

ULTIMATE TEST SERIES NEET 2020

MOCK TEST-09

PATTERN : NEET

- Please read the instructions carefully. You are allotted 5 minutes specifically for this purpose.
- You are not allowed to leave the Examination Hall before the end of the test.

Name :

M.M.: 720

Time : 3 hrs

BRANCH : DEHRADUN, KOTDWAR, HALDWANI, AGRA, SAHARANPUR

TOPIC :

Physics : Full Syllabus

Chemistry : Full Syllabus

Biology : Full Syllabus

INSTRUCTIONS :

- Attempt **All** the questions. This Test booklet consists of **180** questions. The maximum marks are 720
- There are three parts in the question paper of **Physics, Chemistry and Biology (Botony, Zoology)** having **45** questions .
- Each question is allotted **4 (four)** marks for each correct response
- There is **1/4th** negative marking for each wrong attempt The total duration of the test is **3 hrs**.
- There is no negative marking for un-attempted questions.
- Use Blue/black ball point pen to fill the **OMR**
- Write your **Name** and **Roll number** carefully on the **OMR** sheet as well as the question paper.

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BIOLOGY

- If oxyntic cells of gastric glands become non-functional, what is likely to happen?
 - Proteolytic enzymes will not be secreted
 - pH of the stomach will be decreased
 - Absorption of cyanocobalamine is affected
 - Gastric juice will not be secreted
- Herbarium is prepared for
 - Woody trees
 - Bryophytes
 - Alga
 - Flowering plant
- Name the point of eye, where the visual activity is greatest
 - Ora serrata
 - Fovea
 - Optic disc
 - Macula densa
- Siliceous shulls, flagellated forms, ciliated forms, parasities and saprophytes are all included under which group in Protistans?
 - Diatoms
 - Dinoflagellates
 - Euglenoids
 - Protozoans
- Dolipore septa, clamp connections, well developed dikaryotic mycelium is observed in
 - Sac fungus
 - Club fungus
 - Algal fungus
 - Fungi imperfecti
- What is the effect caused by Cocaine ?
 - slows down the body functions
 - provides sedation effectively
 - produces sense of euphoria and increased energy
 - reduces the pain very effectively
- Monerans with oxygenic photosynthesis is associated with all except
 - Heterocysts
 - Algal blooms
 - Flagella
 - Peptidoglyan cell wall
- Hisardale was developed by
 - close breeding
 - inter specific hybridisation
 - cross breeding
 - out crossing
- Which is correct with regard to Monera ?
 - Rotation in cytoplasm
 - Tubulin in flagella
 - Murein in cell wall
 - Histones in nucleoid

10. Heterotroph with zoospores is
- (1) *Chlamydomonas*
 - (2) *Laminaria*
 - (3) *Phytophthora*
 - (4) *Spirogyra*
11. Which of the following is a correct match of the organism and its two characters ?
- (1) *Hydra* – cnidocytes, metagenesis
 - (2) *Nereis* – parapodia, monoecious
 - (3) *Pila* – calcareous shell, radula
 - (4) *Balanoglossus* – gill respiration, closed circulation
12. SO₂ pollution indicator organism is
- (1) Pioneer community
 - (2) Possess soredia and isidia
 - (3) Algal and fungal colony
 - (4) All the above
13. In the kidney, urea is transported into the medullary interstitium from
- (1) thin segment of ascending limb of Henle's loop
 - (2) descending limb of Henle's loop
 - (3) thick segment of ascending limb of Henle's loop
 - (4) collecting duct
14. Which one of the following is not a gametophyte ?
- (1) Protonema of *Funaria*
 - (2) Prothallus of *Dryopteris*
 - (3) Endosperm of *Cycas*
 - (4) Perisperm in Beet root
15. Isogamy is observed in all except
- (1) *Chlamydomonas*
 - (2) *Spirogyra*
 - (3) *Cladophora*
 - (4) *Chara*
16. Identify the correct pair of sexually transmitted diseases
- (1) Genital warts, Malaria
 - (2) Gonorrhoea, Pneumonia
 - (3) Syphilis, Trichomoniasis
 - (4) Chlamydiasis, Filariasis
17. Character unrelated to Fabaceae is
- (1) Axile placentation
 - (2) Vexillary aestivation
 - (3) Pod / Legume
 - (4) Nodular roots
18. Fasciculated roots, cladodes, scale leaves and vegetable yielding genus is
- (1) *Asparagus*
 - (2) *Arachis*
 - (3) *Atropa*
 - (4) *Amaranthus*
19. Identify the correct sequence of stages in Verhulst – Pearl Logistic growth
- (1) Lag phase → acceleration → crash down
 - (2) Lag phase → acceleration → deceleration → asymptote
 - (3) Acceleration → asymptote → deceleration → lag phase
 - (4) Lag phase → acceleration → asymptote → deceleration

20. Which one of the following groups of three animals each is correctly matched with their one characteristic feature ?

Animals	Character
(1) <i>Hirudinaria</i> , <i>Chaetopleura</i> , <i>Laccifer</i>	Metamerism
(2) <i>Ancylostoma</i> , <i>Aedes</i> , <i>Gorgonia</i>	Triploblastic organization
(3) <i>Ophiura</i> , <i>Physalia</i> , <i>Pleurobrachia</i>	Radial symmetry
(4) <i>Locusta</i> , <i>Fasciola</i> , <i>Pinctada</i>	Coelomates

21. Match the following with relation to flower of genus in column A with its floral formula in column B

Column - A	Column - B
I) <i>Solanum</i>	A) $\overset{\nearrow}{\text{O}} \oplus \text{P}_{(3+3)}$
II) <i>Dolichos</i>	B) $\text{K}_4 \text{C}_4 \text{A}_{2+4}$
III) <i>Brassica</i>	C) $\overset{\nearrow}{\text{O}} \oplus \underline{\text{G}}_{(2)}$
IV) <i>Allium</i>	D) $\% \text{C}_{1+2+(2)} \text{A}_{(9)+1}$

