# EAMCET-2011 MEDICAL–BOTANY

1. **Identify the correct ratios of the following, related to Bentham and Hooker's classification of plants**

   A) **Number of series in Dicotyledonae and monocotyledonae**

   B) **Number of classes and sub–classes**

   | **A** | **B** |
   |---|---|
   | 1)  1 : 1 | 1 : 3 |
   | 2)  1 : 1 | 1 : 1 |
   | 3)  2 : 1 | 1 : 1 |
   | 4)  1 : 1 | 1 : 2 |

2. **The ratio of chromosomal number of pollen grain of Nicotiana tabacum ; endosperm cell of Oryza sativa and root cell of Allium cepa is**

   1)  3 : 9 : 2          2)  4 : 7 : 6          3)  6 : 9 : 4          4)  3 : 8 : 2

3. **A DNA fragment of 204 $A^0$ was separated by a scientist from the nuclear genome of the plant.  What will be the ratio between the number of two and three hydrogen bonds formed in the components of this fragment if it contains 40% Adenine ?**

   1)  4 : 1          2)  1 : 4          3)  2 : 3          4)  1 : 3

4. **Identify wrong pair of statements from the following.**

   I) **Cell organelles are newly formed in '$G_2$' phase of cell cycle**

   II) **Doubling of chromosomes occur in 'S' phase of cell cycle**

   III) **The nuclei formed after meiosis–I are haploid**

   IV) **Terminalization occurs in Anaphase–I**

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

5. **The correct order of plants which exhibits laticiferous cells and lysigenous cavities respectively is**

   1)  Ficus, Carica          2)  Nerium, Citrus          3)  Hevea, Pinus          4)  Citrus, Pothos

6. **Study the following combinations and identify the correct matches.**

   I) **Linear growth – Intercalary meristem – Leaf base of grass plant**

   II) **Aerenchyma – Buoyancy – Bryophyllum**

   III) **Trichosclereids – Isodiametric in shape – Aerial roots of Monstera**

   IV) **Water stomata – Guttation – Root pressure**

   **The correct answer is**

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

7. **Identify the following plants with reference to the number of phloem strands in their roots**

   A) **Nicotiana**          B) **Castanea**          C) **Ricinus**          D) **Gossypium**

   | | **A** | **B** | **C** | **D** | | **A** | **B** | **C** | **D** |
   |---|---|---|---|---|---|---|---|---|---|
   | 1) | 5 | 1 | 2 | 8 | 2) | 8 | 5 | 4 | 2 |
   | 3) | 2 | 8 | 5 | 4 | 4) | 4 | 2 | 8 | 5 |

8. **Identify the plant having both spongy petiole and submerged assimilatory roots**

   1)  Tinospora          2)  Trapa          3)  Typha          4)  Eichhornia

9. **Study the following lists.**

   | List – I | List – II |
   |---|---|
   | A) Arnica | I) Food for astronauts |
   | B) Jatropha | II) Medicinal plant |
   | C) Chlorella | III) Fibre yielding plant |
   | D) Boehmeria | IV) Petro–plant |
   | | V) Biofertilizer |

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

10. **A student observed 31 Quisqualis plants each with 36 nodes, 15 Hibiscus plants each with 21 nodes and 77 Calotropis plants each with 11 nodes. All these plants contain leaves at every node. What will be the total number of leaves of these plants put together ?**

    1) 237  2) 4241  3) 2593  4) 1585

11. **Study the following lists.**

    | List – I | List – II |
    |---|---|
    | A) Leaflets modified into spines | I) Trillium |
    | B) Succulent leaves | II) Yucca |
    | C) Whorled phyllotaxy | III) Scilla |
    | D) Epiphyllous buds | IV) Ulex |
    | | V) Colchicum |

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

12. **Identify two correct statements from the following.**

    I) A single male and a few female flowers are present in a flower like inflorescence in Poinsettia

    II) Sessile or subsessile flowers formed in the axils of leaves are crowded at the nodes in Leonotis

    III) In Ficus, a fruit like inflorescence is present with all fertile flowers

    IV) The floral axis is sympodial in Hamelia

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

13. **From among the following, identify the correct order of plants which exhibit hypogynous, perigynous and epigynous flowers respectively**

    I) Physalis, Sesbania, Tridax  II) Lathyrus, Tagetus, Smilax

    III) Tephrosia, Lathyrus, Tridax  IV) Abutilon, Lathyrus, Tagetus

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

14. **Thirty seeds each of Dolichos, Pisum and Maize are kept for germination in the soil. How many cotyledons are found above the soil and below the soil respectively when all the seeds germinate ?**

    1) 90, 90  2) 30, 60  3) 60, 60  4) 60, 90

15. **Identify the correct pair of statements.**

    I) The filiform apparatus helps in absorption of food

    II) Antipodals are the vegetative cells of female gametophyte

    III) The fusion of two polar nuclei occurs always before the entry of pollen tube

    IV) The largest cell of embryosac is the egg cell

    <u>The correct pair is</u>

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

16. **A student observed a plant with stellate hairs on vegetative parts and the fruit dehiscing into many seeded mericarps. Which one of the following characters is also associated with that plant ?**

    1) 3 – 10 bracteoles forming a whorl on the calyx

    2) Two carpels in the gynoecium of a flower

    3) Failure of the germination of pollen grains on the stigma of the same flower

    4) Presence of monosiphonous pollen grains

17. **Of the four plants (A, B, C and D) observed, 'A' was selected by Mendel for his hybridization experiments, while in 'B', shull found inbreeding depression and it is a day neutral plant. In 'C' Hugo de Vries discovered mutations. 'D' has bicollateral vascular bundles and straight embryos. Identify the characters of – A, B, C and D in correct order.**

    <u>The correct order is</u>

    1) Piston mechanism, Eustele, Monocarpellary gynoecium, Swollen placenta

    2) Monadelphous stamens, still roofs, Bicarpellary gynoecium, unilocular ovary

    3) Pulvinus leaf base, Kranz anatomy, Tricarpellary gynoecium, Septicidal capsule

    4) Foliaceous stipules, Scutellum, Tetracarpellary gynoecium, Septifragal capsule

18. **Which of the following disease is caused by a fungus ?**

    1) Exocortosis of Citrus                    2) Crown gall of pear

    3) Yellowing disease of peach            4) Root rot of apple

19. **Single cell protein produced from one of the following microbes is rich in Methionine**

    1) Dunaliella salina                         2) Scenedesmus acutus

    3) Spirulina maxima                        4) Methylophilus methylotrophus

20. **Study the following lists.**

    <u>List – I</u>

    A) Embryoids

    B) Gene pollution

    C) Transgenic microbes

    D) Bioreactors

    <u>List – II</u>

    I) Environmental clean up

    II) Molecular farming

    III) Super weeds

    IV) Artificial seeds

    V) Somaclonal variations

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

21. **From which of the following crosses, $F_1$ progeny showing maximum hybrid vigour can be obtained ?**

    I) AAbb x aaBB          II) AAbb x aabb          III) aaBB x aabb          IV) AABB x aabb

