FIITJEE BIG BANG EDGE TEST (MEDICAL)

for students presently in Class XI - 2022

Time: 3 Hours (9:30 am – 12:30 pm) | **Code** | | ***Maximum Marks: 720***

Instructions:

1. **You are advised to devote 60 Minutes on Section-I, 60 Minutes on Section-II and 60 Minutes on Section-III.**
2. **This Question paper consists of 3 sections. Marking scheme is given in table below:**

Section	Subject	Question no.	Marking Scheme for each question	
			correct answer	wrong answer
SECTION – I	BIOLOGY (PART-A)	1 to 90	**+4**	**-1**
SECTION – II	PHYSICS (PART-A)	91 to 135	**+4**	**-1**
SECTION – III	CHEMISTRY (PART-A)	136 to 180	**+4**	**-1**

3. **Blank papers, clip boards, log tables, slide rule, calculator, cellular phones, pagers and electronic devices, in any form, are not allowed.**

Registration Number : _____

Name of the Candidate : _____

Test Centre : _____

Recommended Time: 60 Minutes for Section – I

Section – I

BIOLOGY – (PART – A)

This part contains 90 ***Multiple Choice Questions*** *number 1* ***to 90.*** *Each question has 4 choices (A), (B), (C) and (D), out of which* ***ONLY ONE*** *is correct.*

1. Which is the incorrect statement regarding fungi?
   (A) Wheat rust causing agent is *Puccinia*
   (B) *Penicillium* is a source of antibiotic
   (C) The cell wall of fungi are composed of peptidoglycan
   (D) Fungi prefer to grow in warm and humid places

2. True statement regarding taxonomic hierarchy is:
   (A) Step-wise arrangement of all categories for classification of plants and animals
   (B) A group of senior taxonomists who decide the nomenclature of plants and animals
   (C) A list of botanists or zoologists who have worked on taxonomy of a species or group
   (D) Classification of a species based on fossil record

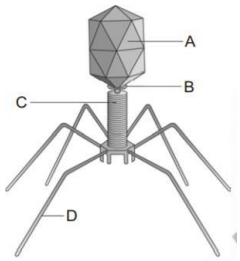
3. The science of naming, describing and classifying organisms is:
   (A) Order (B) Taxonomy (C) Species (D) Geology

4. Which one of the following is not a correct statement?
   (A) Botanical gardens have collection of living plants for reference
   (B) A museum has collection of photographs of plants and animals
   (C) Key is a taxonomic aid for identification of specimens
   (D) Herbarium houses dried, pressed and preserved plant specimens

5. Which type of DNA is found in bacteria?
   (A) Circular DNA (B) Membrane bound DNA
   (C) Straight DNA (D) Helical DNA

6. Diatomaceous earth is formed due to which substance?
   (A) Phosphorus (B) Calcium
   (C) Silicon (D) Copper

7. Identify A, B, C and D parts in this diagram of bacteriophage.
   (A) A – Head, B – Sheath, C – Collar, D – Tail fibres
   (B) A – Head, B – Collar, C – Sheath, D – Tail fibres
   (C) A – Head, B – Collar, C – Tail fibres, D – Sheath
   (D) A – Head, B – Sheath, C – Tail fibres, D – Collar



8. Which one of the following has least similar characters?
   (A)Family (B)Class (C)Genus (D) Division

9. The term 'taxon is used for
   (A) The ranks of species and genus (B)The ranks up to phylum
   (C)The species epithet only (D)Any rank of taxonomic hierarchy

10. Captive breeding of endangered animal species is carried out in
    (A) Laboratories (B)Zoological park
    (C)Museum (D)Botanical garden

11. Which is correct with relevance **to** lichens?
    (A) Mycobiont is autotrophic component (B) Phycobiont is heterotrophic component
    (C) They are good pollution indicators (D) They do not grow in non-polluted areas

12. Pioneer behind Binomial Nomenclature is----------

(A) Aristotle (B) Linnaeus (C) Whittaker (D) Pasteur

13. Mark the odd one w.r.t. kingdom fungi.
(A) They reproduce asexually and sexually
(B) They show a great diversity in structure and habitat
(C) Most of fungi are saprophytic in their mode of nutrition
(D) They do not reproduce by zoospores

14. …….. elongates into primary root
(A) Pedicel (B) Radicle (C) Plumule (D) Stamen

15. Diatoms leave behind a large amount of cell wall deposits in their habitat. This accumulation over the years is called
(A) Dynamite (B) Quartz soil (C) Keisulgurh (D) Coral

16. In which of the following, cell wall forms two thin overlapping shells, which fit together as in a soap box?
(A) Euglenoids (B)Diatoms (C) Eubacteria (D) Slime molds

17. Heterocysts are
(A) Thick walled, non-green cells (B) Present in cyanobacteria
(C) Fix atmospheric nitrogen (D) All of the above

18. Systema Naturae was published by
(A) Linnaeus (B) Aristotle (C) A. P. De Candolle (D) H. Santapau

19. Which of the following is sterile and cannot have offsprings?
(A) Mule (B) Guava (C) Planaria (D) Both b and c

20. Virus is classified under Kingdom -------
(A) Monera (B) Protista (C) Fungi (D) None of these

21. Which of the following is false for Mycoplasma?
(A) Absence of cell wall (B) PPLO are gram positive
(C) Presence of cell wall (D) Absence of well-developed nucleus

22. Eubacteria differs from archaebacteria in
(A) Cell Wall (B) Cell shape
(C) Mode of nutrition (D) Mode of reproduction

