

NEET

MODEL GRAND TEST

No. of Questions: 180

Maximum Marks: 180

Time: 3 Hrs

1. Nissl's granules are found in
- 1) Dendrites and Axon
 - 2) Cyton and Axon
 - 3) Cyton and Dendrites
 - 4) Dendrites and Telodendrites
2. The most spectacular and evolutionarily fascinating examples of mutualism are found in
- 1) Plant – Plant relationships
 - 2) Animal – Bacteria relationships
 - 3) Invertebrate – Vertebrate relationships
 - 4) Plant – Animal relationships
3. Peristaltic movements of the gut are increased by the stimulation of
- 1) Nodal system
 - 2) Sympathetic neural system
 - 3) Somatic neural system
 - 4) Parasympathetic neural system
4. The most abundant organic compound on earth is and the most abundant protein is
- 1) Starch, RuBisco
 - 2) Cellulose, RuBP
 - 3) RuBisco, Starch
 - 4) Cellulose, RuBisco
5. Haploid daughter cells formed as a result of meiosis in plants and in animals, respectively
- 1) Spores and Spores
 - 2) Gametes and Gametes
 - 3) Spore mother cells and Gametes
 - 4) Spores and Gametes
6. A) Lysozyme I) Ribonucleotide
B) Taq polymerase II) Modifies nucleotides in bacterial genome
C) Methylase III) Deoxy ribo nucleotide polymerization
D) Ribozyme IV) Peptidoglycan hydrolysis
- The correct matching is
- 1) A – II, B – III, C – IV, D – I
 - 2) A – II, B – I, C – III, D – IV
 - 3) A – IV, B – III, C – II, D – I
 - 4) A – IV, B – II, C – I, D – III
7. A fall in GFR activates JG cells to release
- 1) ANF
 - 2) Angiotensin
 - 3) ADH
 - 4) Renin
8. The resting axonal membrane is comparatively more permeable to
- 1) Na⁺
 - 2) K⁺
 - 3) Ca²⁺
 - 4) Proteins
9. Inferior position of ovary is observed in the flowers of
- 1) Plum
 - 2) Sunflower
 - 3) Chinrose
 - 4) Brinjal

10. The kangaroo rat is able to survive in the desert without drinking water. Which of the following statement(s) is/are most appropriate explanation for this feature?
- Its nephrons have long loops of Henle.
 - It conserves energy by excreting ammonia.
 - Air exhaled from its lungs becomes warm as it passes through the short nasal cavities.
 - It gains water mainly from oxidation of fat.
- 1) (a) and (d) 2) (a), (c) and (d) 3) Only (d) 4) (a), (b) and (d)
11. Which of the following is 'fast block' to polyspermy?
- Cortical reaction
 - Acrosomal reaction
 - Zona reaction
 - Depolarisation of the cell membrane of the oocyte
12. Match the following
- | | |
|-------------------------|---|
| A) <i>Trichoderma</i> | I) White button mushroom |
| B) <i>Penicillium</i> | II) Baking and brewing industry |
| C) <i>Saccharomyces</i> | III) Biopesticide, biochemical producer |
| D) <i>Agaricus</i> | IV) Drug & cheese ripening |
- 1) A – IV, B – III, C – I, D – II 2) A – III, B – II, C – IV, D – I
3) A – I, B – II, C – IV, D – III 4) A – III, B – IV, C – II, D – I
13. Asymptote in a logistic growth curve is obtained when
- $b = 0$
 - $\frac{N}{K} = 1$
 - $K - N = 1$
 - $b - d = 1$
14. Mortality for newborns is greater for those either under-weight or over-weight. This represents
- Disruptive selection as the bell-shaped curve obtains two peaks
 - Stabilising selection as it reduces the variance in birth weight
 - Disruptive selection as more individuals acquire peripheral character value at both ends of the distribution curve
 - Directional selection as it pushes the mean of the character in one direction
15. Deficiency of sulphur cause all except
- Inhibition of cell division
 - Necrosis
 - Delay in flowering
 - Chlorosis
16. Fovea centralis is the area of highest visual acuity or resolution. Select the best option in support of this from the following statements.
- Only cones are densely packed in it.
 - It contains more photoreceptor cells than bipolar cells than ganglion cells.
 - Bipolar and ganglion cells are displaced to the periphery and do not cover the cones.
 - Optic nerve exits the eye at fovea centralis.
- 1) (a) and (c) 2) (a), (b) and (c) 3) Only (c) 4) (a) and (d)

17. A) Spooling I) Selection of desired DNA fragment
B) Elution II) Removal of fine threads of DNA
C) Gel Electrophoresis III) Checks the progress of restriction enzyme digestion
D) Southern blotting IV) Extraction of DNA from gel
E) Colony hybridization V) Selection of transformed cell

Match the following.

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

18. The circulation of blood to and from the cardiac musculature is called

- 1) Carotid circulation 2) Pulmonary circulation
3) Portal circulation 4) Coronary circulation

19. Mark the incorrect match.

- 1) Intrafascicular cambium – Primary lateral meristem
2) Phelloderm – Secondary parenchyma
3) Medullary rays – Primary parenchyma
4) Intercalary meristem – Secondary lateral meristems

20. Turner's syndrome and Down's syndrome are genetic disorders. Select the correct statement from the following options.

- 1) In both cases, the affected person has 47 chromosomes instead of 46.
2) Both occur due to failure of cytokinesis after telophase of cell division
3) Neither of them are typically passed from one generation to the next
4) There is an extra Barr body in Turner's syndrome but not in Down's syndrome

21. The genotypes of a husband and wife are IAi and IBi. With respect to ABO blood types, how many different genotypes and phenotypes are possible among their children?

- 1) 3 genotypes; 4 phenotypes 2) 4 genotypes; 3 phenotypes
3) 4 genotypes; 4 phenotypes 4) 3 genotypes; 3 phenotypes