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

22. **Study the following lists.**

    **List – I**

    A) Sesquiterpene

    B) Diterpene

    C) Adenine compound

    D) Indole compound

    **List – II**

    I) Low nicotine in tobacco

    II) Delay in Potato tuber sprouting

    III) Root formation on stem cuttings

    IV) More male flowers in Cannabis

    V) Enhanced vase life of flowers

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

23. **From the phytohormones given below, identify the pairs which have mutually opposite influence on seed germination, stem elongation and stomatal movement respectively**

    I) IAA      II) $GA_3$      III) Zeatin      IV) ABA    V) $C_2H_4$

    1) II – IV ; I – V ; III – IV      2) III – V ; II – V ; I – III

    3) II – IV ; II – III ; IV – V      4) III – V ; II – IV ; I – V

24. **The nucleotide sequence on antisense strand of DNA which is transcribed as codon that specifies the amino acid serine is**

    1) TAC      2) CCC      3) TCA      4) AGU

25. **Assertion (A) : Reduced Coenzyme formed in the oxidation of isocitric acid accounts for more ATP production in electron transport than the reduced coenzyme formed in succinic acid oxidation.**

    **Reason (R) : In the reoxidation of mitochondrial NADH, the number of protons translocated from matrix to intermembrane space is less than the protons translocated when $FADH_2$ is oxidized.**

    1) A is false but R is true

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

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

    4) A is true but R is false

26. **The number of ATP required in excess to assimilate atmospheric $CO_2$ to four molecules of triose phosphates in $C_4$ plants as compared to $C_3$ plants is**

    1) 60      2) 24      3) 30      4) 36

27. **If 8 molecules of Ribulose 1, 5 – bisphosphate molecules are oxygenated by RUBISCO, how many PGA molecules are ultimately available to PCR cycle in photosynthetic carbon oxidation cycle ?**

    1) 24      2) 8      3) 12      4) 16

28. **A student has taken 6000 molecules of Fructose 1, 6 – bisphosphate and 2 molecules of Aldolase into an enzyme reaction mixture to determine its activity. After 5 minutes, 50% substrate was found converted into products. Then, what is the TON of Aldolase and the total number of trioses formed by the enzyme action at the end of 5 minutes ?**

    1) 600, 3000      2) 30, 6000      3) 300, 3000      4) 300, 6000

**29.** Study the following combinations and identify the correct matches related to the role of essential mineral elements in plants

I) Sulphur – Stabilization of protein structure

II) Manganese – Expression of apical dominance

III) Zinc – Activation of IAA oxidase

IV) Potassium – Maintenance of anion–cation balance in cells

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

**30.** The number of stomata and epidermal cells in 1 mm$^2$ area of abaxial surface of the leaves of A, B, C and D plants are given below. Identify the plant having the least stomatal index.

| Plant | Number of stomata | Number of epidermal cells |
|---|---|---|
| A | 20 | 100 |
| B | 40 | 160 |
| C | 50 | 300 |
| D | 70 | 560 |

The correct answer is

1) D 　　　　2) A 　　　　3) B 　　　　4) C

**31.** Study the following table showing the components of water potential of three mesophyll cells–A, B and C.

| Cell | Osmotic potential | Pressure potential |
|---|---|---|
| A | – 0.6 | 0.2 |
| B | – 0.5 | 0.3 |
| C | – 0.9 | 0.4 |

If the above cells are in direct contact with each other, then the water moves at the lowest rate between

1) $B \rightarrow A$ 　　　　2) $A \rightarrow C$ 　　　　3) $C \rightarrow B$ 　　　　4) $B \rightarrow C$

**32.** Study the following lists with reference to transmission of viral diseases.

| List – I | List – II |
|---|---|
| A) Zoospores of fungi | I) Rice tungro |
| B) Insects | II) Cherry ring spot |
| C) Longidorus | III) Tobacco necrosis |
| D) Seeds | IV) Soil borne viral disease |
|  | V) Lettuce mosaic |

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

**33.** Which of the following pair is correct ?

1) Escherichia – Gram positive

2) Thiomargarita – Acanthurus

3) Epulopiscium – Spherical shaped

4) Aquaspirillum – Magnetic field

**34.** Study the following lists.

| List – I | List – II |
|---|---|
| A) Sex hormone | I) Fertilization in Funaria |
| B) Cell wall breaking enzyme | II) Formation of zygophores in Rhizopus |
| C) sugary mucilaginous substance | III) Formation of buds in Funaria |
| D) Naturally occurring growth factor | IV) Fertilization in Pteris |
| | V) Conjugation in Spirogyra |

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

**35.** Trace the correct sequence of stages in the development of male gametophyte in Cycas, starting from microspore

1) Antheridial cell $\rightarrow$ Stalk cell $\rightarrow$ Tube cell $\rightarrow$ Generative cell

2) Antheridial cell $\rightarrow$ Generative cell $\rightarrow$ Body cell $\rightarrow$ Antherozoids

3) Generative cell $\rightarrow$ Body cell $\rightarrow$ Antheridial cell $\rightarrow$ Antherozoids

4) Tube cell $\rightarrow$ Antheridial cell $\rightarrow$ Stalk cell $\rightarrow$ Antherozoids

**36.** A male branch of Funaria has ten antheridia and produced a sum total of 1400 spermatozoids. What is the number of androcyte mother cells in each antheridium assuming each of the antheridia has the same number of androcytes ?

1) 960      2) 16      3) 70      4) 340

**37.** Two filaments of Spirogyra aplanospora are observed. One of the filaments has 150 cells another contains 225 cells. If all the cells in both the filaments are involved in asexual reproduction, what is the ratio of new filaments developed from them ?

1) 1 : 2      2) 2 : 3      3) 1 : 1      4) 3 : 5

**38.** Study the following statements.

A) A homozygous tall plant is crossed with homozygous dwarf plant

B) A heterozygous tall plant is selfed

C) A heterozygous tall plant is crossed with homozygous dwarf plant

D) A heterozygous tall plant is crossed with homozygous tall plant

The probability of tall character appearing in the progenies in terms of percentage respectively would be

| | **A** | **B** | **C** | **D** |
|---|---|---|---|---|
| 1) | 100% | 75% | 50% | 100% s |
| 2) | 100% | 50% | 75% | 100% |
| 3) | 75% | 25% | 100% | 100% |
| 4) | 100% | 100% | 25% | 75% |

**39.** The number of $F_2$ plants found similar to $F_1$ phenotype and genotypes, respectively in a total of 128 plants in $F_2$ progeny of a Mendelian dihybrid cross.