23. Dikaryotic phase occurs in
(A) Kingdom Monera (B) Kingdom Protista
(C) Kingdom Fungi (D) Kingdom Animalia

24. Assertion: Tobacco Mosaic Virus causes Tobacco mosaic disease in tobacco plants
Reason: TMV has dsRNA acts a prophage which multiplies along with the host cell
(A) Assertion and reason are true, Reason is the correct explanation of Assertion
(B) Assertion and Reason are true, Reason is the not correct explanation of Assertion
(C) Assertion is true and Reason is false
(D) Both Assertion and Reason are false

25. Study the four statements (A–D) given below and select the two correct ones out of them:
(A) Definition of biological species was given by Ernst Mayr.
(B) Photoperiod does not affect reproduction in plants.
(C) Binomial nomenclature system was given by R.H. Whittaker.
(D) Unicellular organisms do not exhibit division of labour
The two correct statements are
(A) B and C (B) C and D (C) A and D (D) A and B

26. Specialized Complex permanent tissues for Water and Food conduction in plants are------
(A) Xylem and phloem (B) Pericycle and endodermis
(C) Epidermis and cortex (D) Epidermis and hypodermis

27. Find the odd one wrt to nomenclature
(A) When written by hand, the names are to be underlined
(B) Biological names can be written in any language
(C) The first word in a biological name represents the genus name and the second is a specific epithet
(D) The names are written in Latin and are italicized when typed

28. Urochordata is also called as Tunicata due to the presence of:
(A) Mantle (B) Test or tunic (C) Shell (D) Shield

29. Besides paddy fields, cyanobacteria are also found inside vegetative part of
(A) Pinus (B) Cycas (C) Psilotum (D) Equisetum

30. Which of the following is correct?
(A) All slime moulds are haploid (B) Some protozoans have contractile vacuole
(C) Dinoflagellates are non-motile (D) Pellicle is absent in Euglena

31. Which of the following is incorrect w.r.t. Species?
(A) A group of individual organisms with fundamental similarities
(B) Two different species breed together to produce fertile offsprings
(C)Human beings belong to the species *sapiens*
(D) Panthera has many specific epithet as *tigris, leo* and *pardus*

32. What is equivalent of phylum in Botany
(A) Class (B) Order (C) Family (D) Division

33. Maximum modes of nutrition are found in
(A) Monera (B) Protista (C) Fungi (D) Plantae

34. Correct form of writing the binomial name of potato is
(A) *Solanum tuberosum*
(B) SOLANUM TUBEROSUM
(C) Solanumtuberosum
(D) solanum tuberosum

35. Mycoplasmas are organisms which are placed under Kingdom----------
(A) Monera (B) Plantae (C) Fungi (D) Animalia

36. The number of species that are known and described range between
(A) 1.7-1.8 million (B)1.7-1.8 billion (C) 5 billion (D)3.5 million

37. Which is the nonliving part of phloem tissue at maturity?
(A) Phloem parenchyma (B) Phloem fibres (C) Companion cells (D) None of these

38. Slime moulds are also referred to as ----------
(A) Autotrophs (B) Holophytes
(C) Consumer Decomposer protists (D) Acellular Fungi

39. Identify the category that is included before and after "Genus"
(A) Family and Species (B) Class and Family
(C) Order and Phylum (D) Kingdom and Class

40. In living organisms, growth is from
(A) inside (B) Accumulation of materials on the surface
(C) Out side (D) All of these

41. Which of the following plants produce seeds but not flowers?
(A) Maize (B) Mint (C) Peepal (D) Pinus

42. In Chlorophyceae, the mode of sexual reproduction is
(A) Isogamy (B) Anisogamy (C) Oogamy (D) All of these

43. Pteridophytes are those plants which are commonly referred to as
(A) Popular Phanerogams (B) Amphibians of Plant Kingdom
(C) Flowering plants (D) Vascular Cryptogams

44. Colchicum belongs to order
(A) Liliales (B)Solanaceae (C)Fabaceae (D)Brassicaceae

45. Some common commercial fibres like jute and flax are obtained from
(A)Collenchyma (B) Chlorenchyma (C) Phloem Fibres (D) Parenchyma

46. ----------are referred to as vascular cryptogams.
(A) Pteridophytes (B) Bryophytes
(C) Thallophytes (D) Gymnosperms

47. Which of the following has both the male and female cones on same plant body?
(A) *Cycas* (B) *Ginkgo* (C) *Eucalyptus* (D) *Pinus*

48. Peat is obtained from
(A) *Sphagnum* (B) *Funaria* (C) *Riccia* (D) *Marchantia*

49. Which of the following reproduces by Fragmentation?
(A) *Spirogyra* (B) *Vibrios* (C) *Bacillus* (D) *Corona Virus*

50. Among the following which group of organisms belongs to kingdom Fungi
(A) Mycoplasma, toadstool
(B) Bacteria, Agaricus, toadstool
(C) Yeast, mushroom, toadstool
(D) Eubacteria

51. Assertion: *Chlamydomonas* has flagella for locomotion
Reason: *Chlamydomonas* is an example of an algae
(A) Assertion and reason are true, Reason is the correct explanation of Assertion
(B) Assertion and Reason are true, Reason is the not correct explanation of Assertion
(C) Assertion is true and Reason is false
(D) Both Assertion and Reason are false

52. *Selaginella* is a ----------
(A) Bryophyte (B) Thallophyte (C) Pteridophyte (D) Bacteria

53. Peat moss is a term given to-------
(A) *Sphagnum* (B) *Funaria* (C) *Riccia* (D) *Marchantia*

54. Which of the following angiosperm is almost microscopic?
(A) Eucalyptus (B) Wolffia (C) Acacia (D) Colocasia

55. In algae, the photosynthetic pigments are present in
(A) Pyrenoids (B) Cell wall (C) Chloroplast (D) Vacuole

56. Identify the simple permanent tissue from the following--------
(A) Parenchyma (B) Xylem (C) Phloem (D) Apical meristem