- (1) I - C, II - A, III - B, IV - D
 (2) I - C, II - D, III - B, IV - A
 (3) I - A, II - D, III - C, IV - B
 (4) I - D, II - C, III - A, IV - B
22. In the circulatory system of fishes
- (1) Heart pumps oxygenated blood to the body parts
 (2) Gills directly receive deoxygenated blood from the body parts
 (3) Heart receive oxygenated blood from

the gills

- (4) Body parts receive oxygenated blood from the gills

23. In the knee jerk reflex, impulses from the muscle spindle are conducted to the spinal cord by
- (1) afferent neurons via dorsal root
 (2) efferent neurons via ventral root
 (3) afferent neurons via ventral root
 (4) efferent neurons via dorsal root
24. Meristem present in grasses is / are
- (1) Lateral meristem
 (2) Apical meristem
 (3) Intercalary meristem
 (4) 2 & 3
25. Correctly matched pair in the following is
- (1) Casparian strips – Exodermis of root
 (2) Conjunctive tissue – Stele of stem
 (3) Guard cells – Epidermis of leaf
 (4) Starch sheath – Endodermis of root
26. Choose the incorrect match among the following
- (1) Plague – viral disease
 (2) Chikungunya – vector borne disease
 (3) Pneumonia – air borne disease
 (4) Diphtheria – bacterial disease
27. In plants long distance transport of which of the following compound is passive
- (1) Water
 (2) Minerals
 (3) Organic solutes
 (4) All the above

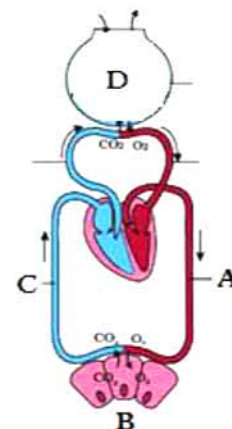
28. Rate of decomposition is faster
- (1) if detritus is rich in lignin and chitin
 - (2) in warm and moist environment
 - (3) if detritus is poor in water soluble substances
 - (4) in anaerobic, low temperature conditions.
29. Notochord is present only in the larval tail in
- (1) *Amphioxus*
 - (2) *Saccoglossus*
 - (3) *Doliolum*
 - (4) *Myxine*
30. Which of the following causes cross bridge formation, during muscle contraction ?
- (1) Binding of calcium to the myosin head
 - (2) Release of ADP and Pi from the myosin head
 - (3) Binding of ATP to the myosin head
 - (4) Hydrolysis of ATP by the myosin head
31. Which step in nitrogen cycle involves aerobic chemoautotrophic bacteria ?
- (1) Nitrogen fixation
 - (2) Ammonification
 - (3) Nitrification
 - (4) Nitrogen assimilation
32. In humans, part of the fallopian tube that is closest to the uterus is
- (1) Ampulla
 - (2) Cervix
 - (3) Isthmus
 - (4) Infundibulum
33. Choose the correct set of three carbon, four carbon, five carbon, six carbon, intermediates that undergo oxidation in aerobic respiration
- (1) Pyruvic acid, malic acid, Ribulose 1,5 bisP, oxaloacetic acid
 - (2) 1, 3 Bis PGA, oxaloacetic acid, α ketoglutaric acid, isocitric acid
 - (3) Glyceraldehyde 3P, Succinic acid, α ketoglutaric acid, Isocitric acid
 - (4) Pyruvic acid, Fumaric acid, α ketoglutaric acid, Oxalo succinic acid
34. Pick the wrong match
- (1) Thinning (Cotton) = Ethylene
 - (2) Bolting (Beet root) = Gibberellins
 - (3) Nutrient mobilization = Cytokinins
 - (4) Flowering (Pineapple) = ABA
35. Mammals of colder climates have shorter ears and limbs to minimize heat loss. This is
- (1) Bergman's rule
 - (2) Vont Hoff's rule
 - (3) Gloger's rule
 - (4) Allen's rule
36. In which cells spindle apparatus is not involved in the separation of sister chromatids ?
- (1) Plants
 - (2) Animals
 - (3) Bacteria
 - (4) 1 & 3

37. Which of the following is incorrect about CFCs ?
- (1) they are responsible for depletion of ozone
 - (2) they also cause green house effect
 - (3) in the stratosphere, CFCs have permanent and continuing affect on ozone levels
 - (4) they contribute to 60% of total global warming
38. Which of the following is an aromatic amino acid ?
- (1) Methionine
 - (2) Tryptophan
 - (3) Valine
 - (4) Glycine
39. Polypeptides are produced, modified and broken down respectively in
- (1) ER, Golgi and Lysosomes
 - (2) Golgi, Lysosomes and ER
 - (3) ER, Lysosomes and Golgi
 - (4) Golgi, ER and Lysosomes
40. In all sexually reproducing organisms A is always observed and presence of B is not obligatory. A and B respectively are
- (1) Flowers, Zygote
 - (2) Zygote, Flowers
 - (3) Seeds, Zygote
 - (4) Seeds, Flowers
41. In human heart, passive ventricular filling occurs during
- (1) atrial systole
 - (2) joint diastole
 - (3) joint systole
 - (4) both 1 and 2
42. Which of the following is true about glucocorticoids ?
- (1) They interact with membrane bound receptors of target cells
 - (2) They inhibit cellular uptake and utilization of amino acids
 - (3) They stimulate glycogenesis and lipogenesis
 - (4) They provide immune responses by producing inflammatory reactions
43. In frog, renal portal system transports the blood from
- (1) lower body parts to kidneys
 - (2) kidneys to forelimbs
 - (3) dorsal aorta to kidneys
 - (4) kidneys to post caval vein
44. Statement-I : Gametes are always haploid eventhough the plant body from which they arise may be haploid (or) diploid
Statement-II : Sexual reproduction generally involve fusion of gametes produced from the same plant (or) two different plants
- (1) Statement-I and Statement-II are true
 - (2) Statement-I is true but Statement-II is false.
 - (3) Statement-I is false but Statement-II is true.
 - (4) Statement-I and Statement-II are false



45. What is untrue regarding *Eichhornia* ?
- (1) It entered into India as a contaminant with imported wheat
 - (2) Water hyacinth
 - (3) Terror of Bengal
 - (4) Balancing roots and offsets
46. Rivet popper hypothesis of Paul Ehrlich explains
- (1) the relation between diversity and productivity
 - (2) the significance of a species in an ecosystem
 - (3) the species richness-area relationship
 - (4) the latitudinal gradient of biodiversity
47. In the flowers of angiosperms, microsporangia develop further and become
- (1) Anther
 - (2) Pollen sac
 - (3) Pollen grain
 - (4) Stamen
48. The strength of linkage is more when
- (1) Genes are distantly placed
 - (2) Recombination frequency is more
 - (3) Parental phenotype is less in F_2 generation
 - (4) Distance between genes on a chromosome is less
49. In DNA fingerprinting technique, the term blotting refers to
- (1) separation of DNA fragments
 - (2) hybridization using labeled VNTR

- probe
- (3) transferring separated DNA fragments to synthetic membranes
 - (4) detection of hybridized DNA fragments
50. Select out the odd one with respect to product of the process
- (1) Biological nitrogen fixation
 - (2) Industrial nitrogen fixation
 - (3) Electrical nitrogen fixation
 - (4) Ammonification
51. Choose the correct option related to the below given diagram.



