text{S}_2\text{O}_3 \rightarrow \text{Na}_2\text{SO}_4 + \text{S} + \text{HCl}
\]

X and Y in the above reactions are

\[
\text{Options}:
\]
1. Cl\textsubscript{2}O, H\textsubscript{2}O
2. H\textsubscript{2}O, Cl\textsubscript{2}
3. H\textsubscript{2}O\textsubscript{2}, Cl\textsubscript{2}O\textsubscript{2}
4. Cl\textsubscript{2}, H\textsubscript{2}O\textsubscript{2}

---

If Xe and F\textsubscript{2} are in 1:20 molar ratio in the reaction
\[
\text{Xe}_\text{(g)} + \text{F}_2\text{(g)} \xrightarrow{573\text{K}, 60-70\text{ bar}} \text{X}_\text{(g)} \xrightarrow{3\text{H}_2\text{O}} \text{Y} + 6\text{HF}
\]
The shapes of X and Y are respectively

\[
\text{Options}:
\]
1. Distorted Octahedral, Pyramidal
2. Pyramidal, Distorted Octahedral
The number of P-O-P bonds present in the oxoacids of phosphorous given below are respectively

<table>
<thead>
<tr>
<th></th>
<th>H$_4$P$_2$O$_7$</th>
<th>(HPO$_3$)$_3$</th>
<th>H$_4$P$_2$O$_5$</th>
<th>H$_4$P$_2$O$_6$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Option</td>
<td>I</td>
<td>II</td>
<td>III</td>
<td>IV</td>
</tr>
</tbody>
</table>

Options:

1. 2 1 0 1

2. 1 3 1 0

3. 1 2 1 0

4. 0 2 2 1
The number of moles of dichromate \( \left( \text{Cr}_2\text{O}_7^{2-} \right) \) and permanganate \( \left( \text{MnO}_4^- \right) \) separately required to oxidise 1 mole of ferrous iron each in acidic medium are respectively

1. \( \frac{1}{6}, \frac{1}{5} \)
2. \( \frac{1}{5}, \frac{1}{6} \)
3. \( \frac{1}{4}, \frac{1}{5} \)
4. \( \frac{1}{2}, \frac{1}{2} \)

---

The Wilkinson catalyst used in the hydrogenation of alkenes is

\[ \text{Na}_3[\text{Ag(S}_2\text{O}_3)_2] \]

\[ [(\text{Ph}_3\text{P})_3\text{RhCl}] \]

\[ [\text{Co(NH}_3)_6]\text{Cl}_3 \]

\[ [\text{Ni(CO)}_4] \]
Novolac, a linear polymer is formed from which one of the following?

వర్చిత బ్రెచ్‌లు లేదా అనేక అలంపులు ఇంటి కట్టడం వంటి రెండు మూడు వంటి విధానాలు వంటి విధానాలు రూపాలను ఉంచవచ్చు?

Options:

1. [Chemical structure image]
2. [Chemical structure image]
3. [Chemical structure image]
4. [Chemical structure image]

The number of –CH₂OH groups and –CHOH groups present in the open chain structures of D-(+-) glucose (A) and D-(+-) fructose (B) are respectively

D-(+-) గ్లుక్స్‌ (A), D-(+-) ఫ్రస్ట్రేస్ (B) లేదా అనేక అలంపులు ఇంటి కట్టడం వంటి రెండు మూడు వంటి విధానాలు వంటి విధానాలు రూపాలను ఉంచవచ్చు?

Options:

A  B

1. 0, 5 1, 4
Which one of the following artificial sweeteners does not have \(-\text{CONH}^-\) group?

Options:
1. Aspartame
2. Sacralose
3. Allitame
4. Saccharin
Which of the following statements are correct with respect to $S_N2$ reactions?

I) They follow second order kinetics
II) Optically active alkyl halides give racemic products
III) In the case of optically active alkyl halides, the product formed has inverted configuration compared to the reactant
IV) These reactions proceed through intermediates

$S_N2$ రంగాలను ఎవరుండి కలిగి గణించడం యొక్క నిర్ధారణలు ఉంటాం అనుకుంటును?
I) ఏదు ప్రత్యేకంగా నిర్దేశపెట్టిన రాణా లిబర్టేము
II) మేలు ప్రత్యేకంగా నిర్దేశపెట్టిన రాణా లిబర్టేము
III) మేలు లేని ప్రత్యేకంగా నిర్డిష్టం లిబర్టేము ప్రత్యేకంగా నిర్డిష్టం లిబర్టేము
IV) యొక్క ప్రత్యేకంగా నిర్డిష్టం లిబర్టేము

Options:
1. I, III, IV
2. I, III only
3. II, IV only
4. I, IV only

Methanolar reaction with Grignard reagent $A$ followed by hydrolysis in the presence of acid gives \( \overset{\text{CH}_2\text{OH}}{\text{CH}_2} \) $A$ is

మీటానోల్ రంగాలను గ్రిగ్నార్ చేపుడు $A$ అలాగే హ్యూడోలసిస్ ప్రత్యేకంగా హ్యూడోలసిస్ ప్రత్యేకంగా \( \overset{\text{CH}_2\text{OH}}{\text{CH}_2} \) $A$ ఉంటుందు.

Options:
Identify the set from the following, that produces anisole

Options:
1. C₆H₅CHO, CH₃MgCl
2. C₆H₅OH, NaOH, CH₃I
3. C₆H₅OH, NaOH, CO₂
4. C₆H₅COCH₃, LiAlH₄
Match the following

List - I

A) Reimer-Tiemann

B) Hoffmann bromamide

C) Rosenmund

D) Sandmeyer

List - II

(Main organic product)

A) CHO

B) Cl

C) OCH₃

D) HO

E) NH₂

The correct answer is

Options:

A B C D

1. V III I II

A B C D

2. IV V I II
Formation of R from P and Q is an example of

\[ 
\text{Formation of R from P and Q is an example of} \\
\]

\[ 
P, Q \xrightarrow{\text{formation}} R \text{ (an example of a reaction)} \\
\]

**Options:**

1. Cannizaro reaction
   
2. Simple aldol condensation
   
3. Mixed aldol condensation
   
4. Reimer-Tiemann reaction
Arrange the following in the order of their acidic strength:

\[
\begin{array}{c}
\text{CH}_3\text{OH} & \text{(CH}_3)_2\text{CHOH} & \text{H}_2\text{O} & \text{(CH}_3)_3\text{COH} & \text{C}_6\text{H}_5\text{OH} \\
\text{I} & \text{II} & \text{III} & \text{IV} & \text{V}
\end{array}
\]

Options:
1. \( V > \text{III} > I > \text{II} > \text{IV} \)
2. \( \text{III} > V > \text{II} > I > \text{IV} \)
3. \( \text{IV} > \text{II} > I > \text{III} > V \)
4. \( I > \text{II} > \text{IV} > V > \text{III} \)

Z in the above sequence of reactions is

\[
\begin{array}{c}
\text{Aniline} \xrightarrow{\text{Diazotization}} X \xrightarrow{\text{Cu}_2\text{Cl}_2, \text{HCl}} Y \xrightarrow{\text{(i) NaOH, 623K, 300 atm}} (\text{ii} \text{H}^+) Z
\end{array}
\]

Options:
1. \( \text{OH} \)
2. \( \text{COO}^-\text{Na}^+ \)