57. Protonema is
(A) Haploid and is found in mosses (B) Diploid and is found in liverworts
(C) Diploid and is found in pteridophytes (D) Haploid and is found in pteridophytes

58. At least a half of the total CO_2 fixation on earth is carried out through photosynthesis by
(A) Angiosperms (B) Gymnosperms (C) Algae (D) Bryophytes

59. Select the mismatched pair.
(A) Smallest autotrophic angiosperm – Rafflesia (B) Tallest angiosperm – *Eucalyptus regnans*
(C) Marine angiosperms – Zostera, (D) Angiosperm with smallest seed – Orchid

60. Megasporophyll of gymnosperms is homologous to ------ of angiosperms.
(A) Stamen (B) carpel (C) sepal (D) petal

61. The giants among algae includes
(A) *Microcystis* (B) *Macrocystis* (C) *Dictyota* (D) *Laminaria*

62. Members of Phaeophyceae are commonly called as----------
(A) Green algae (B) Red Algae (C) Brown Algae (D) Blue green Algae

63. In gymnosperms, the ovule is naked because
(A) ovary wall is absent (B) integuments are absent
(C) perianth is absent (D) nucellus is absent

64. Yeast is a member of Phylum ----------
(A) Zygomycota (B) Basidiomycota (C) Ascomycota (D) Deuteromycota

65. Which of the following is unexceptionally seen only in angiosperms
(A) Double fertilisation (B) Sexual reproduction
(C) Pollination (D) Spore formation

66. Honey is the commercial product of which of the following animal?
(A) *Bombyx* (B) *Laccifer* (C) *Apis* (D) *Aedes*

67. Which of the following is a chordate feature, not shared by the non-chordates?
(A) Triploblastic body (B) True coelom
(C) Bilateral symmetry (D) Notochord

68. Comb jellies are_____and jelly fishes are_____respectively.
(A) Echinoderms, Ctenophores (B) Ctenophores, Echinoderms
(C) Ctenophores, Cnidarians (D) Cnidarians, Echinoderms

69. Blastopore is the pore of
(A) Archenteron (B) Blastocoel (C) Coelom (D) Alimentary canal

70. Mesoglea is
(A) A germinal layer present between ectoderm and endoderm
(B) An undifferentiated layer present between ectoderm and endoderm
(C) Another name of mesoderm
(D) None of these

71. *Wuchereria bancrofti* will cause
(A) malaria (B)filariasis (C) gastritis (D)leprosy

72. Saccoglossus is a member of Phylum----------
(A) Vertebrata (B) Annelida (C) Hemichordata (D) Arthropoda

73. Which of the following is not a character of phylum Hemichordata?
(A) Presence of stomochord.
(B) Excretory organ is proboscis gland
(C) Circulatory system is closed
(D) Respiration takes place through gills

74. A marine cartilaginous fish that can produce electric current is
(A) *Trygon* (B) *Scoliodon* (C) *Pristis* (D) *Torpedo*

75. Most appropriate term to describe the life cycle of Obelia is
(A) Metamorphosis (B) metamerism (C) metagenesis (D) all of these.

76. Notochord is found only in the tail of larva in
(A) *Ascidia* (B) *Branchiostoma* (C) *Petromyzon* (D) *Trygon*

77. Which of the following has organelles called Nematocysts?
(A) Cnidarians (B) Ctenophores (C) Aschelminths (D) Platyhelminths

78. Leech produces an anticoagulant called
(A) Anophelin (B) Hirudin (C) Cephalin (D) Lectin

79. Pearl oyster is a ----------
(A) Echinoderm (B) Mollusc (C) Annelid (D) Fish

80. Given below are the pair of phyla with their body cavities, opt the incorrect matching

	Phylum	Body cavity
(A)	Platyhelminthes	Acoelomates
(B)	Nematoda	Eucoelomate
(C)	Annelida	Schizocoelom
(D)	Echinodermata	Enterocoelom

81. Find odd one out of the following
(A) Ascidia (B) Branchiostoma (C) Salpa (D) Doliolum

82. *Pheretima posthuma* is commonly called as
(A) Cockroach (B) Ant (C) Earthworm (D) Tapeworm

83. What are the following characters are seen in the class – Mammalia?
I) Mammary glands are absent
II) Presence of two pairs of limbs
III) Four chambered heart
IV) Homeotherms
V) Fertilization is external
(A) I, II, III (B) II, III, IV (C) IV, III, II (D) III, IV, V

84. Human cells in culture show a cell cycle which will be completed in----------
(A) Approximately every 24 hours once (B) Approximately every 12 hours once
(C) Approximately every 6 hours once (D) Every one hour once.

85. Precipitation of uric acid or oxalate leads to
(A) Nephritis (B) Uremia (C) Renal Calculus (D) Renal Failure

86. Assertion: Viruses are larger than viroids
Reason: Viroids lack protein coat and has low molecular weight RNA.
(A) Assertion and reason are true
(B) Assertion is false and Reason are true
(C) Assertion is true and Reason is false
(D) Both Assertion and Reason are false

87. Which of the following statements is not true?
(A) All members of the kingdom Animalia are multicellular
(B) Nature of coelom is used as one of the basis of animal classification
(C) There is no need of classification now as over a million species of animals have been described till now
(D) The arrangement of cells in the body is one of the classifying feature of the animals

88. A complete digestive system has
(A) Single opening that serves as both mouth and anus
(B) Two openings, one as mouth and other as anus
(C) Single opening that acts as mouth only
(D) Two openings, both act as mouth as well as anus