- (1) PCO_2 in C is less than that in D
 - (2) PCO_2 in A is equal to that in D
 - (3) PO_2 in B is greater than that in C
 - (4) PO_2 in A equal to that in D
52. The _____ contains a number of centres which control body temperature, urge for eating and drinking
- (1) Cerebrum
 - (2) Medulla oblongata
 - (3) Hypothalamus
 - (4) Cerebellum

53. How many among the following characters are observed in grasses ?
 (A) Apomixis
 (B) Scutellum in seed
 (C) Motor cells in leaves
 (D) Bean shaped guard cells
 (E) Coleoptile and Coleorhiza
 (F) Anemophily
 (1) 6
 (2) 5
 (3) 3
 (4) 2
54. One of the key concepts of Darwinian theory of evolution is
 (1) saltation
 (2) use and disuse principle
 (3) branching descent and natural selection
 (4) fixed nature of species
55. Ribo nucleotides are observed in all except
 (1) Codons
 (2) Anticodons
 (3) Ribozyme
 (4) P^{BR} 322
56. The biodiversity hotspot from the following is
 (1) Aravali hills of Rajasthan
 (2) Western ghats and Srilanka
 (3) Bustar of Chhattisgarh
 (4) Sarguja of Madhya Pradesh
57. Multiple RNA polymerases catalyse heterocatalysis in
 (1) Prokaryotes
 (2) Eukaryotes
 (3) Virus
 (4) 1 & 2
58. Which one among the following get transformed in Griffith's experiment ?
 (1) Physical form of mice
 (2) Physical form of bacteria
 (3) Physical form of nucleic acid
 (4) Physical form of capsid
59. Which of the following statements is true regarding absorption of food in the gut ?
 (1) Fructose and some amino acids are absorbed by facilitated transport in the colon
 (2) Chylomicrons are absorbed actively into the intestinal mucosa in ileum
 (3) Electrolytes like sodium and bicarbonates are passively transported in the stomach
 (4) Glucose and amino acids are absorbed by active transport in small intestine
60. Which of the following is a non medicated intra uterine device for contraception
 (1) Vault
 (2) Saheli
 (3) Lippe's loop
 (4) Norplant
61. Both DNA & RNA's are either single stranded (or) double stranded in
 (1) Bacteria
 (2) Eukaryotes
 (3) Viruses
 (4) Fungi

62. Muscles present in the walls of blood vessels are
- (1) cylindrical, striated, multi nucleated
 - (2) cylindrical, branched, unstriped
 - (3) fusiform, unstriated, uninucleated
 - (4) involuntary, striated, fusiform
63. All are energy utilization process except
- (1) Diazotrophy
 - (2) Translation process on ribosomes
 - (3) Polymerisation during DNA replication
 - (4) Absorption of capillary water by root hairs
64. _____ are not given any place in ecological pyramids even though they play a vital role in the ecosystem.
- (1) Producers
 - (2) Consumers
 - (3) Saprophytes
 - (4) Carnivores
65. Sixth amino acid in the beta globin chain of sickle cell haemoglobin is
- (1) Glutamic acid
 - (2) Valine
 - (3) Histidine
 - (4) Proline
66. Separation of two strands of DNA during autocatalysis, heterocatalysis & PCR is aided respectively by
- (1) Helicase, RNA Polymerase, Helicase
 - (2) Helicase, RNA Polymerase, 94°C
 - (3) RNA polymerase, Helicase, 94°C
 - (4) Helicase, DNA Polymerase, 94°C
67. Read the statement
“He postulated the presence of adaptor molecule that would on one hand read the code & on other hand would bind to specific Aminoacid
Who is the scientist & adaptor molecule?
- (1) Holley & t - RNA
 - (2) Nirenberg & ϕ - m RNA
 - (3) Crick & t - RNA
 - (4) Crick & m - RNA
68. Choose the correct option about antidiuretic hormone
- (1) it promotes reabsorption of water in the initial segments of the renal tubule
 - (2) its secretion is suppressed in response to dehydration
 - (3) it causes abrupt fall in the GFR
 - (4) it has constrictory effect on the blood vessels
69. “Z” gene expression in lac operon is induced by
- (1) Repressor lactose complex
 - (2) Repressor
 - (3) Glucose in medium
 - (4) Blocking of operator
70. Testicular hormones called androgens are synthesized and secreted by
- (1) Male germ cells
 - (2) Primary spermatocytes
 - (3) Leydig cells
 - (4) Sertoli cells

71. Mean annual temperature as well as mean annual precipitation are more in
- (1) grassland
 - (2) temperate forest
 - (3) coniferous forest
 - (4) tropical forest
72. Somaclonal variations can be obtained by
- (1) Colchicine treatment
 - (2) Hybridisation
 - (3) Irradiation with gamma rays
 - (4) Tissue culture
73. A collection of plants and seeds having diverse alleles of all the genes of a crop is called
- (1) Herbarium
 - (2) Germplasm
 - (3) Gene gun
 - (4) Genome
74. The UN Conference of Parties on climate change in the year 2016 was held in
- (1) Marrakech, Morocco
 - (2) Lima, Peru
 - (3) Bonn, Germany
 - (4) Paris, France
75. Which of the following is a correct representation of the various pulmonary capacities ?
- (1) $IC < EC < VC$
 - (2) $EC < IC < FRC$
 - (3) $FRC < IC < VC$
 - (4) $IC < FRC < TLC$

76. Disease resistant & pest resistant varieties of *Brassica* respectively
- (1) Pusa Sawani & Pusa Gaurav
 - (2) Pusa Gaurav & Pusa Swarnim
 - (3) Pusa Swarnim & Pusa Sawani
 - (4) Pusa Swarnim & Pusa Gaurav
77. Select the option which correctly matches the endocrine gland with its hormone and its function