1) 48, 24      2) 72, 48      3) 48, 32      4) 72, 32

**40.** In a hydrophyte, the submerged leaves compensate for the roots. That plant belongs to the category of

1) Rooted hydrophytes with floating leaves      2) Submerged suspended hydrophytes

3) Free floating hydrophytes      4) Submerged rooted hydrophytes

*Sujana*

| 1) **3** | 2) **3** | 3) **1** | 4) **4** | 5) **2** | 6) **1** | 7) **3** | 8) **2** | 9) **4** | 10) **2** |
|---|---|---|---|---|---|---|---|---|---|
| 11) **4** | 12) **3** | 13) **2** | 14) **4** | 15) **3** | 16) **3** | 17) **4** | 18) **4** | 19) **4** | 20) **2** |
| 21) **1** | 22) **3** | 23) **1** | 24) **3** | 25) **4** | 26) **2** | 27) **3** | 28) **4** | 29) **1** | 30) **1** |
| 31) **2** | 32) **1** | 33) **4** | 34) **2** | 35) **2** | 36) **3** | 37) **2** | 38) **1** | 39) **4** | 40) **3** |

# EAMCET-2011 MEDICAL–ZOOLOGY

**41.** **The type of association exhibited by Hydroactinia and Pagurus is**

1) Endo commensalism     2) Ecto parasitism          3) Ecto commensalism     4) Hyperparasitism

**42.** **In the blood circulation of Pheretima, the blood collected by lateral oesophageal blood vessel flows into supra oesophageal blood vessel through**

1) Lateral hearts and commissural blood vessels          2) Lateral hearts and anterior loops

3) Lateral oesophageal hearts and ring vessels          4) Anterior loops and ring vessels

**43.** **Conjugation in ciliate protozoans is essential for**

1) Permanent pairing of two individuals          2) Nuclear reorganisation

3) Gemmation          4) Regeneration of lost body parts

**44.** **Tassar silk is secreted by**

1) Philosamia recini          2) Antheraea paphia

3) Antheraea assamensis          4) Bombyx mori

**45.** **DNA polymerase for industrial use in Polymerase Chain Reaction (PCR) is produced by**

1) Thermus aquaticus          2) Streptococcus pyogenes

3) Trichoderma reesi          4) Bacillus licheniformis

**46.** **Match the following**

**List – I**

**A) Ascending limb of Henle's loop**

**B) Proximal convoluted tubule**

**C) Collecting tubule**

**D) Distal convoluted tubule**

**List – II**

**I) Concentration of glomerular filtrate is high**

**II) Facultative water reabsorption**

**III) Impermeable to water**

**IV) Obligatory water reabsorption**

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

**47.** **Which of the following statements are true about protostomes**

**A) Cleavage spindles or planes are oblique to the polar axis of the zygote**

**B) Cleavage spindles or planes are at right angles to the polar axis of the zygote**

**C) The fate of blastomeres is fixed early in the development**

**D) The fate of blastomeres is fixed relatively late in the development**

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

**48.** Match the following

|     | List  – I |     | List – II |
|-----|-----------|-----|-----------|
| A)  | Cosmozoic theory | I)  | Louis Pasteur |
| B)  | Biogenesis theory | II) | Thales |
| C)  | Theory of spontaneous generation | III) | Cuvier |
| D)  | Theory of catastrophism | IV) | Arrhenius |
|     |           | V)  | Haldane |

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

**49.** **One of the following hepatitis is not transmitted parenterally**

1) Hepatitis – D       2) Hepatitis – A       3) Hepatitis – B       4) Hepatitis – C

**50.** **Dense irregular connective tissue is found in**

1) Bone marrow and lymph nodes                2) Tendons and ligaments

3) Periosteum and pericardium                4) Vocal cords and trachea

**51.** **In Convoluta the tissue present between the gut and body wall is**

1) Botryoidal tissue       2) Mesoglea       3) Mesoderm       4) Parenchyma

**52.** **Flightless bird with preen gland is**

1) Dromaius       2) Tinamus       3) Apteryx       4) Rhea

**53.** **Identify the correct combinations**

| National Park | Place | Animal Protected |
|---|---|---|
| A) Jim Corbett | Rajasthan | Tigers |
| B) Gir | Gujarat | Lions |
| C) Kaziranga | Assam | One - horned rhinoceros |
| D) Periyar | Uttaranchal | Tigers and elephants |

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

**54.** **In rabbit the opening of coronary sinus into the left precaval vein is bound by a fold called**

1) Tricuspid Valve       2) Valve of Eustachain       3) Valve of Thebesius       4) Mitral Valve

**55.** **In a population of 5000, 200 individuals exhibit a trait for recessive allele 'a'. Find out the frequency of the dominant and recessive alleles in the population**

1) 0.68 and 0.32       2) 0.6 and 0.4       3) 0.8 and 0.2       4) 0.96 and 0.04

**56.** **Identify the holocrine gland from the following**

1) Liver       2) Pancreas       3) Mammary glands       4) Sebaceous glands

**57.** **Identify the sequence of steps involved during inspiration in rabbit**

**A) Volume of thoracic cavity increases**

**B) Contraction of external intercostal muscles moves the rib cage forward**

**C) Diaphragm becomes flat**

**D) Thoracic cavity expands drawing air into lungs**

**1) A → B → C → D**       2) A → D → B → C       3) C → B → A → D       4) C → A → B → D

**58.** **In rabbit the fungiform papillae that contain taste buds are distributed**

1) At the sides of the base of the tongue                2) In the margin of the tongue

3) On the upper surface of the tongue                4) At the base of the tongue

**59.** **Choose the type of mouth parts of insects in which the two labella are interconnected by Dutton's membrane**

1) Siphoning type                2) Biting and chewing type

3) Piercing and sucking type                4) ponging type

**60.** **The animal that mostly depends on 'Metabolic water' to survive for long periods without drinking water**

1) Macropus       2) Dipodomys       3) Didelhis       4) Ornythorhynchus

**61.** **What part of the alimentary canal in cookroach secretes peritrophic membrane around the food ?**

1) Mesenteron 2) Gizzard 3) Crop 4) Hepatic caecae

**62.** **Three-lobed diphycercal tail is the feature of this fish**

1) Polypterus 2) Latimeria 3) Protopterus 4) Neocertatodus

**63.** **Statement (S) : Nematodes exhibit 'eutely'**

**Reason (R) : In nematodes cell divisions cease near the end embryonic development so that number of the cells of the adult is constant**

1) Both (S) and (R) are true and (R) is the correct explanation (S)

2) Only (S) is true but not (R)

3) Both (S) and (R)are not true

4) Both (S) and (R) are trueand (R) is not a correct explanation to (S)

**64.** **Identify the following structures which are present in dioptrical region of the ommatidium of cookroach**

1) Lenticular cells, rhabdome, rhabdomeres 2) Lenticular cells, vitrellae, crystalline cone

3) Vitrellae, retinulae, rhabdome 4) Crystalline cone, retinulae, rhabdome

**65.** **The joint between carpal and metacarpal of thumb in primate mammals is**

1) Ball and Socket joint 2) Saddle joint 3) Pivot joint 4) Hinge joint

**66.** **In diapsid skull of reptiles, the two temporal fossae are separated by these bones ot form the upper temporal bar**

1) Post-orbital and jugal 2) Post-frontal and squamosal

3) Post-orbital and squamosal 4) Squamosal and jugal

**67.** **In the life-cycle of Plasmodium vivax some stages may survive for long periods in liver as dormant stages known as**