89. Read the following statement and choose the correct characteristic feature of Aves.
(A) Skin of birds have glands
(B) Air sacs help in excretion
(C) Heart is having three auricle and one ventricle
(D) Preen gland is present at the base of tail

90. The excretory organs of annelid are
(A) Nephridia (B) Statocysts (C) Archeocytes (D) None of these

Recommended Time: 60 Minutes for Section – II

Section – II

PHYSICS – (PART – A)

This part contains 45 ***Multiple Choice Questions*** *number* ***91 to 135.*** *Each question has 4 choices (A), (B), (C) and (D), out of which* ***ONLY ONE*** *is correct.*

91. A ball thrown by one player reaches the other in 2 sec. The maximum height attained by the ball above the point of projection will be about-
(A) 2.5 m (B) 5 m (C) 7.5 m (D) 10 m

92. A particle is projected with a velocity u so that its horizontal range is twice the maximum height attained. The horizontal range is
(A) u^2/g (B) $2u^2/3g$ (C) $4u^2/5g$ (D) $u^2/2g$

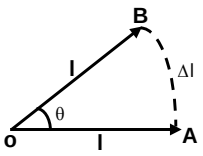
93. A ball is thrown horizontally from a height of 20 m. It hits the ground with a velocity three times its initial velocity. The initial velocity of ball is
(A) 2 m/s (B) 3 m/s (C) 5 m/s (D) 7 m/s

94. The heat generated in a circuit is dependent upon the resistance, current and time for which current is flown. If the error in measuring the above are as 1%, 2% and 1% the maximum error in measuring heat will be
(A) 2% (B) 3% (C) 6% (D) 1%

95. A particle is released from rest at origin. It moves under influence of potential file $U = x^2 - 3x$, Find the KE at x = 2.
(A) 1 J (B) 2 J (C) 3 J (D) 4 J

96. An aircraft loops the loop of radius R = 500 m with a constant velocity v = 360 km/h. The weight of the flyer of mass m = 70 kg in the lower, upper and middle points of the loop will respectively be –
(A) 210 N, 700 N, 1400 N (B) 1400 N, 700 N, 2100 N
(C) 700 N, 1400 N, 210 N (D) 2100 N, 700 N, 1400 N

97. Vector of length *l* is rotating with an angle θ with respect to its tail. The change in it's position vector of its vertex :
(A) *l* cos $\theta/2$ (B) 2*l* cos $\theta/2$
(C) 2*l* sin $\theta/2$ (D) *l* cos $\theta/2$



98. The length of second's hand in a watch is 1 *cm.* The change in velocity of its tip in 15 seconds is
(A) Zero (B) $\frac{\pi}{30\sqrt{2}}\ cm/\sec$
(C) $\frac{\pi}{30}\ cm/\sec$ (D) $\frac{\pi\sqrt{2}}{30}\ cm/\sec$

99. If $\left|\vec{A}\times\vec{B}\right| = \sqrt{3}\left(\vec{A}.\vec{B}\right)$, then the value of $\left|\vec{A}+\vec{B}\right|$ is
(A) $\left(A^2+B^2+\frac{AB}{\sqrt{3}}\right)^{1/2}$ (B) A + B
(C) $\left(A^2+B^2+\sqrt{3}\,AB\right)^{1/2}$ (D) $\left(A^2+B^2+AB\right)^{1/2}$

100. In a system of units in which the unit of mass a kg, unit of length is b metre and the unit of time is c second, the magnitude of a calorie is

(A) $\frac{4.2c}{ab^2}$ (B) $\frac{4.2c^2}{ab^2}$ (C) $\frac{abc}{4.2}$ (D) $\frac{4.2}{abc}$

101. Power supplied to a particle of mass 2 kg varies with times as $P = \frac{3t^2}{2}$ watt. Here t is in second. If velocity of particle at t = 0 is $v = 0$. The speed of particle at time t = 2 s will be

(A) 1 m/s (B) 2 m/s (C) 2 m/s (D) 0 m/s

102. If $\left|\vec{A}\times\vec{B}\right| = \left|\vec{A}\ .\ \vec{B}\right|$, then angle between $\vec{A}$ and $\vec{B}$ will be

(A) 30° (B) 45° (C) 60° (D) 90°

103. The three vectors $\vec{A} = 3\hat{i} - 2\hat{j} + k$, $\vec{B} = \hat{i} - 3\hat{j} + 5k$ and $\vec{C} = 2\hat{i} + \hat{j} - 4k$ form

(A) An equilateral triangle (B) Isosceles triangle
(C) A right angled triangle (D) None of these

104. A stone falls freely such that the distance covered by it in the last second of its motion is equal to the distance covered by it in the first 5 seconds. It remained in air for:-

(A) 12 s (B) 13 s (C) 25 s (D) 26 s

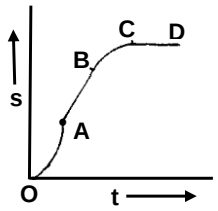
105. Rain is falling with 30m/s vertically down and air is blowing 10m/s horizontally from north to south direction in which direction, a man is standing with its opened umbrella to protect himself from rain

(A) In north direction, at $\tan^{-1}$ (3) with verticle.
(B) In south direction, at $\tan^{-1}$ (3) with verticle.
(C) In north direction, at $\tan^{-1}$ (1/3) with verticle.
(D) In south direction, at $\tan^{-1}$ (1/3) with verticle.

106. A ship is streaming towards east at a speed of $12\,ms^{-1}$. A woman runs across the deck at a speed of $5\,ms^{-1}$ in the direction at right angles to the direction of motion of the ship i.e. towards north. What is the velocity of the woman relative to sea?