Endocrine gland	Hormone	Function
(1) Parathyroid	Parathyroid hormone	Increases Ca^{++} level and stimulates bone mineralization
(2) Adrenal cortex	Adrenaline	Causes pupillary dilation, piloerection
(3) Pineal gland	Melatonin	Influences pigmentation, defense capability
(4) Thyroid	Thyrocalcitonin	Regulates basal metabolic rate

78. The process by which organisms with different evolutionary history evolve similar adaptive features in response to a common environmental challenge is
- (1) Adaptive radiation
 - (2) Convergent evolution
 - (3) Divergent evolution
 - (4) Special creation

79. Aerobic bacteria are employed in
- (1) Fermentation
 - (2) Biogas plants
 - (3) Sewage treatment plants
 - (4) Bread production
80. Pick the incorrect match
- (1) Biolistics - gene transfer method
 - (2) Antibiotic resistant genes - selectable markers
 - (3) *EcoRI* - Plasmid
 - (4) *Agrobacterium* - Natural genetic engineer
81. Biological product of transgenic animal, which is useful in the treatment of emphysema
- (1) α - 1- antitrypsin
 - (2) α - interferon
 - (3) α - lactalbumin
 - (4) α - globulins
82. Which of the following disorders in humans is due to allosomal trisomy ?
- (1) Turner's syndrome
 - (2) Down's syndrome
 - (3) Klinefelter's syndrome
 - (4) Cri-du-Chat syndrome
83. A single strand of Nucleic acid tagged with a radioactive molecule used in southern blotting & colony hybridization is
- (1) $\phi \times 174$ Bacteriophage DNA
 - (2) Vector
 - (3) Selectable marker

- (4) Probe
84. Blue-white selection in genetic engineering is used to / for
- (1) Separation of DNA from host cell
 - (2) Direct gene transfer
 - (3) Test the presence of insert in a plasmid
 - (4) Purify and formulate the gene product
85. Which one of the following is the correct matching of three items and their grouping category ?

	Items	Category
(1)	Clavicle, Coxal bone, Carpal	Girdle bones
(2)	Ethmoid, Sphenoid, Xiphoid	Skull bones
(3)	Scapula, Sternum, Sacrum	Appendicular skeleton
(4)	Atlas, Hyoid, Coccyx	Axial Skeleton

86. Which one among the following is incorrect?
- (1) *Hind* II - first Restriction enzyme discovered
 - (2) Gel-electrophoresis - separation of DNA fragments
 - (3) Ideal cloning vector - multiple restriction sites for one enzyme
 - (4) Stirred tank bioreactor - growing bacteria in culture medium

87. Find out the incorrect statement about Placenta

- (1) It is connected to embryo through umbilical cord
- (2) It is a structural and functional unit between foetus and maternal body
- (3) It acts as an endocrine tissue
- (4) It facilitate the supply of oxygen and nutrients to the maternal body

88. Healthy ecosystems are base for

- (1) Economics
- (2) Environment
- (3) Aesthetic goods and services
- (4) All the above

89. Choose the incorrect match related to *Periplaneta*

- (1) Alary muscles – help in circulation
- (2) Tegmina – metathoracic wings
- (3) Seminal vesicles – storage of sperms
- (4) Collateral glands – ootheca formation

90. Cyclostomes possess

- (1) open type of circulation
- (2) cycloid scales on the body
- (3) 6-15 pairs of gill slits
- (4) paired fins for locomotion

PHYSICS

91. A nonconducting ring of radius R has charge Q distributed unevenly over it. If it rotates with an angular velocity ω , the equivalent current will be

- (1) zero (2) $Q\omega$ (3) $Q\frac{\omega}{2\pi}$ (4) $Q\frac{\omega}{2\pi R}$

92. The average translational kinetic energy of O_2 (molar mass 32) molecules at a particular temperature is 0.048 ev. The translational kinetic energy of N_2 (molar mass 28) molecules in ev at the same temperature is

- (1) 0.0015 (2) 0.036
(3) 0.048 (4) 0.768

93. Beta rays emitted by a radioactive material are

- (1) Electromagnetic radiation
- (2) The electrons orbiting around the nucleus
- (3) Charged particles emitted by nucleus
- (4) Neutral particles

94. A raindrop reaching the ground with terminal velocity has momentum p. Another drop of twice the radius, also reaching the ground with terminal velocity, will have momentum

- (1) 4p (2) 8p
(3) 16p (4) 32p

95. A circular current carrying coil has a radius R. The distance from the centre of the coil on the axis where the magnetic induction will be $\frac{1}{8}$ th to its value at the centre of the coil, is

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

96. Photon and electron are given same energy (10^{20} J). Wavelength associated with photon and electron are λ_{ph} and λ_{el} then correct statement will be
- (1) $\lambda_{\text{ph}} > \lambda_{\text{el}}$
 - (2) $\lambda_{\text{ph}} < \lambda_{\text{el}}$
 - (3) $\lambda_{\text{ph}} = \lambda_{\text{el}}$
 - (4) $\frac{\lambda_{\text{el}}}{\lambda_{\text{ph}}} = c$, velocity of light
97. Two masses M and m are attached to a vertical axis by weightless threads of combined length l . They are set in rotational motion in a horizontal plane about this axis with constant angular velocity ω . If the tensions in the threads are the same during motion, the distance of M from the axis is
- (1) $\frac{Ml}{M+m}$
 - (2) $\frac{ml}{M+m}$
 - (3) $\frac{M+m}{M} l$
 - (4) $\frac{M+m}{m} l$
98. In a parallel-plate capacitor of capacitance C , a metal sheet is inserted between the plates, parallel to them. The thickness of the sheet is half of the separation between the plates. The capacitance now becomes
- (1) $4C$
 - (2) $2C$
 - (3) $C/2$
 - (4) $C/4$
99. Water drops fall at regular intervals from a roof. At an instant when a drop is about to leave the roof, the separations between 3 successive drops below the roof are in the ratio
- (1) $1 : 2 : 3$
 - (2) $1 : 4 : 3$
 - (3) $1 : 3 : 5$
 - (4) $1 : 5 : 13$
100. A point charge q is placed at a distance $a/2$ directly above the centre of a square of side a . The electric flux through the square is
- (1) $\frac{q}{\epsilon_0}$
 - (2) $\frac{q}{\pi\epsilon_0}$
 - (3) $\frac{q}{4\epsilon_0}$
 - (4) $\frac{q}{6\epsilon_0}$
101. On a cold morning, a metal surface will feel colder to touch than a wooden surface because
- (1) Metal has high specific heat
 - (2) Metal has high thermal conductivity
 - (3) Metal has low specific heat
 - (4) Metal has low thermal conductivity
102. Two identical metal balls with charges $+2Q$ and $-Q$ are separated by some distance, and exert a force F on each other. They are joined by a conducting wire, which is then removed. The force between them will now be
- (1) F
 - (2) $F/2$
 - (3) $F/4$
 - (4) $F/8$