1) Sporozoites 2) Merozoites 3) Hypnozoites 4) Cryptozoites

**68.** **Match the following with reference to the insects and disease**

**List - I**

**a) Aedes**

**b) Cimex**

**c) Psorophora**

**d) Musca**

**List - II**

**I) Dermatobiasis**

**II) Typhoid**

**III) Encephalitis**

**IV) Bubonic plague**

**V) Break bone fever**

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

**69.** **Match the following**

**List - I**

**A)Cancer cells**

**B) Transcriptional factors**

**C) Cyclins**

**D) Zygote**

**List- II**

**I) DNA replication**

**II) Sacharomyces**

**III) Telomerase**

**IV) Totipotent cell**

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

**70.** **Which of the following statements are correct**

A) Diencephalon regulates posture and balance

B) Cerebral hemispheres control voluntary movements

C) Medulla oblongata regulates involuntary activities

D) Cerebellum regulates temperature

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

**71.** **Statement (S) : Sex-influenced genes are autosomal genes in both males and females**

**Reason     (R) : The phenotypic expression of sex-influenced genes is different in different sexes, dominant in one sex and recessive in the other**

1) Both (S) and (R) are true and (R) is the correct explanation (S)

2) Only (S) is true but not (R)          3) Both (S) and (R)are not true

4) Both (S) and (R) are trueand (R) is not a correct explanation to (S)

**72.** **Vermicompost produced by earthworm contains Nitrogen N and Phosphorus P in this ratio.**

1) 10% N and 3.04% P   2) 60% N and 5.04% P  3) 30% N and 2.04%P  4) 20% N and 1.04% P

**73.** **The blood group of a woman is 'O'. She has two brothers; one with 'A' group and the other with 'B' group. The genotypes of her parents are**

1) $I^AI^B$–$I^OI^O$          2) $I^OI^o$–$I^AI^O$          3) $I^AI^O$–$I^AI^B$          4) $I^AI^O$–$I^AI^O$

**74.** **In which of the following characaters prototherians resemble Metatherians ?**

1) Presence of epipubic bones, two uteri and penis in male

2) Presence of abdominal testis and chorio-vitelline placenta

3) Presene of single headed ribs, megalecithal eggs and smallest gestation period

4) Presence of degenerate corpus callossum, simple cochlea and absence of ear pinnae

**75.** **The sites of ATP ase activity in flagellum/cilium are**

1) Inner sheath                              2) Central tubules of axoneme

3) The dynein arms of outer doublets of microtubules

4) Outer protoplasmic sheath

**76.** **The following are the parts of male reproductive in rabbit. Arrange them in sequence showing the passage of sperms from the place of their formation**

A) Epididymis          B) Vasa efferentia          C) Vas deferentia          D) Seminiferous tubules

E) Urethra          F) Rete testis

1) $E \rightarrow C \rightarrow A \rightarrow B \rightarrow F \rightarrow D$          2) $D \rightarrow F \rightarrow B \rightarrow A \rightarrow E \rightarrow C$

3) $D \rightarrow F \rightarrow A \rightarrow B \rightarrow C \rightarrow E$          4)$D \rightarrow F \rightarrow B \rightarrow A \rightarrow C \rightarrow E$

**77.** **Pick up the statements that are true about Klinefelter syndrome**

A) Feminine sexual development is not completely suppressed

B) Karyotype is 44XXY          C) The male is negative for Barr body

D) Secondary sexual characters are well developed

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

**78.** **Match the following**

| List - I | List - II |
|---|---|
| A) Zooplanktons | I) Chironomid larva |
| B) Neustons | II) Daphnia |
| C) Nektons | III) Water spiders |
| D) Benthos | IV) Hydra |

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

**79.** **Ctenophores have the following symmetry**

1) Biradial        2) Radial        3) Spherical        4) Pentaradial

**80.** **Identify the correct combinations with reference to their larval forms**

**A) Holothuroidea**      – **phiopluteus**

**B) Asteroidea**      – **Bipinnaria**

**C) Pelecypoda**      – **Glochidium**

**D) Cephalopoda**      – **Auricularia**

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

| 41) **3** | 42) **4** | 43) **2** | 44) **2** | 45) **1** | 46) **4** | 47) **4** | 48) **2** | 49) **2** | 50) **3** |
|---|---|---|---|---|---|---|---|---|---|
| 51) **4** | 52) **2** | 53) **3** | 54) **3** | 55) **3** | 56) **4** | 57) **3, 4** | 58) **2** | 59) **3** | 60) **2** |
| 61) **1** | 62) **2** | 63) **1** | 64) **2** | 65) **2** | 66) **3** | 67) **3** | 68) **1** | 69) **3** | 70) **1** |
| 71) **4** | 72) **2** | 73) **4** | 74) **1** | 75) **3** | 76) **4** | 77) **2** | 78) **4** | 79) **1** | 80) **2** |

# EAMCET-2011 MEDICAL–PHYSICS

81. **A wheel of radius 0.5m rolls without sliding on a horizontal surface, starting from rest, the wheel moves with constant acceleration 6 rad/s$^2$. The distance travelled by the centre of the whell from t = 0 to t = 3s is**

    1) 18 m        2) Zero        3) 27 m        4) 13.5 m

82. **A body is projected vertically from the surface of the earth with a velocity equal to $\dfrac{3}{4}$ th escape velocity of earth. If 'R' is the radius of earth, the maximum height attained by the body is**

    1) $\dfrac{10}{3}R$      2) $\dfrac{10}{9}R$      3) $\dfrac{9}{7}R$      4) $\dfrac{9}{8}R$

83. **The time period of a simple harmonic motion is 8s. At t = 0, it is at its equilibrium position. The ratio of distance traversed by it in the first and second seconds is**

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

84. **An Aluminium and Copper wire of same cross sectional area but having lengths in the ratio 2 : 3 are joined end to end. This composite wire is hung from a rigid support and a load is suspended from the free end. If the increase in length of the composite wire is 2 . 1 mm, the increase in lengths of Aluminium and Copper wires are : $\left[ Y_{A\ell} = 20 \times 10^{11} N/m^2 \text{ and } Y_{Cu} = 12 \times 10^{11} N/m^2 \right]$**

    1) 1.0 mm; 1.1 mm    2) 0.6 mm; 1.5mm    3) 0.7 mm; 1.4 mm    4) 0.9 mm; 1.2 mm

85. **The surface energy of a liquid drop is E. It is sprayed into 1000 equal droplets. Then their surface energy is**

    1) E        2) 1000 E        3) 100 E        4) 10 E

86. **A liquid flows through two capillary tubes A and B connected in series. The length and radius of B are twice that of A. The ratio of pressure difference across A and across B is**

    1) 1        3) 8        3) 4        4) 2

87. **At 10$^0$C , the value of the density of a fixed mass of an ideal gas divided by its pressure is 'x'. At 110$^0$C this ratio is**

    1) $\dfrac{110}{10}x$      2) $\dfrac{283}{383}x$      3) $\dfrac{10}{110}x$      4) $\dfrac{383}{283}x$

88. **When a liquid, filled in two vessels A and B of equal volumes, is heated, the coefficients of apparent expansion of the liquids are found to be $\gamma_1$ and $\gamma_2$ respectively. If $\alpha_1$ be the coefficient of linear expansion of A, then the coefficient of linear expansion of B will be**

    1) $\dfrac{\gamma_1 - \gamma_2}{3} + \alpha_1$    2) $\dfrac{\gamma_1 - \gamma_2}{3} - \alpha_1$    3) $\dfrac{\gamma_2 - \gamma_1}{3} + \alpha_1$    4) $\dfrac{\gamma_2 - \gamma_1}{3} - \alpha_1$