22. Amides (double aminated keto acids) are mostly transported to other parts through

- 1) Sieve tube 2) Phloem fibres
3) Xylem vessels 4) Xylem parenchyma

23. Storage organ is stem in all except

- 1) *Amorphophallus* 2) Onion
3) Turmeric 4) Potato

24. Which one of the following is a method of *in situ* conservation of biodiversity?

- 1) Sacred groves 2) Botanical gardens
3) Cryopreservation 4) Tissue culture

25. The incorrect matching among the following is
- 1) *Selaginella* – Seed habit
 - 2) *Calotropis* – Valvate aestivation
 - 3) *Alstonia* – Circular/ Whorled phyllotaxy
 - 4) Rose – Apocarp
26. Which of the following is an autosomal recessive disorder?
- 1) Phenylketonuria
 - 2) Myotonic dystrophy
 - 3) Haemophilia A
 - 4) Red–green colour blindness
27. Match the following.
- | | |
|---|----------------------|
| A) Long distance transport of water, minerals and food | I) Pressure gradient |
| B) Cell to cell movement of water | II) Active transport |
| C) Translocation of food into sieve tubes gradient from mesophyll cells | III) Water potential |
| D) Water drops on leaf tips of grasses | IV) Root pressure |
- 1) A – I, B – III, C – IV, D – II
 - 2) A – II, B – III, C – I, D – IV
 - 3) A – I, B – III, C – II, D – IV
 - 4) A – III, B – I, C – II, D – IV
28. Crossing over occurs in between
- 1) Homologous and Sister chromatids
 - 2) Non homologous and Nonsister chromatids
 - 3) Homologous and non Sister chromatids
 - 4) Non homologous and Sister chromatids
29. Synthesis of multiple copies of gene of interest using PCR is initiated by
- 1) Two sets of RNA primers
 - 2) Two sets of DNA primers
 - 3) DNA polymerase
 - 4) One set of RNA primer
30. A hormone produced in a woman only during pregnancy is
- 1) hGH
 - 2) Oxytocin
 - 3) hCG
 - 4) Progesterone
31. In a woody tree primary tissues are located at this region
- 1) Bast
 - 2) Wood
 - 3) Periderm
 - 4) Root and stem apices
32. Which one of the following is not observed in grasses?
- 1) Scutellum
 - 2) Coleoptile
 - 3) Caryopsis Fruit
 - 4) Lenticels

33. Match the following sexually transmitted diseases (column-I) with their causative agent (column-II) and select the correct option.

Column – I

- a) Cervical cancer
b) AIDS
c) Hepatitis B
d) Genital herpes

Column – II

- i) HBV
ii) HSV
iii) HPV
iv) HIV

(a) (b) (c) (d)

- 1) iii iv i ii
2) ii iv i iii
3) iii i iv ii
4) i iv iii ii

34. Oral contraceptive pills

- 1) Inhibit gametogenesis
2) Make cervical mucus clear and watery
3) Inhibit ovulation
4) Stimulate secretion of LH

35. Pick the incorrect pair.

- 1) Activated sludge – Floccs
2) Primary sludge – Inorganic matter
3) BOD – Measure of impurity
4) Biogas – Mostly CO₂ and traces of H₂S, S, CH₄

36. Which one of the following characteristics is shared by *Crocodylus* and *Corvus*?

- 1) Four chambered heart
2) Homiothermous nature
3) External fertilization
4) Dicondylic skull

37. The polarity of leading strand during DNA replication is

- 1) 3' – OH away from replication fork
2) 5' – OH towards the replication fork
3) 3' – OH towards the replication fork
4) Both 3' – OH and 5' – OH away from replication fork

38. The genotype of a plant showing the dominant phenotype can be determined by

- 1) Monohybrid cross
2) Pedigree analysis
3) Test cross
4) Dihybrid cross

39. Why is vivipary undesirable for annual crop plants?

- 1) It reduces vigour of plants
2) Seeds exhibit long dormancy
3) Seeds cannot be stored for next season
4) It effects fertility of plants

40. The joint between carpal and metacarpal of thumb is

- 1) Saddle joint
2) Pivot joint
3) Hinge joint
4) Fibrous joint

41. The actual reduction of CO_2 to carbohydrates during dark phase is fuelled by
- 1) Solar energy
 - 2) Assimilatory power
 - 3) NADP^+ and FAD
 - 4) Enzymes in stroma
42. The technique used to separate DNA fragments of different lengths to produce a DNA fingerprint is
- 1) Blotting
 - 2) Autoradiography
 - 3) Hybridisation
 - 4) Electrophoresis
43. Luxuriant growth of the following organisms indicate absence of pollution in an area
- 1) Cyanobacteria
 - 2) Lichens
 - 3) Bacteria
 - 4) Mosses
44. Gastro-oesophageal sphincter regulates the opening of oesophagus into
- 1) Pyloric portion
 - 2) Cardiac portion
 - 3) Fundic portion
 - 4) Body of the stomach
45. The earliest mammals were
- 1) Shrew-like
 - 2) Ape-like
 - 3) Bat-like
 - 4) Whale-like
46. Pick the wrong match in the list given below.
- 1) Richmond-long effect – Cytokinins
 - 2) Triple response growth – Ethylene
 - 3) Bolting – Gibberellins
 - 4) Premature leaf, fruit fall – Auxins
47. Select the correct route for the passage of ova in female frogs
- 1) Ovaries → Urinogenital ducts → Ovisacs → Cloaca → Exterior
 - 2) Ovaries → Body cavity → Oviducts → Cloaca → Exterior
 - 3) Ovaries → Urinogenital ducts → Cloaca → Exterior
 - 4) Ovaries → Body cavity → Ureters → Cloaca → Exterior
48. In case of a couple where the female cannot produce ova but can provide suitable environment for fertilization and further development, which is the suitable technique for fertility?
- 1) Gamete intra fallopian transfer
 - 2) Artificial insemination
 - 3) Intracytoplasmic sperm injection
 - 4) Intrauterine transfer
49. A number of insects feed on a big tree; small birds depend on the insects; larger birds eat small birds. What is the shape of a pyramid of numbers of that tree ecosystem?
- 1) Inverted
 - 2) Upright
 - 3) Spindle-shaped
 - 4) Bell-shaped
50. Even after forceful expiration, lungs are not emptied and residual volume of air remains the lungs because
- 1) Intrapleural pressure is always lesser than alveolar pressure
 - 2) Alveolar pressure is never more than atmospheric pressure
 - 3) Intrapleural pressure is always greater than alveolar pressure
 - 4) Surfactant in the alveolar fluid increases the surface tension