103. The magnetic moment (μ) of a revolving electron around the nucleus varies with principal quantum number n as

- (1) $\mu \propto n$
- (2) $\mu \propto 1/n$
- (3) $\mu \propto n^2$
- (4) $\mu \propto 1/n^2$

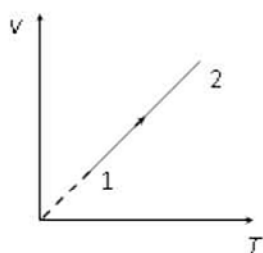
104. Two coherent monochromatic light beams of intensities I and $4I$ are superposed. The maximum and minimum possible intensities in the resulting beam are

- (1) $5I$ and I
- (2) $5I$ and $3I$
- (3) $9I$ and I
- (4) $9I$ and $3I$

105. The amplitude of a damped oscillator becomes half in one minute. The amplitude after 3 minute will be $1/X$ times the original, where X is

- (1) 2×3
- (2) 2^3
- (3) 3^2
- (4) 3×2^2

106. Volume versus temperature graph of two moles of helium gas is as shown in figure. The ratio of heat absorbed and the work done by the gas in process 1-2 is



- (1) 3

(2) $5/2$

(3) $5/3$

(4) $7/2$

107. To form a composite $16\mu\text{F}, 1000\text{V}$ capacitor from a supply of identical capacitors marked $8\mu\text{F}, 250\text{V}$, we require a minimum number of capacitors

- (1) 40
- (2) 32
- (3) 8
- (4) 2

108. Light from a hydrogen discharge tube is incident on the cathode of a photoelectric cell the work function of the cathode surface is 4.2 eV . In order to reduce the photo-current to zero the voltage of the anode relative to the cathode must be made

- (1) -4.2 V
- (2) -9.4 V
- (3) $+4.2\text{ V}$
- (4) $+9.4\text{ V}$

109. With usual notation, the following equation, said to give the distance covered in the n^{th} second i.e., $S_n = u + a\left(n - \frac{1}{3}\right)$ is

- (1) numerically correct but dimensionally not correct
- (2) numerically not correct but dimensionally correct
- (3) both dimensionally and numerically correct
- (4) neither numerically nor dimensionally correct

110. The tension of a string is increased by 44%. If its frequency of vibration is to remain unchanged, its length must be increased by

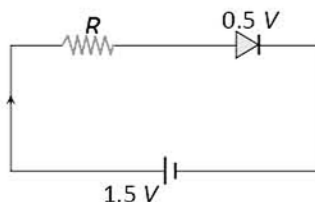
- (1) 44%
- (2) $\sqrt{44}\%$
- (3) 22%
- (4) 20%

111. Three-fourths of the active nuclei present in a radioactive sample decay in $\frac{3}{4}$ s. The

half-life of the sample is

- (1) 1 s
- (2) $\frac{1}{2}$ s
- (3) $\frac{3}{4}$ s
- (4) $\frac{3}{8}$ s

112. The diode used in the circuit shown in the figure has a constant voltage drop of 0.5 V at all currents and a maximum power rating of 100 milliwatts. What should be the value of the resistor R, connected in series with the diode for obtaining maximum current

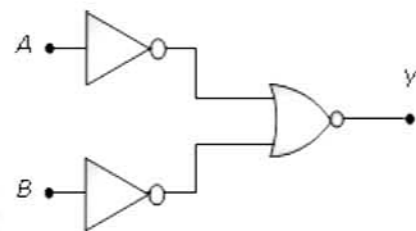


- (1) 1.5 Ω
- (2) 5 Ω
- (3) 6.67 Ω
- (4) 200 Ω

113. If different planets have the same density but different radii then the acceleration due to gravity (g) on the surface of the planet will depend on its radius (R) as

- (1) $g \propto \frac{1}{R^2}$
- (2) $g \propto \frac{1}{R}$
- (3) $g \propto R$
- (4) $g \propto R^2$

114. Which logic gate is represented by the following combination of logic gates



- (1) OR
- (2) NAND
- (3) AND
- (4) NOR

115. If the distance between the earth and the sun becomes half its present value, the number of days in a year would have been

- (1) 64.5
- (2) 129
- (3) 182.5
- (4) 730

116. A shell at rest explodes into pieces. The centre of mass of the fragments move

- (1) In parabolic path
- (2) Vertically upwards
- (3) Horizontally
- (4) at rest

117. An ideal gas heat engine operates in a Carnot cycle between 127°C and 227°C . It absorbs 6 kcal at the higher temperature. The amount of heat (in kcal) converted into work is equal to
- (1) 3.5
 - (2) 1.6
 - (3) 1.2
 - (4) 4.8
118. A flat circular coil of n turns and radius r carries a current i . Its magnetic moment is
- (1) $\pi r^2 ni$
 - (2) $2\pi r ni$
 - (3) $\mu_0 \left(\frac{ni}{2\pi r} \right)$
 - (4) $\mu_0 \pi r^2 ni$
119. A wire of length L is bent in the form of a circular coil and current i is passed through it. If this coil is placed in a magnetic field then the torque acting on the coil will be maximum when the number of turns is
- (1) As large as possible
 - (2) Any number
 - (3) 2
 - (4) 1
120. At some point, the gravitational potential and also the gravitational field due to earth is zero. The point is
- (1) On earth's surface
 - (2) at the centre of the earth
 - (3) At a height R_e from earth's surface (R_e radius of the earth)
 - (4) At infinity
121. An LC resonant circuit contains a 400 pF capacitor and a 100 μH inductor. It is set into oscillation coupled to an antenna. The wavelength of the radiated electromagnetic waves is
- (1) 377 mm
 - (2) 377 metre
 - (3) 377 cm
 - (4) 3.77 cm
122. The breaking stress of a wire of length L and radius r is 5 kg-wt/m^2 . The wire of length $2l$ and radius $2r$ of the same material will have breaking stress in kg-wt/m^2
- (1) 5
 - (2) 10
 - (3) 20
 - (4) 80
123. In YDSE, the frize width is β . If the entire arrangement is now placed inside a liquid of refractive index μ , the frize will become
- (1) $\mu\beta$
 - (2) $\frac{\beta}{\mu}$
 - (3) $\frac{\beta}{\mu+1}$
 - (4) $\frac{\beta}{\mu-1}$



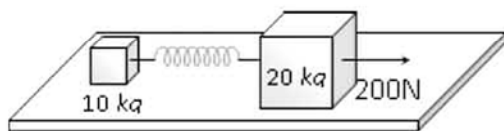
124. A spring, which is initially in its unstretched condition, is first stretched by a length x and then again by a further length x . The work done in the first case is W_1 and in the second case is W_2 .