89. P-V diagram of an ideal gas is shown in figure. Work done by the gas in the process ABCD is

1) $P_0V_0$

2) $4P_0V_0$

3) $2P_0V_0$

4) $3P_0V_0$
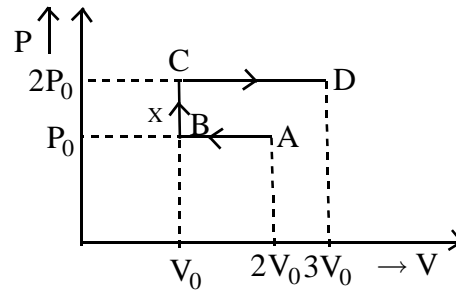


90. Two cylinders A and B fitted with pistons. A and B contain equal moles of an ideal monoatomic gas at 400 K. Piston in A is free to move, while piston in B is held fixed. Same amount of heat is given to the gas in each cylinder. If the rise in temperature of the gas in A is 42 K, then the increase in the temperature of the gas in B is , $\left(\gamma = \dfrac{5}{3}\right)$

1) 70 K

2) 21 K

3) 35 K

4) 42 K

91. The temperature of a perfect black body is $727^0$C and its area is 0.1 m². If Stefan's constant is $5.67 \times 10^{-8}$ W/m² k⁴, then heat radiated by it in 0.3 minutes is

1) 102060 cal

2) 102.06 cal

3) 1701 cal

4) 17010 cal

92. A source of sound producing wavelength 50 cm is moving away from a stationary observer with $\dfrac{1}{5}$ th speed of sound. Then what is the wavelength of sound heard by the observer

1) 60 cm

3) 70 cm

3) 55 cm

4) 40 cm

93. Two identical flutes produce fundamental notes of frequency 300 Hz at $27^0$C. If the temperature of the air in one of the flutes in increased to $31^0$C, the number of beats heard per second will be

1) 1

2) 4

3) 3

4) 2

94. A water film is formed on a glass - block. A light ray is incident on water film from air at an angle $60^0$ with the normal. The angle of incidence on glass slab is, [given $\mu_g$ = 1.5, $\mu_w$ = $\dfrac{4}{3}$ ]

1) $\sin^{-1}\left(\dfrac{9\sqrt{3}}{16}\right)$

2) $\sin^{-1}\left(\dfrac{3\sqrt{3}}{8}\right)$

3) $\sin^{-1}\left(\dfrac{1}{\sqrt{3}}\right)$

4) $\sin^{-1}\left(\dfrac{4\sqrt{3}}{9}\right)$

95. A thin bi-convex lens of focal length 20 cm is made of glass of refractive index 1.5. When it is dipped in a liquid of refractive index $\dfrac{9}{8}$, it acts as

1) Convex lens of focal length 30 cm

2) Concave lens of focal length 15 cm

3) convex lens of focal length 15 cm

4) Concave lens of focal length 30 cm

**96.** When a light of wavelength 4000 $\overset{0}{A}$ in vacuum travels through the same thickness in diamond and water separately, the difference in the number of wave is 200. Find the thickness, if refractive indices of diamond and water are $\dfrac{5}{2}$ and $\dfrac{4}{3}$ respectively

1) 68.5 mm    2) 6.85 mm    3) 0.685 mm    4) 0.0685 mm

**97.** Two polarizers have their axes inclined at $45^0$ to each other. If unpolarized light of intensity $I_0$ is incident on the first polarizers, then the intensity transmitted light through second polarizer is

1) $I_0$    2) 0    3) $\dfrac{I_0}{4}$    4) $\dfrac{I_0}{2}$

**98.** A magnet of length 10 cm and magnetic moment 1 Am² is placed along the side AB of an equilateral triangle ABC. If the length of sides AB is 10 cm, the magnetic induction at point C is

1) $10^{-4}\,T$    2) $10^{-9}\,T$    3) $10^{-7}\,T$    4) $10^{-5}\,T$

**99.** A bar magnet of moment M gives a time period 'T' at a place in a vibration magnetometer. Four such similar bar magnets are placed in the frame one over the other out of which one magnet is placed with opposite polarity. The new time period is

1) T    2) 2T    3) $\dfrac{T}{\sqrt{2}}$    4) $\sqrt{2}T$

**100.** Four positive point charges (+q) are kept at the four corners of a square of side '*l*' . The net electric field at the midpoint of any one side of the square is $\left[\text{take}\,\dfrac{1}{4\pi\varepsilon_0}=K\right]$

1) $\dfrac{8Kq}{\sqrt{5}.\ell^2}$    2) $\dfrac{Kq}{\ell^2}$    3) $\dfrac{4Kq}{\ell^2}$    4) $\dfrac{16Kq}{5\sqrt{5}.\ell^2}$

**101.** Consider a parallel plate capacitor of capacity $10\,\mu F$ filled with air. When the gap between the plates is filled partly with a dielectric of dielectric constant 4, as shown in figure, the new capacity of the capacitor is (A is the are of plates)
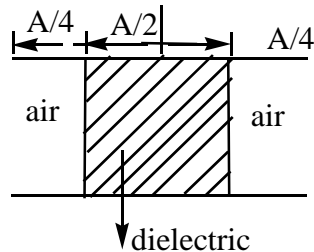


1) $2.5\mu F$    2) $25\mu F$

3) $20\mu F$    4) $40\,\mu F$

**102.** In the circuit shown in figure, the ammeter shows 5A current, voltmeter shows 250V and the internal resistance of the voltmeter is $2500\Omega$, then the value of R is
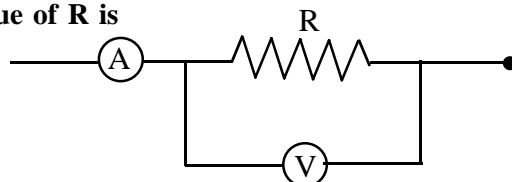


1) $510\Omega$    2) $51\Omega$

3) $150\ \Omega$    4) $0.51\ \Omega$

**103.** A battery of emf 'E' and internal resistance 'r' is connected to a resistor of resistance '$r_1$' and Q Joules of heat is produced in a certain time 't'. When the same battery is connected to another resistor of resistance '$r_2$' the same quantity of heat is produced in the same time 't'. then, the value of 'r' is

1) $\sqrt{r_1\, r_2}$ 　　　　2) $\dfrac{r_1^2}{r_2}$ 　　　　3) $\dfrac{r_2^2}{r_1}$ 　　　　4) $\dfrac{1}{2}\left(r_1 + r_2\right)$

**104.** In a thermocouple, cold junction is at $0^0$C, hot junction is at $t^0$C. The graph drawn between thermo - emf (E) and temperature of the hot junction (t) is represented by the equation, $E = at + bt^2$. If $a = -224b$, the neutral and the inversion temperatures of the thermocouple respectively, in degree Celsius are

1) 448, 224 　　　2) 224, 112 　　　3) 224, 448 　　　4) 112, 224

**105.** If $\overline{B}$ is the magnetic Induction, at the centre of a circular coil of radius 'r' carrying a current is 1 T, then its value at a distance of $\sqrt{3}\, r$ on the axis from the centre of the coil is

