

# EAMCET - MEDICAL

Model Grand Test - 2017

**EAMCET (MEDICAL)**

**Time: 3 Hours**

**Date: 00-00-2017**

**Max. Marks: 160**

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## **INSTRUCTIONS TO THE CANDIDATES**

**(Read the Instructions carefully before Answering)**

1. Separate Optical Mark Reader (OMR) Answer Sheet is supplied to you along with Question Paper Booklet. Please read and follow the instructions on the OMR Sheet for marking the responses and also the required data.
2. Candidates should write the Hall Ticket Number only in the space provided on this page and the OMR Sheet. Do not write the Hall Ticket Number anywhere else.
3. Immediately on opening the Question Paper Booklet please check for (i) Serial number of the questions (1 – 160), (ii) The number of pages, and (iii) Correct Printing. In case of any defect, please report to the invigilator and ask for replacement with the same within five minutes from the commencement of the test.
4. Electronic gadgets like Cell Phone, Pager, Calculator, Electronic watches and Mathematical / Log. Tables are not permitted into the examination hall.
5. Darken the appropriate circles of 1, 2, 3 or 4 in the OMR sheet corresponding to correct or the most appropriate answer to the concerned question number in the sheet. Darkening of more than one circle against any question automatically gets invalidated.
6. Rough work should be done only in the space provided for this purpose in the Question Paper Booklet.
7. Once the candidate enters the Examination Hall, he/she shall not be permitted to leave the Hall till the end of the Examination.
8. Ensure that the Invigilator puts his/her signature in the space provided on Question Paper Booklet and the OMR Answer Sheet. Candidate should sign in the space provided on the OMR Answer Sheet and filled – in application form.
9. Each question carries One Mark. Choose the correct or appropriate answer from the given options to the following questions and darken, With blue / black ball point pen the corresponding digit 1, 2, 3 or 4 in the circle pertaining to the question number concerned in the OMR Answer Sheet, separately supplied to you.

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## BOTANY

1. Four cells are arranged in a linear way. Their osmotic potential and pressure potential are given below (in bars). Identify the correct direction of movement of water.  
i)  $f = -7, p = 5$       ii)  $f = -20, p = 19$       iii)  $f = -6, p = 2$       iv)  $f = -6, p = 3$   
1)  $i \rightarrow ii \rightarrow iii \rightarrow iv$       2)  $ii \rightarrow i \rightarrow iii \rightarrow iv$       3)  $ii \rightarrow i \rightarrow iv \rightarrow iii$       4)  $ii \rightarrow iv \rightarrow i \rightarrow iii$
2. Match the following.
- | Column – I<br>(Organism) | Column – II<br>(Category) |
|--------------------------|---------------------------|
| I. Thiobacillus          | A. Cyano bacteria         |
| II. Nitrobacter          | B. Anaerobic bacteria     |
| III. Rhodospirillum      | C. Nitrifying bacteria    |
| IV. Anabaena             | D. Denitrifying bacteria  |
|                          | E. Ammonifying bacteria   |
- 1) I-C, II-D, III-B, IV-E  
2) I-D, II-C, III-B, IV-A  
3) I-C, II-B, III-E, IV-D  
4) I-B, II-E, III-C, IV-D
3. The average generation time of E.Coli is 20 minutes. How much time will two E.Coli cells take to become 128 cells?  
1) 60min      2) 140min      3) 2 hrs      4) 20min
4. Identify the incorrect statements with reference to TMV  
I) extensively studied by many scientists  
II) Both capsomeres and nucleic acid are arranged helically.  
III) Core contains ds RNA with 6500 nucleotides  
IV) Capsid is made up of 2130 capsomeres of identical size, each of which contains 158 amino acids.  
1) I & II      2) III only      3) II & IV      4) I & III
5. The set of genotypes of off spring which together constitute  $8/16^{\text{th}}$  of the total off spring of the cross  $Rr Yy \times Rr Yy$   
1)  $RRYY, rryy, RRYy, rrYy$       2)  $RRYY, RrYy, RRyy, rryy$   
3)  $RRyy, Rryy, rrYy, rryy$       4)  $RRYy, RrYY, rrYy, Rryy$
6. Match the following.
- | List – I        | List – II  |
|-----------------|--|
| A) Activator    | I) Catabolite  |
| B) Inducer      | II) Inhibits transcription by binding to promotor          |
| C) Co-repressor | III) Product of anabolism that inhibits transcription      |
| D) Repressor    | IV) Product of regulating gene that promotes transcription |
- 1) A-IV, B-III, C-I, D-II      2) A-III, B-IV, C-II, D-I  
3) A-IV, B-III, C-II, D-I      4) A-I, B-II, C-III, D-IV
7. Assertion (A): Replication of DNA is semi conservative.  
Reason (R): During DNA replication both strands of DNA act as templates, to synthesize new strands and the two new strands have identical nucleotides.  
1) A and R are true and R is the correct explanation of A  
2) A and R are true and R is not the correct explanation of A  
3) A is true but R is false      4) A is false but R is true