- (1) $W_2 = W_1$
- (2) $W_2 = 2W_1$
- (3) $W_2 = 3W_1$
- (4) $W_2 = 4W_1$

125. A sphere and a cube of same material and same volume are heated upto same temperature and allowed to cool in the same surroundings. The ratio of the amounts of radiations emitted will be

- (1) 1 : 1
- (2) $\frac{4\pi}{3} : 1$
- (3) $\left(\frac{\pi}{6}\right)^{1/3} : 1$
- (4) $\frac{1}{2}\left(\frac{4\pi}{3}\right)^{2/3} : 1$

126. The masses of 10 kg and 20 kg respectively are connected by a massless spring as shown in figure. A force of 200 N acts on the 20 kg mass. At the instant shown, the 10 kg mass has acceleration 12 m/sec^2 . What is the acceleration of 20 kg mass (in m/sec^2)



- (1) 12

- (2) 4
- (3) 10
- (4) zero

127. Two polaroids are oriented with their principal planes making an angle of 60° . The percentage of incident unpolarized light which does not pass through the system is

- (1) 12.5 %
- (2) 50%
- (3) 30%
- (4) 87.5 %

128. A long solenoid of N turns has a self-inductance L and area of cross-section A . When a current i flows through the solenoid, the magnetic field inside it has magnitude B . The current i is equal to

- (1) $\frac{BAN}{L}$
- (2) $BANL$
- (3) $\frac{BN}{AL}$
- (4) $\frac{B}{ANL}$

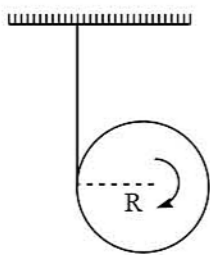
129. A child standing with folded hands at the centre of a platform rotating about its central axis. The kinetic energy of the system is K . The child now stretched his arms such that the moment of inertia of system doubles kinetic energy of system now is

- (1) $2K$
- (2) $K/2$
- (3) $K/4$
- (4) $4K$

130. Two balls are projected simultaneously with the same velocity from the top of a tower of height 'h', one vertically upwards and the other vertically downwards. If they reach the ground in 6s, and 4s the value of 'h' is ($g = 10 \text{ ms}^{-2}$)

- (1) 80 m
- (2) 240 m
- (3) 120 m
- (4) 100 m

131. Thread wound around a solid cylinder of mass M and radius R. It is allowed to fall as shown. Its acceleration is



- (1) g
- (2) $3g/2$
- (3) $g/3$
- (4) $2g/3$

132. A concave mirror and a converging lens (glass with $\mu = 1.5$) both have a focal length of 3 cm when in air. When they are in water ($\mu = \frac{4}{3}$), their new focal lengths are

- (1) $f_{\text{Lens}} = 12 \text{ cm}$, $f_{\text{Mirror}} = 3 \text{ cm}$
- (2) $f_{\text{Lens}} = 3 \text{ cm}$, $f_{\text{Mirror}} = 12 \text{ cm}$
- (3) $f_{\text{Lens}} = 3 \text{ cm}$, $f_{\text{Mirror}} = 3 \text{ cm}$
- (4) $f_{\text{Lens}} = 12 \text{ cm}$, $f_{\text{Mirror}} = 12 \text{ cm}$

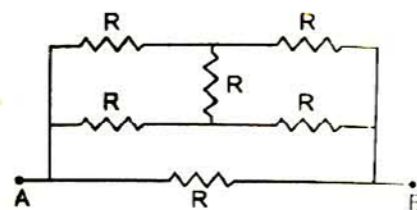
133. A pipe open at both ends produces a note of frequency f_1 . When the pipe is kept with $\frac{3}{4}$ th of its length in water, it produced a note of frequency f_2 . The ratio $\frac{f_1}{f_2}$ is

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

134. In a compound microscope, maximum magnification is obtained when the final image

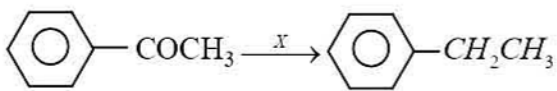
- (1) is formed at infinity
- (2) is formed at the least distance of distinct vision
- (3) Coincides with the object
- (4) Coincides with the objective lens

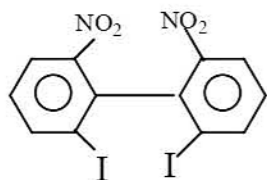
135. In the network shown below, the equivalent resistance between A and B is