1) 8T 　　　　2) $\dfrac{1}{4}$ T 　　　　3) $\dfrac{1}{8}$ T 　　　　4) $\dfrac{1}{16}$ T

**106.** A series LCR circuit is connected to a source of alternating emf 50 V and if the potential differences across inductor and capacitor are 90V and 60V respectively, the potential difference across resistor is

1) 80V 　　　　2) 1600 V 　　　　3) 400 V 　　　　4) 40 V

**107.** A long straight vertical conductor carries a current of 8 A in the upward direction. What is the magnitude of the resultant magnetic induction at a point in the horizontal plane at a distance of 4 cm from the conductor towards South? (The horizontal component of earth's magnetic induction = 4 x 10⁻⁵ T)

1) $4\times10^{-5}\,T$ 　　2) $2\times10^{-5}\,T$ 　　3) $2\sqrt{2}\times10^{-5}\,T$ 　　4) $4\sqrt{2}\times10^{-5}\,T$

**108.** Match the following physical quantities with their respective dimensional formula

a) Angular momentum 　 e) $\left[ML^2T^{-3}\right]$

b) Impulse 　　　　　　f) $\left[ML^2T^{-1}\right]$

c) Pressure 　　　　　　g) $\left[MLT^{-1}\right]$

d) Power 　　　　　　　h) $\left[ML^{-1}T^{-2}\right]$

1) a – g ; b – h ; c – f ; d – e 　　　　　　2) a – g ; b – h ; c – e ; d – f

3) a – f ; b – g ; c – h ; d – e 　　　　　　4) a – f ; b – g ; c – e; d – h

**109.** Two vectors are $(\vec{A}+\vec{B})$ and $(\vec{A}-\vec{B})$. The angle between their resultant vector and $\vec{A}$ is
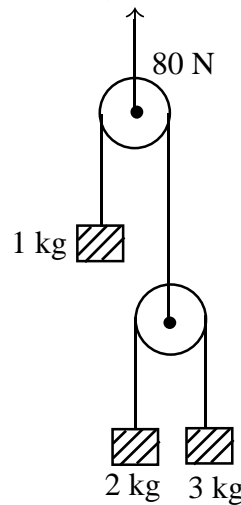
1) $\cos^{-1}\left(\dfrac{A-B}{A+B}\right)$ 
2) **Zero** 
3) $\cos^{-1}(A/B)$ 
4) $\cos^{-1}(B/A)$

**110.** A ball is dropped into a well. The water level in the well is at a depth 'h' below the top. If the speed of sound is v, then after what time the splash of sound is heard

1) $h\left[\dfrac{2}{g}-\dfrac{1}{v}\right]$ 
2) $h\left[\sqrt{\dfrac{2}{gh}}+\dfrac{1}{v}\right]$ 
3) $h\left[\sqrt{\dfrac{2}{gh}}-\dfrac{1}{v}\right]$ 
4) $h\left[\dfrac{2}{g}+\dfrac{1}{v}\right]$

**111.** The acceleration of 3 kg mass in figure shown is (assume g = 10m/s²)

1) $16\dfrac{2}{3}\,\text{m}/\text{s}^2$ **downwards**

2) $3\dfrac{1}{3}\,\text{m}/\text{s}^2$ **downwards**

3) $3\dfrac{1}{3}\,\text{m}/\text{s}^2$ **upwards**

4) **Zero**



80 N
1 kg
2 kg  3 kg

**112.** A bullet is fired normally towards an immovable wooden block. It loses 25% of its kinetic energy in penetrating through a thickness 'x' of the plank. The total thickness penetrated by the bullet into the block is

1) 8x 
2) 2x 
3) 4x 
4) 6x

**113.** A shell is fired from a cannon with a velocity 'v' at an angle '$\theta$' with the horizontal. At the highest point in its path is explodes into two pieces of equal masses. One of the pieces retraces its path and reaches the cannon. Then the velocity of the other piece immediately after collision is

1) 3 v cos $\theta$ 
2) v cos $\theta$ 
3) 2 v cos $\theta$ 
4) $\dfrac{3}{2}\text{v}\cos\theta$

**114.** A uniform metal disc of diameter 24 cm is taken and out of it a disc of diameter 8 cm is cut off from the right side end. The centre of mass of the remaining part will be at

1) **Right side, 2 cm from the centre** 
2) **Left side, 1 cm from the centre**

3) **Left side, 2 cm from the centre** 
4) **Right side, 1 cm from the centre**

**115.** A uniform chain of length '$l$' is placed on a rough table, with its length $\dfrac{\ell}{n}(n>1)$ hanging over the edge of the table. If the chain just begins to slide off the table by itself, the coefficient of friction between the chain and the table is

1) $\dfrac{n-1}{n+1}$ 
2) $\dfrac{1}{n}$ 
3) $\dfrac{1}{n+1}$ 
4) $\dfrac{1}{n-1}$

**116.** **Two circular rings of equal mass (m) and radius (r) are placed side by side, touching each other. The moment of inertia of the system about tangential axis in the plane of system passing through point of contact of the rings is**

1) $\dfrac{5}{2}\mathrm{mr}^2$            2) **3 mr²**            3) $\dfrac{3}{2}\mathrm{mr}^2$            4) **6 mr²**

**117.** **When two electrons enter into a magnetic field with different velocities, they deflect in different circular paths, in such a way that the radius of one path is double that of the other. 1 x10⁻⁷ ms⁻¹ is the velocity of the electron in smaller circle of radius 2 x 10⁻³ m. The velocity of electron in the other circular path is**

1) $2\times10^7\,\mathrm{ms}^{-1}$     2) $2\times10^6\,\mathrm{ms}^{-1}$     3) $4\times10^7\,\mathrm{ms}^{-1}$     4) $4\times10^6\,\mathrm{ms}^{-1}$

**118.** **When a light of photons of energy 4.2 e V is incident on a metallic sphere of radius 10 cm and work function 2.4 e V, photoelectrons are emitted. The number of photoelectrons liberated before the emission is stopped, is** $\left(\mathrm{e}=1.6\times10^{-19}\ \text{and}\ \dfrac{1}{4\pi\varepsilon_0}=9\times10^9\,\mathrm{N-m^2/coulomb^2}\right)$

1) $1.25\times10^8$     2) $6.25\times10^{18}$     3) $6.25\times10^8$     4) $1.25\times10^9$

**119.** **Two deuterium nuclei each of mass 'm' fuse together to form a Helium nucleus, releasing an energy E. If 'c' is the velocity of light, the mass of Helium nucleus formed will be**

1) $\mathrm{m}+\dfrac{\mathrm{E}}{\mathrm{c}^2}$     2) $2\mathrm{m}-\dfrac{\mathrm{E}}{\mathrm{c}^2}$     3) $2\mathrm{m}+\dfrac{\mathrm{E}}{\mathrm{c}^2}$     4) $\dfrac{\mathrm{E}}{\mathrm{mc}^2}$

**120.** **A zener diode voltage regulator operated in the range 120 – 180 V produces a constant supply of 110 V and 250 mA to the load. If the maximum current is to be equally shared between the load and zener, then the values of series resistance (Rs) and load resistance (R₁) are**