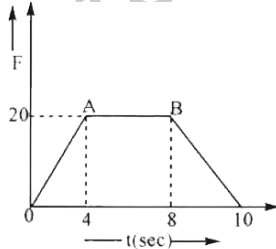
51. Decomposition is favoured by
- 1) Anaerobiasis and hypothermia
 - 2) High lignin content in the litter
 - 3) Low temperature and anaerobiasis
 - 4) Warm and moist environment
52. Which of the following enters thin segment of ascending limb of loop of Henle from the medullary interstitium?
- 1) NaCl
 - 2) Water
 - 3) Urea
 - 4) Ca²⁺
53. 'Rivet popper hypothesis' was introduced by
- 1) Paul Ehrlich
 - 2) David Tilman
 - 3) Alexander von Humboldt
 - 4) Edward Wilson
54. Genus with gemma cups in thallus and elaters in capsule is
- 1) *Pinus*
 - 2) *Chara*
 - 3) *Marchantia*
 - 4) *Salvinia*
55. UAG codon on mRNA is recognized during translation by
- 1) Stop codon
 - 2) Start codon
 - 3) t-RNA
 - 4) Release factor
56. Distinct vegetative and reproductive phases are observed in life cycles of all except
- 1) Monocarpic perennials
 - 2) Annuals
 - 3) Polycarpic perennials
 - 4) Biennials
57. The exaggerated response of the immune system to dust, pollen grains, etc. results symptoms like sneezing, watery eyes, running nose and difficulty in breathing. The type of antibodies responsible for this reaction are
- 1) IgA
 - 2) IgD
 - 3) IgG
 - 4) IgE
58. One of the following is not a character of gametophytes observed in different groups of plants
- 1) Thallus attached to soil
 - 2) Few celled and parasitic
 - 3) Presence of vascular tissue
 - 4) Chlorophyllous and independent
59. The frequency of a particular six base pair recognition sequence recognized by EcoRI is expected to occur randomly in a dsDNA
- 1) Once in every 46 base pairs
 - 2) Once in every 64 base pairs
 - 3) Four times in every 46 base pairs
 - 4) Six times in every 64 base pairs
60. Pick the incorrect match.
- 1) Cob – Female inflorescence in maize
 - 2) Apomixis – Progeny identical to parent
 - 3) Archegonium – Female sex organ
 - 4) Sporopollenin – Exine wall material

61. The final acceptor of electrons in lactic acid fermentation is
1) Oxygen 2) Pyruvic acid 3) Acetaldehyde 4) Lactic acid
62. Pick the incorrect match.
1) Proton pump – Cytochrome b_6f complex
2) Facilitated diffusion – $CF_0 - CF_1$ complex
3) Starch synthesis – Day time in C_3 , C_4 and CAM plants
4) Kranz anatomy – C_3 plants
63. Pick the wrong pair.
1) Transcription unit – DNA
2) Genetic code – Doublet code
3) Amino acid activation – ATP
4) Splicing – Post transcription change
64. The inducer of lac operon in *E.coli* is
1) Polypeptide 2) Polynucleotide
3) Disaccharide 4) Polysaccharide
65. LH, a gonadotropic hormone acts on
1) Sertoli cells and stimulates the secretion of inhibin
2) Sertoli cells and stimulates the secretion of testosterone
3) Leydig cells and stimulates the secretion of inhibin
4) Leydig cells and stimulates the secretion of testosterone
66. DNA from a single cell is enough to perform DNA fingerprinting analysis because
1) VNTR probes used in hybridization are labelled
2) DNA is digested into fragments by restriction endonucleases
3) Satellite DNA shows very high degree of polymorphism.
4) The sensitivity of the technique has been increased by use of polymerase chain reaction
67. Addison's disease causes elevated levels of potassium in the blood because
1) Oversecretion of cortisol increases selective reabsorption of K^+
2) Undersecretion of aldosterone impairs selective reabsorption of K^+
3) Autoimmune antibodies cause excessive stimulation of ACTH receptors
4) Undersecretion of aldosterone impairs tubular secretion of K^+
68. The sequence of in a DNA confers it the variability needed to be a genetic material
1) Ribose sugar 2) Nitrogen base
3) Phosphoric acid 4) Backbone of DNA
69. When an individual has both IA and IB blood group alleles, both genes are expressed and the individual has AB blood group. This is an example of
1) Co-dominance 2) Incomplete dominance
3) Pleiotropy 4) Polygenic inheritance

79. Polypeptides are produced, modified and broken down respectively by the following cell organelles
- 1) Endoplasmic reticulum, Golgi complex, Lysosomes
 - 2) Golgi complex, Endoplasmic reticulum, Lysosomes
 - 3) Endoplasmic reticulum, Golgi complex, Ribosomes
 - 4) Golgi complex, Endoplasmic reticulum, Nucleus
80. Lichens represent an example of
- 1) Commensalism
 - 2) Parasitism
 - 3) Mutualism
 - 4) Amensalism
81. Cranial bones are 'X' in number and facial bones are 'Y' in number. Select the option that correctly represents values of 'X', 'Y' and explains why human skull is called dicondylic skull.
- 1) X = 14; Y = 8 The skull has two occipital condyles
 - 2) X = 8; Y = 14 The atlas has two occipital condyles
 - 3) X = 8; Y = 14 The skull has two occipital condyles
 - 4) X = 14; Y = 8 The atlas has two occipital condyles
82. In sponges, water goes out of the body through
- 1) Osculum
 - 2) Ostium
 - 3) Madreporite
 - 4) Hypostome
83. Which of the following is **not** true about greenhouse effect?
- 1) Prevents melting of polar ice caps
 - 2) Keeps the earth's surface warm
 - 3) Water vapour is a major contributor to greenhouse effect
 - 4) Cutting down use of fossil fuels is a measure to reduce greenhouse effect
84. Wisdom teeth are
- 1) Last molars
 - 2) First molars
 - 3) Last premolars
 - 4) First premolars
85. How many plants in the list given below are non vascular embryophytes?
Spirogyra, Sphagnum, Riccia, Chara, Pinus, Fucus, Funaria
- 1) 3
 - 2) 2
 - 3) 4
 - 4) 5
86. Caruncle & oily endosperm is observed in
- 1) Maize
 - 2) Castor
 - 3) *Datura*
 - 4) *Cocos*
87. The female gamete can undergo development without fertilisation in
- 1) *Scypha*
 - 2) *Hydra*
 - 3) *Penicillium*
 - 4) *Apis*
88. National heritage animal of India is
- 1) Tiger
 - 2) Lion
 - 3) Elephant
 - 4) Peacock
89. There are 999 bases in an mRNA which includes both start codon and stop codon. Then the number of ATP utilized and water molecules lost during polypeptide synthesis respectively
- 1) 333 and 332
 - 2) 332 and 332
 - 3) 332 and 331
 - 4) 331 and 331
90. The resultant of RNA polymerase activity is
- 1) Template
 - 2) Polypeptide
 - 3) Transcript
 - 4) Coding strand