(A) 13 m/s (B) 5 m/s (C) 12 m/s (D) 17 m/s

107. The distance-time curve of a moving motor-car is according to the following figure. The portion OA of the curve shows :



(A) accelerated motion (B) retarted motion
(C) uniform motion (D) state of rest

108. Two cars of masses m_1 and m_2 are moving along the circular paths of radius r_1 and r_2 respectively. The speeds are such that they complete one round at the same time. The ratio of angular speeds of two cars is:

(A) $m_1 : m_2$ (B) $r_1 : r_2$ (C) 1 : 1 (D) $m_1r_1 : m_2r_2$

109. A 150 m long train is moving with uniform velocity of 45 km/h. The time taken by the train to cross a bridge of length 850 meters is

(A) 56 s (B) 68 s (C) 80 s (D) 92 s

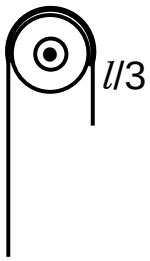
110. A boat takes two hours to travel 8 *km* and back in still water. If the velocity of water is 4 *km/h*, the time taken for going upstream 8 *km* and coming back is

(A) 2*h* (B) 2*h* 40 *min*
(C) 1*h* 20 *min* (D) Cannot be estimated with the information given

111. A particle is moving with velocity $v = (4t^3 + 3t^2 - 1)m/s$. The displacement of particle in time t = 1 s to t = 2 s will be

(A) 21 m (B) 17 m (C) 13 m (D) 9 m

112. A homogeneous chain of length l is placed over a small smooth fixed pulley. It is released from rest. Find the speed of chain when it just leaves the pulley.



(A) $\frac{\sqrt{gl}}{3}$ (B) $2\frac{\sqrt{gl}}{3}$

(C) $\sqrt{2gl}$ (D) $\sqrt{gl}$

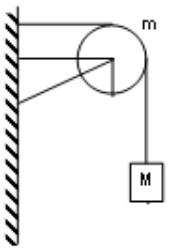
113. An insect crawls a distance of 4 m along north in 10 s and then a distance of 3 m along east in 5 s. The average velocity of the insect is

(A) $\frac{7}{15}$ m/s (B) $\frac{1}{5}$ m/s (C) $\frac{1}{3}$ m/s (D) $\frac{4}{5}$ m/s

114. A car, starting from rest, has a constant acceleration a_1 for a time interval t_1 during which it covers a distance s_1. In the next time interval t_2, the car has a constant retardation a_2 and comes to rest after covering distance s_2 in time t_2. Which of the following relations is correct?

(A) $\frac{a_1}{a_2}=\frac{s_1}{s_2}=\frac{t_1}{t_2}$ (B) $\frac{a_1}{a_2}=\frac{s_2}{s_1}=\frac{t_1}{t_2}$ (C) $\frac{a_1}{a_2}=\frac{s_1}{s_2}=\frac{t_2}{t_1}$ (D) $\frac{a_1}{a_2}=\frac{s_2}{s_1}=\frac{t_2}{t_1}$

115. A string of negligible mass going over a clamped pulley of mass m supports a block of mass M as shown fig. The force on the clamp is given by



(A) $\sqrt{2}$ Mg (B) $\sqrt{2}$ mg

(C) $\left(\sqrt{(M+m)^2+m^2}\right)g$ (D) $\left(\sqrt{(M+m)^2+M^2}\right)g$

116. If a rocket moving with a speed of 400 m/sec, gas is being exhausted at 0.05 kg/sec. The force on the rocket will be :

(A) 20 N (B) 200 N (C) 2000 N (D) 2 N

117. Blood rushes from your head to your feet while quickly stopping when riding on a descending elevator. This is an example for

(A) Newton's I law (B) Newton's II law

(C) Newton's III law (D) None of these

118. A given object takes *n* times as much time to slide down a 45° rough incline as it takes to slide down a perfectly smooth 45° incline. The coefficient of kinetic friction between the object and the incline is given by

(A) $\left(1-\frac{1}{n^2}\right)$ (B) $\frac{1}{1-n^2}$ (C) $\sqrt{\left(1-\frac{1}{n^2}\right)}$ (D) $\sqrt{\frac{1}{1-n^2}}$

119. A car when passes through a convex bridge exerts a force on it which is equal to

(A) $Mg+\frac{Mv^2}{r}$ (B) $\frac{Mv^2}{r}$ (C) Mg (D) None of these

120. A 100 *g* iron ball having velocity 10 *m*/*s* collides with a wall at an angle 30° with the wall and rebounds with the same angle. If the period of contact between the ball and wall is 0.1 *second*, then the force experienced by the wall is

(A) 10 *N* (B) 100 *N* (C) 1.0 *N* (D) 0.1 *N*

121. Choose the correct option

(A) The friction force is dependent on the roughness of the surface.

(B) The kinetic friction is proportional to normal reaction.

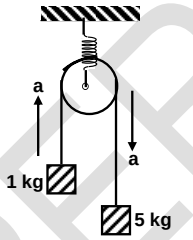
(C) The friction is independent on the area of contact.

(D) All statements are correct

122. Two cars of unequal masses use similar tyres. If they are moving at the same initial speed, the minimum stopping distance
(A) is smaller for the heavier car
(B) is smaller for the lighter car
(C) is same for both cars
(D) depends on the volume of the car

123. A stretching force of 1000 N is applied at one end of a spring balance and an equal stretching force is applied at the other end at the same time. The reading on the balance will be
(A) 1000 N (B) 2000 N (C) 4000 N (D) zero

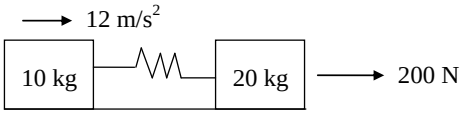
124. A pulley of negligible weight is suspended from a spring balance as shown in the figure. Masses of 1 kg and 5 kg are tied to the ends of a string which passes over the pulley. The mass moves due to gravity. The reading of the spring balance will be :
(A) more than 6kg. (B) 6 kg.
(C) less than 3 kg. (D) less than 6 kg but more than 3 kg.