- (1) $R/2$
- (2) R
- (3) $2R$
- (4) $4R$

CHEMISTRY

136. Dissolution of Xenon in water can be explained by
- (1) Electrostatic forces
 - (2) Dipole – Dipole attractions
 - (3) Dipole-induced dipole attractions
 - (4) Ion – dipole attractions
137. Fluorine is best oxidizing agent in aqueous solution. This fact is best explained by
- (1) High hydration enthalpy of F^- , Low bond dissociation energy of F_2
 - (2) Low hydration enthalpy of F^- , Low bond dissociation energy of F_2
 - (3) High hydration enthalpy of F^- , High bond dissociation energy of F_2
 - (4) Low hydration enthalpy of F^- , High bond dissociation energy of F_2
138. Statement-I : $Mg(OH)_2$, $NaHCO_3$ are Antacids
Statement-II: Penicillin is an antibiotic
- (1) I is true, II is false
 - (2) I and II are true
 - (3) I and II are false
 - (4) I is false, II is true
139. General electronic configuration of Lanthanoids is $[Xe]6s^2 5d^x 4f^y$. For the element Gadolinium ($Z=64$), x and y are respectively
- (1) 4, 5
 - (2) 1, 7
 - (3) 4, 2
 - (4) 5, 2
140. Incorrect statement about interstitial compounds is
- (1) They are chemically most reactive
 - (2) They are hard
 - (3) They retain metallic character
 - (4) They have high melting points
141. The configuration of metal ion is d^5 and the magnitude of $\Delta_0 > P$ then the crystal field stabilization energy will be
- (1) Zero
 - (2) $-1.2\Delta_0$
 - (3) $-2\Delta_0$
 - (4) $-1.6\Delta_0$
142. Acetylene cannot be obtained in the following reaction
- (1) $CaC_2 + H_2O \rightarrow$
 - (2) $CH_3CHCl_2 \xrightarrow[\text{b) } NaNH_2]{\text{a) alc. KOH}}$
 - (3) $CHCl_2 - CHCl_2 \xrightarrow[\text{C}_2\text{H}_5\text{OH}]{\text{Zn dust}}$
 - (4) $CH_2Cl - CH_2Cl \xrightarrow{\text{ethanolic zinc dust}}$
143. 
- “X” cannot be
- (1) ZnHg/conc.HCl
 - (2) $LiAlH_4$
 - (3) NH_2NH_2 / OH^- , ethylene glycol
 - (4) $HI + RedP / 150^\circ C$

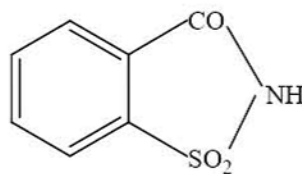


144. shows

- (1) Conformational isomerism
 - (2) Tautomerism
 - (3) Optical isomerism
 - (4) Metamerism
145. Nitrogen present in an organic compound is estimated by Dumas method. One gram of an organic liberated 224CC of Nitrogen at STP. Percentage of nitrogen in the organic compound is
- (1) 28%
 - (2) 56%
 - (3) 42%
 - (4) 36%
146. $CH_3OC(CH_3)_3 \xrightarrow{\text{cold con. HI}} A + B$. A and B are
- (1) $CH_3I, (CH_3)_3COH$
 - (2) $CH_3OH, (CH_3)_2CHOH$
 - (3) $CH_3OH, (CH_3)_3CI$
 - (4) $CH_3I, (CH_3)_3CI$
147. Which of the following is most basic ?
- (1) Aniline
 - (2) N, N-dimethyl aniline
 - (3) Diphenyl amine
 - (4) Triphenyl amine
148. Which of the following gives acetic acid as the oxidation product with acidified $KMnO_4$?
- (1) $CH_2 = CH_2$
 - (2) $CH_3 - CH_2 - CH = CH_2$

- (3) $CH_3 - CH = CH - CH_3$
- (4) $CH_3 - CH_2CH_2 - CH = CH - CH_2CH_3$

149. Benzene reacts with chlorine in presence of sunlight giving
- (1) Benzene hexachloride
 - (2) Chloro benzene
 - (3) Dichloro benzene
 - (4) Cyclo hexane
150. Which of the following is most acidic ?
- (1) CH_4
 - (2) $CH_3 - C \equiv C - CH_3$
 - (3) $H_2C = CH_2$
 - (4) $H - C \equiv C - H$
151. IUPAC name of $LiAlH_4$ is
- (1) Lithium tetra hydrogen aluminium (III)
 - (2) Lithium tetra hydrido aluminate (III)
 - (3) Tetra hydro lithium aluminate(III)
 - (4) Lithium aluminium hydride(III)
152. Micro organisms are sink for
- (1) CO_2
 - (2) SO_2
 - (3) NO_2
 - (4) CO



153. is called
- (1) Alitame
 - (2) Asparatame
 - (3) Sucralose
 - (4) Saccharin

154. $O_3 + Hg \longrightarrow X$. Then 'X' is

- (1) Hg_2O
- (2) HgO_2
- (3) HgO
- (4) Hg_3O_4

155. Equal weights of Methane and sulphur dioxide are present in a vessel of 2 litre capacity. What is the partial pressure of sulphurdioxide, if the total pressure of the mixture of gases is 12 atm?

- (1) 2.4 atm
- (2) 8 atm
- (3) 10 atm
- (4) 3 atm

156. The solubility of $AgCl$ (s) with solubility product 1.6×10^{-10} in 0.1M $NaCl$ solution would be

- (1) $1.6 \times 10^{-5}M$
- (2) $1.6 \times 10^{-9}M$
- (3) $1.26 \times 10^{-5}M$
- (4) $2.26 \times 10^{-6}M$

157. Which among the following has highest boiling point ?:

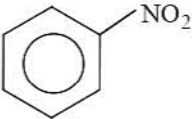
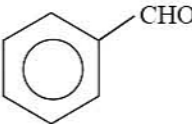
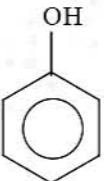
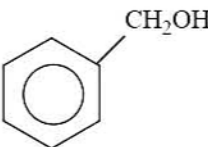
- (1) 0.1M $Al_2(SO_4)_3$
- (2) 0.1M $NaCl$
- (3) 0.1M $CaCl_2$
- (4) 0.1M Glucose

158. Incorrect set among the following is:

- (1) ZnO turns to yellow on heating ---- Metal deficiency defect

- (2) npn or pnp type transistors---- Amplify audio signals
- (3) $MgFe_2O_4$ ----- Antiferromagnetic
- (4) Coordination number of Na^+ ion in $NaCl$ is '6'

159. Which one of the following is most reactive towards electrophilic attack?

- (1) 
- (2) 
- (3) 
- (4) 

160. Biodegradable polymer formed from glycine and aminocaproic acid is

- (1) Nylon 2 - nylon 6
- (2) Dacron
- (3) Nylon 6, 6
- (4) Buna - N

161. In a face centred cubic lattice, atoms of A form the corner points and atoms of B form the face centred points. If two atoms of A are missing from the corner points, the formula of the ionic compound is:

- (1) AB_3
- (2) AB_4
- (3) A_2B_5
- (4) AB_2

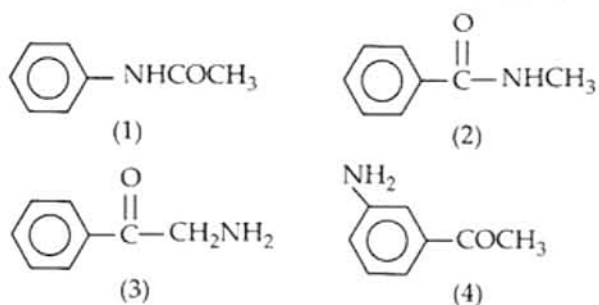
162. Addition of 2.0×10^{-2} moles of a strong monobasic acid to half litre of an acidic buffer changes its pH by 0.01 only. The buffer capacity of the buffer is:

- (1) 0.005
- (2) 0.55
- (3) 4
- (4) 2.5

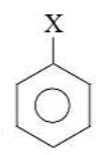
163. How many spectral lines are formed in hydrogen spectrum when excited electrons jump from 5th orbit to 1st in multiple steps?