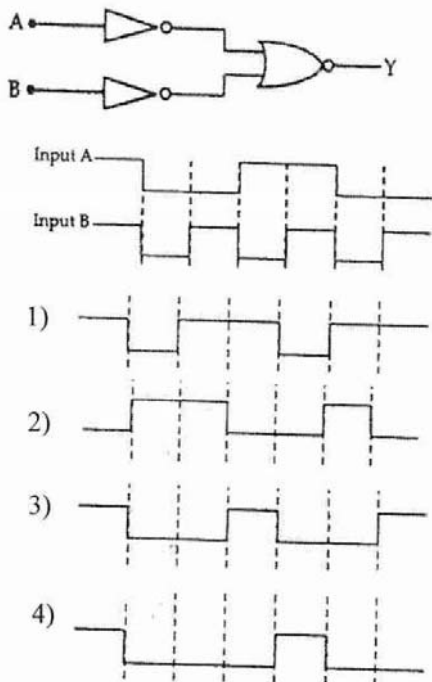
PHYSICS

91. A particle of mass 0.1 kg executes S.H.M under a force $F = -10x$ N. Acceleration of particle at extreme position is 60 m/s^{-2} . The amplitude of oscillation is
 1) 0.6 m 2) 0.5 m 3) 0.4 m 4) 0.2 m
92. Displacement of a particle moving along a straight line is given by $S = 2t^3 - 3t^2 + 4$. S in 'm' and 't' is in 's'. Acceleration of the particle when velocity is zero in ms^{-2} is
 1) 1 2) 2 3) 6 4) 3
93. When a bullet is fired at an angle 15° with horizontal, it is hitting the ground 20 m before the position of target. If the bullet is fired with same speed at 45° with horizontal, it is falling 20 m after the target. The distance of target from which bullet is fired
 1) 20 m 2) 40 m 3) 60 m 4) 80 m
94. A body of mass 5 kg is acted upon by a net force 'F' which varies with time 't' as shown in graph. The velocity of the body at the end of 10 seconds if it is as initially at rest is



- 1) 0 2) 28 ms^{-1} 3) 14 ms^{-1} 4) 22 ms^{-1}

95. The logic circuit shown below has the input waveforms 'A' and 'B' as shown. Pick out the current output waveform.



96. Power applied to a particle varies with time as $P = (3t^2 - 2t + 1)$ watt, where 't' is in second. The change in its kinetic energy between time $t = 2$ sec. and $t = 4$ sec. is
 1) 32 J 2) 46 J 3) 61 J 4) 102 J

97. A ball strikes a horizontal plane with velocity $\frac{256v}{625}$ just before 5th collision.

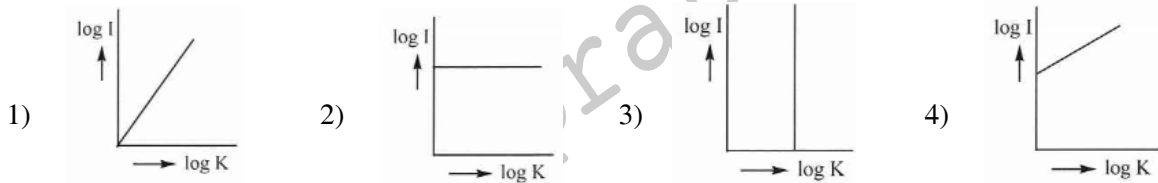
Here 'v' is the velocity just before 1st collision. The coefficient of restitution is

- 1) 0.4 2) 0.64 3) 0.2 4) 0.8

98. A uniform thin rod is held vertically on a horizontal smooth table and released. If the rod is in motion, the centre of mass of the rod moves

- 1) vertically up 2) vertically down
3) in a parabolic path 4) horizontally

99. Which of the following graphs represents the relation between $\log K$ and $\log I$, where K & I represents radius of gyration and moment of inertia



100. A linear force of 25 N is applied to the rim of a uniform smooth disc parallel to its plane. If its radius is 20 cm and mass 30 kg, then angular displacement produced in 12 s is

- 1) 300 rad 2) 600 rad 3) 1200 rad 4) 1500 rad

101. A student measures time period of oscillation of a simple pendulum. He uses the data to estimate the acceleration due to gravity (g) at that place. If the maximum percentage error in measurement of length of pendulum and that in time are e_1 and e_2 respectively then percentage error in estimation of "g" is

- 1) $e_1 + 2e_2$ 2) $2e_1 + e_2$ 3) $e_1 + e_2$ 4) $e_1 - e_2$

102. Two particles of same mass fall on to the surface of the earth one from infinity and the other from an altitude 3R. The ratio of velocities on reaching the earth is

- 1) 2 : 3 2) 3 : 2 3) $2 : \sqrt{3}$ 4) $\sqrt{3} : 2$

103. A thick copper rope of density $1.5 \times 10^3 \text{ kg/m}^3$ and Young's modulus $5 \times 10^8 \text{ Nm}^2$ is 8m in length. When hung from the ceiling of a room, the increase in its length due to its own weight is ($g = 10 \text{ ms}^{-2}$)

- 1) $9.6 \times 10^{-4} \text{ m}$ 2) $19.2 \times 10^{-7} \text{ m}$ 3) $9.6 \times 10^{-3} \text{ m}$ 4) 9.6 m

104. A capillary tube is immersed vertically in water such that the height of liquid column in it is 'x'. This arrangement is taken in a lift moving up with acceleration 'a' and the height of liquid column is 'y'. If 'g' is then 'a' interms of x, y and R

- 1) $\left(\frac{y-x}{y}\right)g$ 2) $\left(\frac{y-x}{x}\right)g$ 3) $\left(\frac{y+x}{x}\right)g$ 4) $\left(\frac{x-y}{y}\right)g$

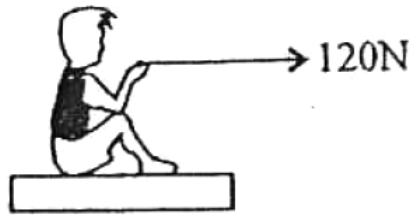
105. More viscous oil is used in summer than in winter in motors due to

- 1) rise in temperature in summer; the viscosity of oil decrease
2) rise in temperature in summer; viscosity of oil increase
3) surface tension of oil decreases
4) surface tension of oil increases

106. An air bubble doubles its radius on raising from the bottom of water reservoir to the surface of water in it. The height of water in the reservoir is nearly

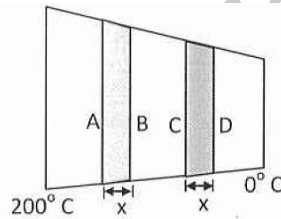
- 1) 10 m 2) 50 m 3) 70 m 4) 80 m

107. A child with mass 30 kg was sitting on a sled with mass 10 kg. The friction between the sled and the floor was negligible. If a force of 120 N was applied to the child, as shown, what is the minimum coefficient of static friction required between the child and sled to keep the child from slipping off?