125. The ratio of the SI unit to the CGS unit of force is
(A) 10^5 (B) 10^{-5} (C) 10^7 (D) 10^{-7}

126. A block of mass 10 kg is pushed up on a smooth inclined plane of inclination 30°, so that it has acceleration 2 m/s^2. The applied force is
(A) 50 N (B) 60 N (C) 70 N (D) 80 N

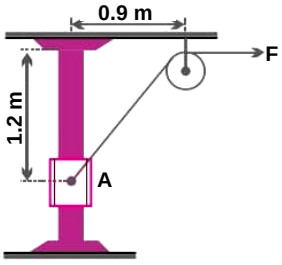
127. Tow masses of 10 kg and 20 kg, respectively, are connected by a light spring as shown in the figure. A force of 200 N acts upon the 20 kg mass. At the instant shown, the 10 kg mass has acceleration of 12 m/s^2. The acceleration of 20 kg mass is
(A) 12 m/s^2 (B) 4 m/s^2 (C) 10 m/s^2 (D) Zero



128. A body of mass m, having momentum p, is moving on a rough horizontal surface. If it is stopped in a distance x, the coefficient of friction between the body and the surface is given by
(A) $\mu = \frac{p^2}{2gm^2x}$ (B) $\mu = \frac{p^2}{2mgx}$ (C) $\mu = \frac{p}{2mgx}$ (D) $\mu = \frac{p}{2gm^2x}$

129. A particle of mass m is moving in a horizontal plane (x-y) along the x-axis, at a certain height above the ground. It suddenly explodes into two fragments smaller fragment is at y = + 15 cm. The larger fragment at this instant is at
(A) y = -5 cm (B) y = + 20 cm (C) y = + 5 cm (D) y = - 20 cm

130. The 50 N collar starts from rest at A and is lifted with a constant speed of 0.6 m/s along the smooth rod. Determine the power developed by the force F at the instant shown.
(A) 10 W (B) 20 W
(C) 30 W (D) 40 W



131. A force $F = \left(5\hat{i} + 3\hat{j}\right)$ newton is applied over a particle which displaces it from its origin to the point $r = \left(2\hat{i} - 1\hat{j}\right)$ metres. The work done on the particle is
(A) -7 joule (B) +13 joules (C) +7 joules (D) +11 joules

132. A body of mass 1 kg is accelerated uniformly from rest to a speed of 5 m/s in 4 sec. What is the instantaneous power delivered to the body at time t. (Assume t < 4 sec).

(A) $\frac{25}{16}t$ (B) t (C) $\frac{16}{25}t$ (D) $\frac{4}{5}t$

133. The mechanical energy of a body falling under a non-conservative force is :

(A) conserved (B) not conserved (C) zero (D) infinite

134. A constant force F is applied to a body of mass m moving with initial velocity u. If after the body undergoes a displacement S its velocity becomes v, then the total work done is :

(A) $m[v^2 + u^2]$ (B) $m/2\ [u^2 + v^2]$ (C) $m/2[v^2 - u^2]$ (D) $m/[v^2 - u^2]$

135. Which of the following is a unit of energy

(A) kWh (B) Watt (C) Horse Power (D) Pascal

Recommended Time: 60 Minutes for Section – III

Section – III

CHEMISTRY – (PART – A)

*This part contains **45 Multiple Choice Questions** number 13**6 to 180.** Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE** is correct.*

136. The hybridizations of atomic orbitals of nitrogen in NO_2^+, NO_3^- and NH_4^+ respectively are
(A) sp, sp^3 and sp^2 (B) sp^2, sp^3 and sp (C) sp, sp^2 and sp^3 (D) sp^2, sp and sp^3

137. A gas in an open container is heated from 27°C to 127°C. The fraction of the original amount of the gas remaining in the container will be
(A) 3/4 (B) 1/2 (C) 1/4 (D) 1/8

138. The weight of one molecule of a compound $C_{60}H_{122}$ is
(A) 1.2×10^{-20} gm (B) 1.4×10^{-21} gm (C) 5.025×10^{23} gm (D) 6.023×10^{23} gm

139. What will occur if a block of copper metal is dropped into a beaker containing a solution of 1 M $ZnSO_4$?
(A) The copper metal will dissolve with evolution of oxygen gas
(B) The copper metal will dissolve with evolution of hydrogen gas.
(C) No reaction will occur
(D) The copper metal will dissolve and zinc metal will be deposited.

140. The molar masses of oxygen and sulphur dioxide are 32 and 64 respectively. If 1 L of oxygen at 25°C and 750 mm Hg pressure contains N molecules, then the number of molecules in 2 L sulphur dioxide under same conditions of temperature and pressure is
(A) N/2 (B) 3 N/2 (C) 2 N (D) 6 N

141. If law of conservation of mass was to hold true, then 20.8 gm of $BaCl_2$ on reaction with 9.8 gm of H_2SO_4 will produce 7.3 gm of HCl and $BaSO_4$ equal to :
(A) 11.65 gm (B) 23.3 gm (C) 25.5 gm (D) 30.6 gm

142. The valence shell electronic configuration of four elements are given below arrange these elements in the correct order of the magnitude of their electron affinity
(i) $2s^22p^5$ (ii) $3s^23p^5$ (iii) $2s^22p^4$ (iv) $3s^23p^4$
(A) i < ii < iv < iii (B) ii < I < iv < iii (C) iii < iv < I < ii (D) iii < iv < ii < i