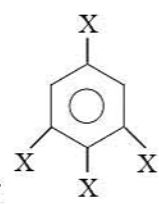
- (1) 1
- (2) 5
- (3) 10
- (4) 6

164. The correct order of basic strength of the following is



- (1) $1 > 2 > 3 > 4$
- (2) $4 > 2 > 3 > 1$
- (3) $4 > 1 > 2 > 3$
- (4) $3 > 4 > 2 > 1$

165. Dipole moment of  is 1.5 D. The

dipole moment of 

dipole moment of

- (1) 1.5 D
- (2) 2.25 D
- (3) 1 D
- (4) 3 D

166. How many significant figures are present in 0.0000135?

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

167. Vapour pressure of pure benzene is 119 torr and that of toluene is 37.0 torr at the same temperature. Mole fraction of toluene in liquid mixture is 0.5, then mole fraction of toluene in vapour phase will be

- (1) 0.137
- (2) 0.237
- (3) 0.435
- (4) 0.205

168. The rate constant of a reaction is 0.1 min^{-1} . What is the time required for the concentration of reactant of above reaction to reduce from 8M to 2M?

- (1) 6.93 min
- (2) 10 minutes
- (3) 13.86 min
- (4) 142.4 minutes

169. Which among the following is an incorrect combination?
- (1) Spelter : Impure Zinc
 - (2) Cassiterite : Ore of iron
 - (3) Copper matte : mixture of Cu_2S and FeS
 - (4) Wrought iron: Purest form of Iron
170. Critical temperatures of CO_2 , SO_2 , CH_4 and H_2 are 304, 630, 190 and 33K respectively. Then which of the following gases shows highest adsorption on a definite amount of charcoal?
- (1) CO_2
 - (2) SO_2
 - (3) CH_4
 - (4) H_2
171. In which of the following reactions, the position of equilibrium shifts towards right on addition of small amount of argon at constant pressure ?
- (1) $\text{H}_{2(g)} + \text{I}_{2(g)} \rightleftharpoons 2\text{HI}_{(g)}$
 - (2) $\text{PCl}_{5(g)} \rightleftharpoons \text{PCl}_{3(g)} + \text{Cl}_{2(g)}$
 - (3) $\text{N}_{2(g)} + 3\text{H}_{2(g)} \rightleftharpoons 2\text{NH}_{3(g)}$
 - (4) $2\text{SO}_2(g) + \text{O}_2(g) \rightleftharpoons 2\text{SO}_3(g)$
172. The reduction potential of Hydrogen electrode $\text{Pt} / \text{H}_2(1\text{atm}) / \text{H}^+(0.01\text{M})$ is:
- (1) -0.06 V
 - (2) -0.09V
 - (3) -0.12V
 - (4) 0.12V
173. Which of the following is not matched correctly?
- (1) Washing soda: NaHCO_3
 - (2) Plaster of paris : $\text{CaSO}_4 \cdot \frac{1}{2} \text{H}_2\text{O}$
 - (3) Black ash : $\text{Na}_2\text{CO}_3 + \text{CaS}$
 - (4) Magnesia (sorel's) cement : $\text{MgCl}_2 \cdot 5\text{MgO} \cdot x\text{H}_2\text{O}$
174. Which of the following reactions is not feasible ?
- (1) $2\text{KI} + \text{Br}_2 \rightarrow 2\text{KBr} + \text{I}_2$
 - (2) $2\text{H}_2\text{O} + 2\text{F}_2 \rightarrow 2\text{HF} + \text{O}_2$
 - (3) $2\text{KBr} + \text{I}_2 \rightarrow 2\text{KI} + \text{Br}_2$
 - (4) $2\text{KBr} + \text{Cl}_2 \rightarrow 2\text{KCl} + \text{Br}_2$
175. In a chemical reaction $\Delta H = 150 \text{ KJ}$ and $\Delta S = 100 \text{ JK}^{-1}$ at 300K. Then ΔG for the reaction is
- (1) zero
 - (2) 300 KJ
 - (3) 330 KJ
 - (4) 120 KJ
176. Molar conductivities at infinite dilution of CH_3COONa , HCl and NaCl are 91.0, 425.9 and 126.4 respectively. The molar conductivity of CH_3COOH is
- (1) $290.8 \text{ S.cm}^2\text{mol}^{-1}$
 - (2) $390.5 \text{ S.cm}^2\text{mol}^{-1}$
 - (3) $180.5 \text{ S.cm}^2\text{mol}^{-1}$
 - (4) $425.5 \text{ S.cm}^2\text{mol}^{-1}$

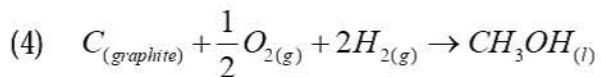
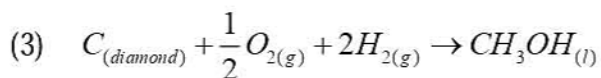
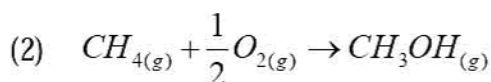
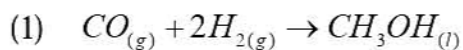
177. Among the electrolytes Na_2SO_4 , CaCl_2 , $\text{Al}_2(\text{SO}_4)_3$ and NH_4Cl , the most effective coagulating agent for Sb_2S_3 sol is:

- (1) Na_2SO_4
- (2) CaCl_2
- (3) $\text{Al}_2(\text{SO}_4)_3$
- (4) NH_4Cl

178. The formal charges on carbon and oxygen in $:\text{C} \equiv \text{O}:$ are:

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

179. ΔH_f° (298K) of methanol is given by the chemical equation



180. Which of the following complex can exhibit linkage isomerism?