- 1) 0.1 2) 0.2 3) 0.15 4) 0.3

108. Two ends of a conducting rod of varying cross-section are maintained at 200°C and 0°C respectively. In steady state

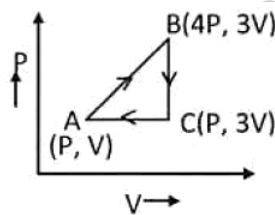


- 1) temperature differences across AB and CD are equal
 2) temperature difference across AB is greater than that across CD
 3) temperature difference across AB is less than that across CD
 4) temperature difference may be equal or different depending upon thermal conductivity of the rod

109. A refrigerator is to maintain a temperature inside at 9°C . If room temperature is 36°C . Find the coefficient of performance

- 1) 10.1 2) 10 3) 10.44 4) 9.9

110. A sample of ideal monoatomic gas is taken round the cycle ABCA as shown in the figure. The efficiency of the cycle is

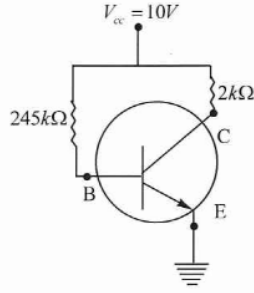


- 1) 0.6 2) 1 3) 0.8 4) 0.4

111. If the molecules in a tank of hydrogen have the same RMS speed as the molecules in another tank of oxygen, we may be sure that

- 1) the pressures are the same
 2) the temperatures are the same
 3) the hydrogen is at the higher temperature
 4) the oxygen is at the higher temperature

112. In a common emitter transistor circuit, the base current is $40 \mu\text{A}$, then V_{BE} is



- 1) 2 V 2) 0.2 V 3) 0.8 V 4) zero

113. A car blowing a horn of frequency 350 Hz is moving normally towards a wall with a speed of 5 m/s. The beat frequency heard by a person standing between the car and the wall is (speed of sound in air = 350 m/s)

- 1) zero 2) 3.5 Hz 3) 5 Hz 4) 10 Hz

114. An organ pipe open at one end is vibrating in first overtone and is in resonance with another pipe open at both ends vibrating in third harmonic. The ratio of length of two pipes is

- 1) 1 : 2 2) 4 : 1 3) 8 : 3 4) 3 : 8

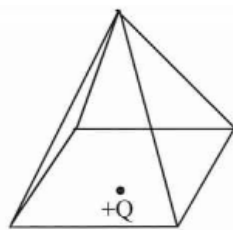
115. In a YDSE with identical slits, the intensity of the central bright fringe is I_0 . If one of the slits is covered, the intensity at the same point is

- 1) $2I_0$ 2) I_0 3) $I_0/2$ 4) $I_0/4$

116. Two parallel plate condensers A and B having capacities of $1 \mu\text{F}$ and $5 \mu\text{F}$ are charged separately to the same potential of 100 V. Now the positive plate of A is connected to the negative plate of B and the negative plate of A to the positive plate of B. Then the total loss of electrical energy in the condensers is.

- 1) $1.67 \times 10^{-2} \text{ J}$ 2) $3 \times 10^{-2} \text{ J}$ 3) $\frac{4}{3} \times 10^{-2} \text{ J}$ 4) $4 \times 10^{-2} \text{ J}$

117. A point charge $+Q$ is positioned at the center of the base of a square pyramid as shown. The flux through one of the four identical upper faces of the pyramid is



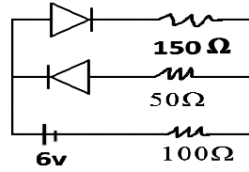
- 1) $\frac{Q}{16\epsilon_0}$ 2) $\frac{Q}{4\epsilon_0}$ 3) $\frac{Q}{8\epsilon_0}$ 4) $\frac{Q}{\epsilon_0}$

118. The gyro magnetic ratio (Ratio of angular momentum to magnetic moment) of electron revolving in first orbit of hydrogen atom is

- 1) $8.8 \times 10^{10} \text{ CKg}^{-1}$
 2) $9.27 \times 10^{-24} \text{ Am}^2$
 3) $4.4 \times 10^{10} \text{ CKg}^{-1}$
 4) $4.63 \times 10^{-24} \text{ Am}^2$

119. A rod lies across frictionless rails in a uniform magnetic field \vec{B} as shown. The rod moves to the right with speed v . In order for the induced emf in the circuit to be zero, the magnitude of the magnetic field should

- 1) not change
- 2) increase linearly with time
- 3) decrease linearly with time
- 4) decrease nonlinearly with time



120. The fringe width in a YDSE is 2 mm, distance between slits and screen is 1.2 m and separation between the slits is 0.24 mm. The radiation of same source is also incident on a photo cathode of work-function 2.2 eV, the stopping potential is

- 1) 3.1 V
- 2) 2.2 V
- 3) 0.9 V
- 4) 5.3 V

121. A particle is moving along X-axis with 4 m/s in front of plane mirror which is moving along negative X direction with 2 m/s. Speed of image with respect to ground will be

- 1) 6 m/s
- 2) 4 m/s
- 3) 8 m/s
- 4) 2 m/s

122. The sky is blue because

- 1) there is more blue light in the sunlight
- 2) of scattering of sunlight by dust particles in the atmosphere
- 3) of scattering of sunlight by air molecules in the atmosphere
- 4) of the colours absorbed by heavenly bodies

123. A far sighted man cannot focus distinctly on objects closer than 1 m. What is the power of the lens that will permit him to read from a distance of 40 cm

- 1) -1.5 D
- 2) +1.5 D
- 3) -0.67 D
- 4) +0.68 D

124. A screen is placed 50 cm from a single slit, which is illuminated with 6000 \AA light. If distance between the first and third minima in the diffraction pattern is 3.00 mm, what is the width of the slit?

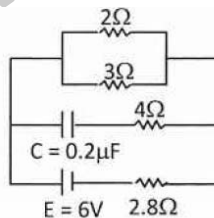
- 1) $20 \mu\text{m}$
- 2) $40 \mu\text{m}$
- 3) $400 \mu\text{m}$
- 4) $200 \mu\text{m}$

125. A particle of charge 'q' and mass 'm' moves rectilinearly under the action of an electric field $E = A - Bx$ where 'B' is positive constant and 'x' is a distance from the point where the particle was initially at rest. The distance travelled by the particle till it comes to rest is

- 1) $\frac{2A}{B}$
- 2) $\frac{A}{B}$
- 3) $\frac{3A}{B}$
- 4) $\frac{A}{2B}$

126. In the circuit shown, the internal resistance of the cell is negligible. The steady state current in the 2Ω resistor is

- 1) 0.6 A
- 2) 0.9 A
- 3) 1.2 A
- 4) 1.5 A



127. The length of a potentiometer wire is 'l'. A cell of emf 'E' is balanced at a length $\frac{l}{3}$ from the positive end of the wire. If the length of the wire is increased by $\frac{l}{2}$. At what distance will the same cell gives a balance point (assume cells are ideal and external resistance is zero)

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

128. A galvanometer of resistance 50Ω is connected to a battery of 3 V along with a resistance of 2950Ω in series. A full scale deflection of 30 divisions is obtained in the galvanometer. In order to reduce this deflection to 20 divisions the total resistance connected in series should be

- 1) 4450Ω 2) 5050Ω 3) 5550Ω 4) 6050Ω

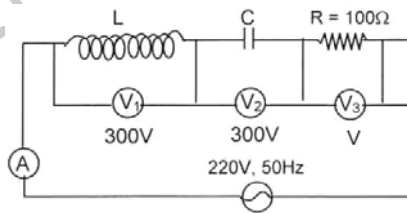
129. A stream of electrons is projected horizontally to the right. A straight conductor carrying a current is supported parallel to the electron stream and above it. If the current in the conductor is from the left to right, what will be the effect on the electron stream?