143. The number of spherical and angular nodes in 2p orbitals are:
(A) 1, 1 (B) 2, 1 (C) 1, 0 (D) 0, 1

144. Dalton's law of partial pressure is not applicable to (under normal conditions)
(A) $NH_{3(g)} + HCl_{(g)}$ mixture (B) $N_2 + O_2$ mixture (C) CO + He mixture (D) H_2 + Ne mixture

145. The ionic radii (in $\mathring{A}$) of N^{3-}, O^{2-} and F^- are respectively :
(A) 1.71, 1.40 and 1.36 (B) 1.71, 1.36 and 1.40
(C) 1.36, 1.40 and 1.71 (D) 1.36, 1.71 and 1.40

146. The pair of ions having same electronic configuration is :
(A) Cr^{3+}, Fe^{3+} (B) Fe^{3+}, Mn^{2+} (C) Fe^{3+}, Co^{3+} (D) Sc^{3+}, Cr^{3+}

147. For the redox reaction, $MnO_4^- + C_2O_4^{-2} + H^+ \rightarrow Mn^{2+} + CO_2 + H_2O$ the correct coefficient of the reactants for the balanced chemical equation are

	MnO_4^-	$C_2O_4^{2-}$	H^+
(A)	2	5	16
(B)	16	5	2
(C)	5	16	2
(D)	2	16	5

148. The maximum kinetic energy of photoelectrons ejected from a metal, when it is irradiated with radiation of frequency $2\times10^{14}s^{-1}$ is $6.63\times10^{-20}J$. The threshold frequency of the metal is:
(A) $2\times10^{14}s^{-1}$ (B) $3\times10^{14}s^{-1}$ (C) $2\times10^{-14}s^{-1}$ (D) $1\times10^{14}s^{-1}$

149. Of the following, which has the shortest de Broglie wavelength?
(A) A nitrogen molecule moving at a velocity of 4000 mph.
(B) A nitrogen molecule moving at a velocity of 1100 mph
(C) A helium nucleus moving at a velocity of 1200 mph
(D) An airplane moving at a velocity of 200 mph

150. An aqueous solution of 6.3 g of oxalic acid dihydrate is made upto 250 mL. The volume of 0.1 N NaOH required to completely neutralise 10 mL of this solution is :
(A)40 mL (B) 20 mL (C) 10 mL (D) 4 mL

151. Most favourable conditions to have more covalent character in ionic bond is
(A) Large cation and small anion (B) Large cation and large anion
(C) Small cation and small anion (D) Small cation and large anion

152. The oxidation number of nitrogen atoms in NH_4NO_3 are
(A) +6, +6 (B) +6, +4 (C) -3, +5 (D) +5, +3

153. Select the correct alternative from the statements that are not related to Mendeleev's periodic table.
(a) The physical and chemical properties of elements are the periodic function of their atomic numbers.
(b) The elements with higher atomic weight were placed before elements with lower atomic weights.
(c) The physical and chemical properties of elements are the periodic function of their atomic weights
(d) Atomic number has been established as the fundamental characteristic of elements based on the work on x-ray spectra of elements
(A) a and b (B) b and c (C) c and d (D) a and d

154. The potential energy of an electron in the first Bohr orbit in the He^+ ion is
(A) – 13.6 eV (B) – 27.2 eV (C) – 54.4 eV (D) – 108.8 eV

155. The dipole moment of HBr is 1.6×10^{-30}cm and inter-atomic spacing is $1\overset{o}{A}$. The percentage ionic character of HBr is
(A) 7 (B) 10 (C) 15 (D) 27

156. NCl_3 exists where as NCl_5 does not exist. It is due to
(A) High electronegativity of N (B) Lower tendency of N to form covalent bond
(C) Non availability of d orbitals in N (D) Statement is incorrect

157. In the atomic spectrum of hydrogen the series of lines observed in the visible region is
(A) Balmer series (B) Paschen series (C) Brackett series (D) Lyman series

158. Which of the following contains greatest number of N atoms?
(A) 22.4 L nitrogen gas at STP (B) 500 mL of 2.00 M NH_3
(C) 1.00 mol of NH_4Cl (D) 6.02×10^{23} molecules of NO_2

159. Which does not have the hydrogen bond?
(A) HF (B) Liquid ammonia (C) Water (D) HCl

160. Increasing order of $C-O$ bond length in CO, CO_2 and CO_3^{2-} is
(A) $CO_3^{2-} < CO_2 < CO$ (B) $CO_3^{2-} < CO_2 = CO$
(C) $CO < CO_3^{2-} < CO_2$ (D) $CO < CO_2 < CO_3^{2-}$

161. Which one of the following pairs of molecules will have permanent dipole moments for both members:
(A) NO_2 and CO_2 (B) NO_2 and O_3 (C) SiF_4 and CO_2 (D) SiF_4 and NO_2

162. N_2 and O_2 are converted into monocations. N_2^+ and O_2^+ respectively. Which is wrong?
(A) In O_2 paramagnetism decreases (B) N_2^+ becomes diamagnetic
(C) In N_2, the N-N bond weakens (D) In O_2, the O-O bond order increases.