1) $\mathrm{R_L}=140\Omega;\ \mathrm{R_S}=440\Omega$          2) $\mathrm{R_L}=280\Omega;\ \mathrm{R_S}=70\Omega$

3) $\mathrm{R_L}=70\Omega;\ \mathrm{R_S}=280\Omega$          4) $\mathrm{R_L}=440\Omega;\ \mathrm{R_S}=140\Omega$

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 81) **4** | 82) **3** | 83) **4** | 84) **2** | 85) **4** | 86) **2** | 87) **2** | 88) **1** | 89) **4** | 90) **1** |
| 91) **0** | 92) **1** | 93) **4** | 94) **2** | 95) **1** | 96) **4** | 97) **3** | 98) **1** | 99) **4** | 100) **4** |
| 101) **2** | 102) **2** | 103) **1** | 104) **4** | 105) **3** | 106) **4** | 107) **4** | 108) **3** | 109) **2** | 110) **2** |
| 111) **2** | 112) **3** | 113) **1** | 114) **2** | 115) **4** | 116) **2** | 117) **1** | 118) **1** | 119) **2** | 120) **4** |

# EAMCET-2011 MEDICAL–CHEMISTRY

121. **Which one of the following oxides is reduced by water gas to obtain the metal during its extraction?**

   1) $WO_3$  2) $Fe_2O_3$  3) NiO  4) ZnO

122. **Which air pollutant is responsible for Bhopal gas tragedy?**

   1) MIC  2) CO  3) PIC  4) CFC

123. **0.16 gms of an organic compound containing sulphur produces 0.233 gms of $BaSO_4$. Percentage of sulphur in the compound is**

   1) 50  2) 10  3) 20  4) 80

124. **Assertion (A): Cyclohexane is the most stable Cycloalkane**

   **Reason (R): Cyclopropane and cyclobutane are less stable due to angle strain and torsional strain**

   **The correct answer is**

   1) A is not true but R is true

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

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

   4) A is true but R is not true

125. $C_6H_6 + O_3 \longrightarrow X \xrightarrow{Zn/H_2O} Y$ . **X and Y are respectively**

   1) Triozonide, Glyoxal
   2) Monoozonide, Oxalic acid
   3) Diozonide, Glycol
   4) Triozonide, Glyoxalic acid

126. **Which one of the following exhibits enantiomerism?**

   1) $H_3C - CH_2 - CH_2 - CH_2Br$
   2) $H_3C - CH_2 - CBr_2 - CH_3$

   3) $BrCH_2 - CH_2 - CH_2 - CH_2Br$
   4) $H_3C - \underset{\underset{Br}{|}}{C}H - CH_2 - CH_3$

127. **Phosgene is formed slowly from which one of the following on exposure to air and sunlight?**

   1) $H_3COH$  2) $C_2H_5C\ell$  3) $CHC\ell_3$  4) $H_3CC\ell$

128. **The order of reactivity of Phenol (1), Nitrobenzene (2) and Benzene (3) towards nitration is**
   1) (1) > (3) > (2)  2) (1) > (2) > (3)  3) (3) > (1) > (2)  4) (2) > (3) > (1)

129. **The reagent used in the Wolff-Kishner reduction is**

   1) $Sn/HC\ell$  2) $LiA\ell H_4$  3) $H_2N - NH_2/KOH$  4) $H_2/Ni$

130. **The $pK_a$ values of four carboxylic acids are 4.76, 4.19, 0.23 and 3.41 respectively. the $pK_a$ value of strongest carboxylic acid among them is**
   1) 0.23  2) 4.76  3) 4.19  4) 3.41

131. **Nitrobenzene on reduction using Zinc in alkaline medium results in 'X'. The number of sigma ($\sigma$) and pi ($\pi$) bonds in 'X' is**
   1) $27\sigma, 7\pi$  2) $27\sigma, 6\pi$  3) $24\sigma, 7\pi$  4) $24\sigma, 6\pi$

132. **Which one of the following is not a biopolymer?**
   1) Insulin  2) DNA  3) Cellulose  4) Nylon – 6

133. **Which one of the following statements is not correct?**
   1) A tripeptide has two peptide bonds
   2) $\alpha$ – Amino acids exist as Zwitter ions
   3) Except Glycine all other naturally occurring $\alpha$ – amino acids are optically active
   4) $\alpha$ Amino acids have maximum solubility at their isoelectric point

**134.** Which one of the following is an artificial sweetening agent?

1)

2) $HO_2C - CH_2 - CH - \overset{O}{\overset{\|}{C}} - \underset{H}{N} - \overset{CH_3}{\underset{|}{CH}} - \overset{O}{\underset{\|}{C}} - \underset{H}{N} - CH$    (with dithietane/thio-structure on right)

$\underset{NH_2}{|}$

3)

4)
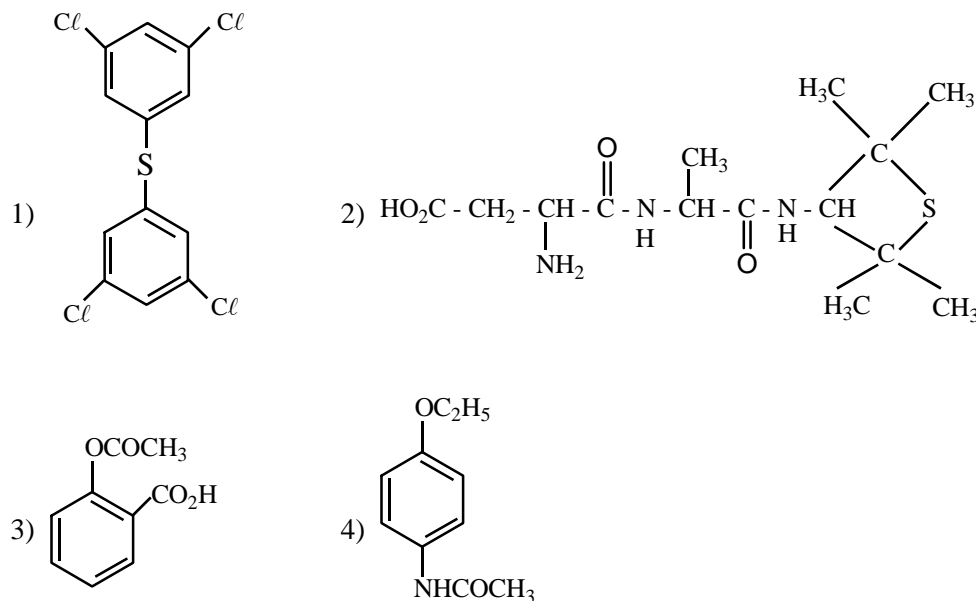
**135.** Which property among the following is same for both hydrogen and deuterium molecules?
1) Boiling point        2) Bond length        3) Bond energy        4) Melting point

**136.** In which of the following reactions hydrogen is not liberated?
1) heating the concentrated NaOH with Si        2) reaction of zinc with NaOH
3) reaction of fused NaOH with C        4) reaction of NaOH with sulphur