- 1) The electron stream will be pulled upwards
 2) The electron stream will be pulled downwards
 3) The electron stream will be retarded
 4) The electron beam will be speeded up towards the right

130. An iron rod of cross-sectional area 4 sq cm is placed with its length parallel to a magnetic field of intensity 1600 amp/m . The flux through the rod is 4×10^{-4} weber. The permeability of the material of the rod in weber/amp-m.

- 1) 0.625 2) 6.25 3) 0.625×10^{-3} 4) 6.25×10^{-3}

131. In the circuit shown below, what will be the reading of the voltmeter V_3 and ammeter A?



- 1) 800 V, 2 A 2) 300 V, 2 A
 3) 220 V, 2.2 A 4) 100 V, 2 A

132. In two excited hydrogen atoms the number of spectral lines possible are 3 and 6 respectively. The ratio of radii of orbits electrons in the given excited states is

- 1) 1 : 2 2) 9 : 16 3) 1 : 1 4) 4 : 1

133. A radioactive element A decays into B with a half-life of 2 days. A fresh prepared sample of A has a mass of 12 gm. What mass A and B are there in the sample after 4 days?

- 1) A = 3 g, B = 9 g 2) A = 6 g, B = 6 g
 3) A = 12 g, B = 0 g 4) A = 9 g, B = 3 g

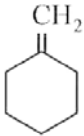
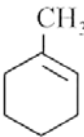
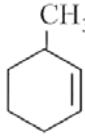
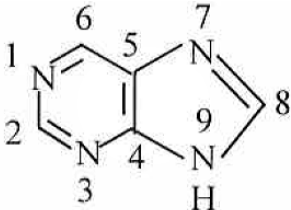
134. Energy released in the fission of a single ${}_{92}\text{U}^{235}$ nucleus is 200 MeV. The fission rate of ${}_{92}\text{U}^{235}$ fuelled reactor operating at a power level of 5 watt is

- 1) $1.56 \times 10^{14}/\text{sec}$ 2) $1.56 \times 10^{11}/\text{sec}$
 3) $1.56 \times 10^{20}/\text{sec}$ 4) $1.56 \times 10^{-17}/\text{sec}$

135. A lead shot of mass 'm' is placed at the bottom of a vertical card board cylinder of length 1.5 m. The cylinder is closed at both ends. The cylinder is suddenly inverted so that the shot falls by 1.5 m. If the process is repeated quickly 100 times, and assuming no heat is lost to the surroundings, then the increase in temperature of the lead shot is nearly ($C = 0.03 \text{ cal/gm}^\circ\text{C}$)

- 1) 12.9°C 2) 16.5°C 3) 8.9°C 4) 11.9°C

CHEMISTRY

136. The equilibrium pressure of $\text{NH}_4\text{CN}(s) \leftrightarrow \text{NH}_3(g) + \text{HCN}(g)$ is 20 atm. Value of K_p is
 1) 100 atm^2 2) 40 atm^2 3) 85 atm^3 4) 75 atm
137. Which among the following is not a correct combination?
 1) Antacid : Cimetidine or Ranitidine
 2) Analgesics : Aspirin or Morphine
 3) Anti depressants: Iproniazid or Phenelzine
 4) Disinfectants: 0.2% solution of phenol or Furacine
138. Which among the following is incorrect statement?
 1) $d_{x^2 - y^2}$ orbital has two nodal planes at an angle of 45° to the axes.
 2) Heisenberg's uncertainty principle can also be represented as $\Delta t \times \Delta E \geq \frac{h}{4\pi}$.
 3) Orbital angular momentum for a s-subshell electron is $\sqrt{2} \frac{h}{2\pi}$.
 4) $m = +2$ is not possible for p-orbital
139. Ziegler-Natta catalyst is an organometallic compound of which metal
 1) Iron 2) Zirconium 3) Rhodium 4) Titanium
140. The element, with Z value 116, has been discovered recently. It will belong to which of the following family / group and electronic configuration ?
 1) Halogen family $[\text{Rn}] 5f^{14} 6d^{10} 7s^2 7p^5$ 2) Carbon family $[\text{Rn}] 5f^{14} 6d^{10} 7s^2 7p^2$
 3) Oxygen family $[\text{Rn}] 5f^{14} 6d^{10} 7s^2 7p^4$ 4) Nitrogen family $[\text{Rn}] 5d^{14} 6d^{10} 7s^2 7p^6$
141. Which of the following lanthanoid ions is diamagnetic (Atomic numbers of Ce is 58, Sm is 62, Eu is 63 and Yb is 70)
 1) Yb^{+2} 2) Ce^{+2} 3) Sm^{+2} 4) Eu^{+2}
142. In the reaction with HCl, an alkene reacts in accordance with the Markovnikov's rule, to give a product 1-chloro-1-methyl cyclohexane. The possible alkene is
 1)  2)  3) 1, 2 4) 
143. Carbon monoxide is harmful to human beings as it
 1) Is carcinogenic
 2) Is antagonistic to CO_2
 3) Has higher affinity for haemoglobin as compared to oxygen
 4) Is destructive to CO_2
144. The 'N' which contributes least to the basic character of the compound
 1) N - 9
 2) N - 3
 3) N - 1
 4) N - 7
- 

145. Which among the following set is incorrect ?

- 1) Increasing order of bond order: $O_2^{-2} < O_2 < O_2^{+1}$
- 2) Increasing order of bond angle : $SnCl_4 < BCl_3 < BeCl_2$
- 3) Increasing order of dipole moment : $NH_3 < NF_3$
- 4) Increasing order of C – C bond length : Ethyne < Ethene < Benzene < Ethane.