163. The correct order of ionization energy is
(A) C > N > O (B) C > N < O (C) C < N > O (D) C < N < O

164. The size of Mo is very similar to W due to
(A) The difference of atomic number by one
(B) The contraction in size in the first transition series elements
(C) Lanthanide contraction
(D) Actinide contraction

165. The maximum covalency exhibited by an element is 6. The number of unpaired electrons in the ground state of an atom is
(A) 1 (B) 2 (C) 3 (D) 4

166. Identify false statement regarding sigma and pi bonds
(A) In sigma bond electron cloud is distributed in a cylindrically symmetrical way around the axis
(B) In pi bond electron cloud is distributed in above and below the axis
(C) Strength of sigma bond is greater than pi bond
(D) s-orbitals can form pi bond

167. If 0.5 mol of $BaCl_2$ is mixed with 0.20 mol of Na_3PO_4, the maximum amount of $Ba_3(PO_4)_2$ that can be formed is
(A) 0.70 mol (B) 0.50 mol (C) 0.20 mol (D) 0.10 mol

168. The partial pressure of N_2, O_2 and CO_2 in a vessel are 38 cm of Hg, 190 torr and 0.5 atm respectively. The total pressure of the mixture at the same temperature is
(A) 0.96 atm (B) 1.02 atm (C) 1.64 atm (D) 1.25 atm

169. Only the vapours of a liquid exist
(A) Below boiling point (B) Below critical temperature
(C) Below inversion temperature (D) Above critical temperature

170. The numerical value of a, the van der Waal's constant is maximum for
(A) He (B) H_2 (C) O_2 (D) NH_3

171. Select incorrect order(s) of electronegativity of element is/are:-
(A) E.N of F-atom on pauling scale > E.N. of N-atom on pauling scale
(B) E.N. of Cl – atom in Cl_2O_7 > E.N. of Cl-atom in Cl_2O_5
(C) E.N. of C-atom in CH_4 > E.N. of C-atom in CO_2
(D) E.N. of Cu^{2+} > E.N. of Cu^+

172. Which of the following have least electron affinity?
(A) Oxygen (B) Fluorine (C) Nitrogen (D) Carbon

173. The mass of pure CH_4 gas to be mixed with 70 g of pure CO so that the partial pressure of CO is equal to the partial pressure of CH_4, is
(A) 40 g (B) 70 g (C) 16 g (D) 28 g

174. At which one of the following conditions the boundary between the liquid and the vapour disappears
(A) When liquid in a open vessel heated to its critical temperature
(B) When liquid in a open vessel heated to its boiling point
(C) When liquid in a closed vessel at temperature less than critical temperature
(D) When a liquid in a closed vessel heated to its critical temperature

175. The wavelength of the electron in the first orbit of the Hydrogen atom is x. The wavelength of the electron in the third orbit and the circumference of the third orbit of the Hydrogen atom are respectively
(A) 3x, 9x (B) 9x, 27x (C) x, 3x (D) x/3, x

176. The oxide which is amphoteric in nature is
(A) BeO (B) MgO (C) CaO (D) SrO

177. 2.76 gm of silver carbonate (at mass of Ag 108) on being heated strongly yield a residue weighing
(A) 2.16 gm (B) 2.48 gm (C) 2.32 gm (D) 2.64 gm

178. Which of the following reaction is non-redox?
(A) $NaNO_3 \rightarrow NaNO_2 + 1/2O_2$
(B) $Zn + 2HCl \rightarrow ZnCl_2 + H_2$
(C) $CaO + SiO_2 \rightarrow CaSiO_3$
(D) $H_2 + 1/2O_2 \rightarrow H_2O$

179. The mass of sulphuric acid needed for dissolving 3 g magnesium carbonate is
(A) 3.5 g (B) 7.0 g (C) 1.7 g (D) 17.0 g

180. A solution of H_2O_2 is titrated with a solution of $KMnO_4$. The reaction is
$2MnO_4^- + 5H_2O_2 + 6H^+ \rightarrow 2Mn^{2+} + 5O_2 + 8H_2O$
It requires 50 mL of 0.1 M $KMnO_4$ to oxidize 10 mL of H_2O_2. The strength of H_2O_2 solution is
(A) 4.25 % (w/v) (B) 8.5 % (w/v) (C) 0.85 % (w/v) (D) 1.7 % (w/v)

FIITJEE Big Bang Edge Test – 2022

(MEDICAL)

***for* students presently in Class 11**

1.C	2.A	3.B	4.B	5.A	6.C	7.B	8.D	9.D	10.B
11.C	12.B	13.D	14.B	15.C	16.B	17.D	18.A	19.A	20.D
21.C	22.A	23.C	24.C	25.C	26.A	27.B	28.B	29.B	30.B
31.B	32.D	33.A	34.A	35.A	36.A	37.B	38.C	39.A	40.A
41.D	42.D	43.D	44.A	45.C	46.A	47.D	48.A	49.A	50.C
51.B	52.C	53.A	54.B	55.C	56.A	57.A	58.C	59.A	60.B
61.B	62.C	63.A	64.C	65.C	66.C	67.D	68.C	69.A	70.B
71.B	72.C	73.C	74.D	75.C	76.A	77.A	78.B	779.B	70.B
81.B	82.C	83.B	84.A	85.C	86.A	87.C	88.B	89.D	90.A
91.B	92.C	93.D	94.C	95.B	96.D	97.C	98.D	99.D	100.B
101.C	102.B	103.C	104.B	105.C	106.A	107.A	108.C	109.C	110.B
111.A	112.B	113.C	114.D	115.D	116.A	117.A	118.A	119.D	120.A
121.D	122.C	123.A	124.D	125.A	126.C	127.B	128.A	129.A	130.C
131.C	132.C	133.B	134.C	135.A	136.C	137.A	138.B	139.C	140.C
141.B	142.C	143.D	144.A	145.A	146.B	147.A	148.D	149.D	150.A
151.D	152.C	153.D	154.D	155.B	156.C	157.A	159.A	159.D	160.D
161.B	162.B	163.C	164.C	165.B	166.B	167.D	168.D	169.B	170.D
171.C	172.B	173.A	174.D	175.A	176.A	177.A	178.C	179.A	180.A