**137.** Which one of the following statements is not correct?
1) Amorphous boron on heating with oxygen forms $B_2O_3$
2) Boron is a non-conductor of electricity
3) Moissan boron is amorphous
4) The reaction between boron and concentrated $HNO_3$ gives $N_2O$

**138.** Which one of the following is a correct set?
1) Diamond, sp        2) Graphite, $sp^2$        3) Diamond, $sp^2$        4) Graphite, $sp^3$

**139.** The total number of $\sigma$ and $\pi$ bonds in pyrophosphoric acid are respectively
1) 12, 2        2) 8, 4        3) 8, 2        4) 10, 2

**140.** What are the products formed when moist chlorine gas is reacted with hypo?
1) $Na_2S_4O_6$, $Na_2SO_3$, HCl        2) $Na_2S_4O_6$, NaCl, HCl
3) $Na_2SO_4$, S, HCl        4) $Na_2SO_3$, S, HCl

**141.** What is the bond angle $(O\hat{Cl}O)$ in $ClO_2^-$ ?
1) $105^0$        2) $111^0$        3) $90^0$        4) $120^0$

**142.** The hybridization of Xe and the number of lone pairs of electrons on it in $XeF_6$ are
1) $sp^3d^2$, 2        2) $sp^3d^3$, 1        3) $sp^3d^2$, 1        4) $sp^3d^3$, 2

**143.** Identify the order in which the spin only magnetic moment (in BM) increases for the following four ions:
I) $Fe^{2+}$        II) $Ti^{2+}$        III) $Cu^{2+}$        IV) $V^{2+}$
1) III, IV, I, II        2) III, II, IV, I        3) I, II, IV, III        4) IV, I, II, III

**144.** Which one of the following frequencies of radiation (in Hz) has a wavelength of 600 nm?
1) $2.0 \times 10^{14}$        2) $5.0 \times 10^{14}$        3) $2.0 \times 10^{13}$        4) $5.0 \times 10^{16}$

**145.** According to Bohr's theory, which one of the following values of angular momentum of hydrogen atom is not permitted?

1) $\dfrac{1.5h}{\pi}$        2) $\dfrac{0.5h}{\pi}$        3) $\dfrac{1.25h}{\pi}$        4) $\dfrac{h}{\pi}$

**146.** Which one of the following is correct order of second ionization potential of Na, Ne, Mg and $Al$ ?

1) $Mg < Al < Ne < Na$        2) $Na < Mg < Ne < Al$

3) $Al < Na < Mg < Ne$        4) $Ne < Al < Na < Mg$

147. The formal charges of $N_{(1)}$, $N_{(2)}$ and O atoms in : $:\ddot{N}_{(1)} = N_{(2)} = \ddot{O}:$ are respectively

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

148. In which of the following pairs, the central atoms have the same number of lone pairs of electrons?

    1) $XeF_4, ClO_4^-$       2) $SCl_4, CH_4$       3) $PCl_5, BrF_5$       4) $XeF_2, ICl$

149. 19 grams of a mixture containing $NaHCO_3$ and $Na_2CO_3$ on complete heating liberated 1.12 lit of $CO_2$ at STP. The weight of the remaining solid was 15.9 g. What is the weight (in g) of $Na_2CO_3$ in the mixture before heating?

    1) 4.0         2) 10.6         3) 8.4         4) 15.9

150. Under which one of the following conditions do real gasses approach the ideal gas behaviour?

    1) High temperature and low pressure         2) Low temperature and low pressure
    3) Low temperature and high pressure         4) High temperature and high pressure

151. Which one of the following is the ratio of the lowerin of vapour pressure of 0.1 M aqueous solutions of $BaCl_2, NaCl$ and $Al_2(SO_4)_3$ respectively?

    1) 5 : 3 : 2         2) 2 : 3 : 5         3) 3 : 2 : 5         4) 5 : 2 : 3

152. The volume in ml. of 0.1 M solution of NaOH required to completely neutralize 100 ml. of 0.3 M solution of $H_3PO_3$ IS

    1) 300         2) 30         3) 60         4) 600

153. Match the following

List I                List II

A) Potential of Hydrogen electrode at $p^H = 10$      I) 0.76 V

B) $Cu^{2+}$ / Cu                    II) 0.059

C) Zn / $Zn^{2+}$                    III) – 0.591 V

D) $\dfrac{2.303RT}{F}$                 IV) 0.337 V

                                 V) – 0.76 V

The correct answer is

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

154. If the values of $\wedge_\infty$ of $NH_4Cl, NaOH$ and $NaCl$ are 130, 217 and 109 ohm⁻¹. cm². equiv⁻¹ respectively, the $\wedge_\infty$ of $NH_4OH$ in ohm⁻¹. cm². equiv⁻¹ is

    1) 22         2) 456         3) 238         4) 196

155. The number of unit cells present in 39 grams of Potassium if it crystallizes as body centred cube is : (N = Avogadro number, At. wt. of Potassium = 39)

    1) $\dfrac{N}{3}$         2) N         3) $\dfrac{N}{4}$         4) $\dfrac{N}{2}$

156. Which one of the following is true for an exothermic reaction $A \rightleftharpoons B$, if $E_f$ and $E_b$ are the activation energies of forward and backward reactions respectively?

    1) $E_f = - E_b$       2) $E_f < E_b$       3) $E_f > E_b$       4) $E_f = E_b$

157. If the equilibrium constant for the reaction $2AB \rightleftharpoons A_2 + B_2$ is 49, what is the equilibrium constant for $AB \rightleftharpoons \dfrac{1}{2}A_2 + \dfrac{1}{2}B_2$ ?

    1) 24.5         2) 49         3) 7         4) $\dfrac{1}{7}$

158. **The $p^H$ of 0.5 M acetic acid is ($K_a = 2 \times 10^{-5}$)**
    1) $10^{-3}$                2) 3                3) 2                4) 11

159. **What is the entropy change in $J.K^{-1}$ during the melting of 27.3 grams of ice at $0^0$ C?**
    1) 3.3                2) 33                3) 330                4) 12.1

160. **Which one of the following give a straight line for Freundlich adsorption isotherm?**

    1) $\log \dfrac{x}{m}$ Vs. $\log \dfrac{1}{P}$        2) $\dfrac{x}{m}$ Vs. $\dfrac{1}{P}$        3) $\log \dfrac{x}{m}$ Vs. $\log P$        4) $\dfrac{x}{m}$ Vs. $\dfrac{1}{P}$

| 121) **3** | 122) **1** | 123) **3** | 124) **3** | 125) **1** | 126) **4** | 127) **3** | 128) **1** | 129) **3** | 130) **1** |
|---|---|---|---|---|---|---|---|---|---|
| 131) **2** | 132) **4** | 133) **4** | 134) **2** | 135) **2** | 136) **4** | 137) **4** | 138) **2** | 139) **1** | 140) **3** |
| 141) **2** | 142) **2** | 143) **2** | 144) **2** | 145) **3** | 146) **1** | 147) **4** | 148) **4** | 149) **2** | 150) **1** |
| 151) **3** | 152) **4** | 153) **1** | 154) **3** | 155) **4** | 156) **2** | 157) **3** | 158) **2** | 159) **2** | 160) **3** |