146. In the complex with formulae $MCl_3 \cdot 4 H_2O$, the coordination number of metal M is six. And there is no molecule of hydration in it. The volume of 0.1 M $AgNO_3$ solution needed to precipitate the free chloride ions in 200 ml of 0.01 M solution of the complex is

- 1) 40 ml
- 2) 20 ml
- 3) 60 ml
- 4) 80 ml

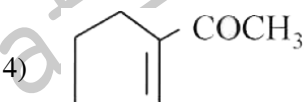
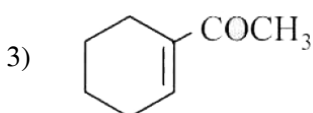
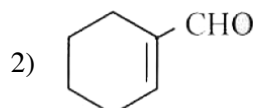
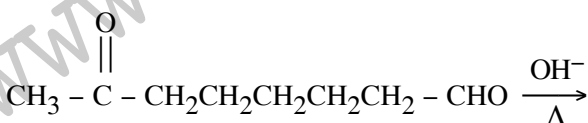
147. Heat of hydrogenation of ethene is ' x_1 ' and that of benzene is ' x_2 ', then the resonance energy of benzene is

- 1) $x_1 - x_2$
- 2) $x_1 + x_2$
- 3) $3x_1 - x_2$
- 4) $x_1 - 3x_2$

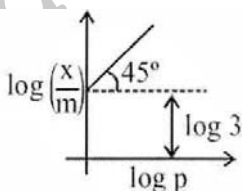
148. Interhalogen compounds are more reactive than the individual halogens because

- 1) they are prepared by direct combination of halogens
- 2) X – X' bond is weaker than X – X or X' – X' bonds
- 3) they are thermally more stable than halogen
- 4) there is a large difference in their electronegativity

149. In the following reaction, the final product is



150. At 2 atm pressure the value of $\frac{x}{m}$ will be

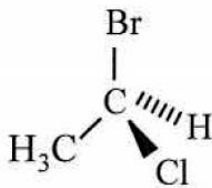


- 1) 2
- 2) 4
- 3) 6
- 4) 8

151. Which statement is not correct?

- 1) Potassium permanganate is a powerful oxidizing substance
- 2) Potassium permanganate is weaker oxidizing substance than potassium dichromate
- 3) Potassium permanganate is stronger oxidizing substance than potassium dichromate
- 4) Potassium dichromate oxidizes a secondary alcohol into ketone

152. The chirality of the following compound is represented as



- 1) R 2) S 3) Z 4) E

153. Solute 'A' is a ternary electrolyte (AB_2) and solute 'B' is a non electrolyte. If 0.1 M solution of solute 'B' produces an osmotic pressure of '2 p', then 0.05 M solution of 'A' at the same temperature will produce an osmotic pressure equal to

- 1) 1.5 p 2) 2 p 3) 3 p 4) p

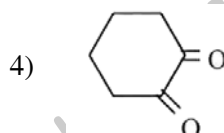
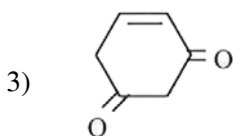
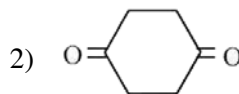
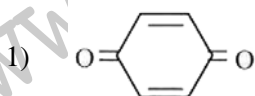
154. Chlorobenzene on treatment with sodium in dry ether gives diphenyl. This is known as

- 1) Fittig reaction 2) Wurtz Fittig reaction
3) Gattermann reaction 4) Wurtz reaction

155. The solubility product of a sparingly soluble salt MY_2 is $3.2 \times 10^{-11} M^3$. Then the concentration of Y^{-1} ions in its saturated solution at equilibrium is

- 1) $2 \times 10^{-4} \text{ mol L}^{-1}$ 2) $4 \times 10^{-4} \text{ mol L}^{-1}$
3) $6.4 \times 10^{-11} \text{ mol L}^{-1}$ 4) $3.2 \times 10^{-4} \text{ mol L}^{-1}$

156. Which of the following does not exhibit tautomerism



157. At 300 K for a reaction: $N_{2(g)} + 3 H_{2(g)} \longrightarrow 2 NH_{3(g)}$, then equilibrium concentration of each species is found to be 0.1 M then find the value of ΔG° for reaction

- 1) -1381.5 cal 2) 2745 cal 3) -4140 cal 4) None of these

158. Which among the following pair of species is isostructural?

- 1) PCl_5 and IF_5 2) H_3O^+ and NCl_3
3) SO_2 and XeF_2 4) SO_3 and XeO_3

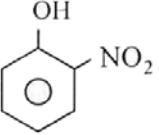
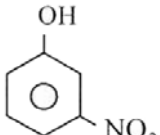
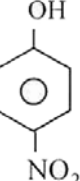

159. A solid PQ has rock salt type structure in which Q atoms are at the corners of the unit cell. If the body centered atoms in all unit cells are missing. Then the simplest formula of the compound is

- 1) PQ 2) P_3Q_4 3) P_2Q_3 4) P_3O_2

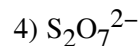
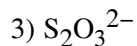
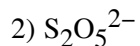
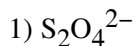
160. $CH_3 - O - C(CH_3)_3 \xrightarrow{\text{Anhydrous HI}} A + B.$

- 1) $CH_3OH + (CH_3)_3Cl$
2) $CH_3I + (CH_3)_3COH$
3) $CH_3I + (CH_3)_2CH = CH_2$
4) $CH_3OH + (CH_3)_2CH = CH_2$

- 161.** The IUPAC name of the Wilkinson's catalyst $[\text{RhCl}(\text{PPh}_3)_3]$ is
- 1) Chlorotris (triphenylphosphine) rhodium (I)
 - 2) Chlorotris (triphenylphosphine) rhodium (IV)
 - 3) Chlorotris (triphenylphosphine) rhodium (0)
 - 4) Chlorotris (triphenylphosphine) rhodium (VI)
- 162.** Pick out the correct statement with respect to $[\text{Co}(\text{C}_2\text{O}_4)_3]^{3-}$
- 1) It is outer orbital complex, sp^3d^2 hybridized and diamagnetic in nature
 - 2) It is inner orbital complex, d^2sp^3 hybridized and paramagnetic in nature
 - 3) It is inner orbital complex, d^2sp^3 hybridized and diamagnetic in nature
 - 4) It is outer orbital complex, sp^3d^2 hybridized and paramagnetic in nature
- 163.** The correct statement regarding the comparison of staggered and eclipsed conformation of ethane, is
- 1) The staggered conformation of ethane is less stable than eclipsed conformation, because staggered conformation has torsional strain
 - 2) The eclipsed conformation of ethane is more stable than staggered conformation, because eclipsed conformation has no torsional strain
 - 3) The eclipsed conformation of ethane is more stable than staggered conformation even through the eclipsed conformation has torsional strain
 - 4) The staggered conformation of ethane is more stable than eclipsed conformation, because staggered conformation has no torsional strain
- 164.** The boiling points of water and ethyl alcohol are 373 K and 351.3 K respectively. The mixture of water and ethyl alcohol at certain composition forms azeotropic mixture and it shows positive deviation from Raoult's law. At what minimum temperature the mixture may boil?
- 1) 390 K
 - 2) 351.3 K
 - 3) 373 K
 - 4) 350.15 K
- 165.** Which among the following is incorrect statement?
- 1) The reagent used to detect carbohydrates by molisch test is H_2SO_4 , α - Naphthol
 - 2) During denaturation, primary structure is destroyed.
 - 3) Pentaacetate of glucose does not react with hydroxylamine.
 - 4) Deficiency of biotin causes dermatitis and paralysis
- 166.** The IUPAC name of the compound is
- $$\begin{array}{c} \text{O} \\ \parallel \\ \text{CH}_3 - \text{CH} - \text{C} - \text{NH} - \text{C}_2\text{H}_5 \\ | \\ \text{C}_2\text{H}_5 \end{array}$$
- 1) N-ethyl-2-ethylpropanamide
 - 2) N-ethyl-2-methylbutanamide
 - 3) N-ethyl-2-methylpropanecarboxamide
 - 4) N-ethyl-2-ethyl ethanecarboxamide
- 167.** An aqueous solution is treated with dimethyl glyoxime in the presence of NH_4OH . The result is scarlet red ppt. The metal in the solution is
- 1) Zn^{+2}
 - 2) Ni^{+2}
 - 3) Cu^{+2}
 - 4) Pb^{+2}

168. Which among CH_4 , SiH_4 , GeH_4 and SnH_4 is most volatile ?
 1) SnH_4 2) SiH_4 3) GeH_4 4) CH_4
169. A synthetic polyamide prepared by prolonged heating of caprolactum is
 1) Dacron 2) Nylon-6 3) Acrilan 4) Teflon
170. The conjugate acid of $\text{Zn}(\text{OH})_2$ is
 1) Zn^{+2} 2) $[\text{Zn}(\text{OH})]^+$ 3) $[\text{Zn}(\text{OH})_3]^{-1}$ 4) $[\text{Zn}(\text{O}_2\text{H})]^{+1}$
171. Incorrect set among the following is
 1) German silver: 25 – 30% Cu + 25 – 30% Zn + 40 – 50% Ni
 2) Zr or Ti: These metals can be refined by van Arkel method
 3) Slag in the extraction of Cu: CaSiO_3
 4) Electrolyte in Hall - Heroult process: Molten $\text{Al}_2\text{O}_3 + \text{Na}_3\text{AlF}_6 + \text{CaF}_2$
172. Which of the following is the most stable carbanion
 1) $\text{O}_2\text{N}-\text{C}_6\text{H}_4-\bar{\text{C}}\text{H}_2$ 2) $\text{CH}_3-\text{C}_6\text{H}_4-\bar{\text{C}}\text{H}_2$ 3) $\text{C}_6\text{H}_5-\bar{\text{C}}\text{H}_2$ 4) $\text{CH}_3\text{O}-\text{C}_6\text{H}_4-\bar{\text{C}}\text{H}_2$
173. $\text{X} = [\text{Li}(\text{H}_2\text{O})_n]^+$, $\text{Y} = [\text{K}(\text{H}_2\text{O})_n]^+$, $\text{Z} = [\text{Cs}(\text{H}_2\text{O})_n]^+$, the correct order of size of these hydrated alkali ions
 1) $\text{X} > \text{Y} > \text{Z}$ 2) $\text{Z} > \text{Y} > \text{X}$ 3) $\text{X} = \text{Y} = \text{Z}$ 4) $\text{Z} > \text{X} > \text{Y}$
174. Acetaldehyde can directly be converted into ethylacetate by which one of the following reactions
 1) Cannizaro's reaction 2) Tischenko reaction
 3) Perkin reaction 4) Claisen condensation
175. According to Fajan's rules, in which among the following polarisability is maximum?
 1) CaCl_2 2) CaBr_2 3) CaF_2 4) CaI_2
176. In Kjeldahl's method of estimation of nitrogen, CuSO_4 acts as
 1) Oxidising agent 2) Reducing agent 3) Catalytic agent 4) Hydrolysis agent
177. Electrolysis of a solution MnSO_4 in aqueous sulphuric acid is a method for the preparation of MnO_2 . Passing a current of 27 A for 24 hours gives 1 kg of MnO_2 . The current efficiency is (Atomic weight of Manganese is 55)
 1) 100% 2) 95% 3) 80% 4) 82.5%
178. The half life of a substance that decomposes with zero order reaction is 10 min. The time in seconds needed for it to decompose to an extent of 75% is
 1) 900 sec 2) 1200 sec 3) 600 sec 4) 450 sec
179. Most acidic among the following is
 1)  2)  3)  4) 

180. Which of the following contain neither S – S bond nor S = S bond



KEY

1-3; 2-4; 3-4; 4-4; 5-4; 6-3; 7-4; 8-2; 9-2; 10-1; 11-4; 12-4; 13-2; 14-2; 15-2; 16-1; 17-3; 18-4; 19-4; 20-3; 21-3; 22-3; 23-2; 24-1; 25-1; 26-1; 27-3; 28-3; 29-2; 30-3; 31-4; 32-4; 33-1; 34-3; 35-4; 36-1; 37-3; 38-3; 39-3; 40-1; 41-2; 42-4; 43-2; 44-2; 45-1; 46-4; 47-2; 48-1; 49-3; 50-1; 51-4; 52-3; 53-1; 54-3; 55-4; 56-3; 57-4; 58-3; 59-1; 60-3; 61-2; 62-4; 63-2; 64-3; 65-4; 66-4; 67-4; 68-2; 69-1; 70-1; 71-3; 72-2; 73-1; 74-4; 75-3; 76-3; 77-4; 78-3; 79-1; 80-3; 81-3; 82-1; 83-1; 84-1; 85-1; 86-2; 87-4; 88-3; 89-3; 90-3; 91-1; 92-3; 93-3; 94-2; 95-4; 96-2; 97-4; 98-2; 99-4; 100-2; 101-1; 102-3; 103-1; 104-4; 105-1; 106-3; 107-1; 108-3; 109-3; 110-1; 111-4; 112-2; 113-1; 114-1; 115-4; 116-1; 117-3; 118-1; 119-4; 120-3; 121-3; 122-3; 123-2; 124-4; 125-1; 126-2; 127-2; 128-1; 129-2; 130-3; 131-3; 132-2; 133-1; 134-2; 135-4; 136-1; 137-4; 138-3; 139-4; 140-3; 141-1; 142-3; 143-3; 144-1; 145-3; 146-2; 147-3; 148-2; 149-3; 150-3; 151-2; 152-1; 153-3; 154-1; 155-2; 156-1; 157-2; 158-2; 159-2; 160-2; 161-1; 162-3; 163-4; 164-4; 165-2; 166-2; 167-2; 168-4; 169-2; 170-2; 171-3; 172-1; 173-1; 174-2; 175-4; 176-3; 177-2; 178-1; 179-3; 180-4.

(This Grand Test prepared by subject experts of Sri Chaitanya Educational Institutions)