8. **A totipotent cell means**  
 1) An undifferentiated cell capable of developing into a system (or) entire plant.  
 2) An undifferentiated cell capable of developing into an organ  
 3) An undifferentiated cell capable of developing into complete embryo  
 4) Cell which lacks the capability into an organ (or) system
9. **Match the items in column 'A' and column 'B' and choose answer.**  
**Column A**  
 i) Lady bird  
 ii) Mycorrhiza  
 iii) Biological control  
 iv) Biogas  
**Column B**  
 a) Methanobacterium  
 b) Trichoderma  
 c) Aphids  
 d) Glomus  
**The correct answer is**  
 1) i-b,ii-d,iii-c,iv-a      2) i-c,ii-d,iii-b,iv-a      3) i-d,ii-a,iii-b,iv-c      4) i-c,ii-b,iii-a,iv-d
10. **Match the following list.**  
**Bio active Substance**  
 i) statin  
 ii) cyclosporin  
 iii) streptokinase  
 iv) Lipase  
**Role**  
 a) Removal of oil stains  
 b) Removal of dots from blood vessel  
 c) lowering of blood cholesterol  
 d) Immuno-suppressive agent  
**Choose the correct match.**  
 1) i-b,ii-c,iii-a,iv-d      2) i-d,ii-b,iii-a,iv-c      3) i-d,ii-a,iii-d,iv-c      4) i-c,ii-d,iii-b,iv-a
11. **Enzyme inhibition caused by a product of enzyme catalyzed reaction is**  
 1) Feedback inhibition      2) competitive inhibition  
 3) metabolic antagonism      4) noncompetitive inhibition
12. **Assertion A: Oxygen is not evolved during cyclic electron transport.**  
**Reason R : Photolysis of water does not occur during cyclic electron transport.**  
 1) A and R are true and R is the correct explanation of A  
 2) A and R are true and R is not the correct explanation of A  
 3) A is true but R is false      4) A is false but R is true
13. **Which of the following is wrongly matched.**  
 1) Sorghum-Kranz anatomy      2) Blackman-law of limiting factors  
 3) Photorespiration – C<sub>3</sub> plants      4) PS II – P<sub>700</sub>
14. **The net gain of ATP of glycolysis when sucrose is the substrate is**  
 1) 4ATP      2) 2ATP      3) 3ATP      4) 1ATP
15. **Match the number of carbon atom given in column – I with that of the compounds given in column – II and select the correct option.**  
**Column – I**  
 A) 4 compound  
 B) 2 compound  
 C) 5 compound  
 D) 3 compound  
**Column – II**  
 i) Acetyl Co-A  
 ii) Pyruvate  
 iii) Citric Acid  
 iv)  $\alpha$  - ketoglutaric acid  
 v) Malic acid  
 1) A-ii, B-v, C-iii, D- i  
 2) A- iii, B-i, C-iv, D-ii  
 3) A-v, B-i, C-iv, D-ii  
 4) A-v, B-iii,C-i, D-ii



24. Match the following.

List – I

- A) Bio-diesel
- B) Medicinal plant
- C) Single cell protein
- D) Bio-fertilizer

List – II

- I) Azolla
- II) Chlorella
- III) Arnica
- IV) Spinach
- V) Jatropa

The correct match is

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

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

25. Select the correctly matched ones

- I. Phaeophyceae - Mannitol
- II. Rhodophyceae - Dictyota
- III. Chlorophyceae - Non-motile gametes
- IV. Rhodophyceae -  $\alpha$ -phycoerythrin

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

26. Linear, co-enosorus with false indusium occur in

- 1) Dryopteris                      2) Polytrichum                      3) Pteris                      4) Cyathium

27. The characteristics of vascular bundles of dicot roots are

- 1) Radial, separated, exarch and polyarch
- 2) Radial, separated, endarch and polyarch
- 3) Collateral, closed, exarch and tetrarch
- 4) Radial, separated, exarch and usually diarch to tetrarch

28. Study the following lists.

List – I

- I. Differentiation
- II. Dedifferentiation
- III. Redifferentiation
- IV. Specialization

List – II

- A. Cork cambium
- B. Embryonic meristem
- C. Tracheary elements
- D. Secondary phloem
- E. Permanent cells

The correct match is

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

- |    | I | II | III | IV |
|----|---|----|-----|----|
| 2) | E | A  | D   | C  |
| 4) | E | A  | C   | D  |

29. Number of grams of polysaccharide formed from 180 grams of glucose

- 1) 180g                      2) 178g                      3) 162g                      4) 18g

30. Match the following.

Column – I

- A. Epistomatous
- B. Multiple epidermis
- C. Respiratory roots
- D. Root pocket

Column – II

- I. Rhizophora
- II. Pistia
- III. Nerium
- IV. Sagittaria
- V. Nymphaea

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

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

31. In the genus A, axillary buds help in vegetative reproduction and genus B floral buds help in vegetative reproduction and in genus C epiphyllous buds help in vegetative reproduction and in genus D floral buds help in sexual reproduction A,B,C,D respectively are  
 1) Agave, Dioscorea, Bryophyllum, Datura      2) Aloe, Drosera, Scilla, Hibiscus  
 3) Drosera, Agave, Bryophyllum, Datura      4) Dioscorea, Agave, Bryophyllum, Hibiscus
32. Choose the incorrect statement.  
 1) Stem tuber is not differentiated into dorsal and ventral surfaces  
 2) Bulbils does not bear adventitious roots till germination  
 3) Offset is an axillary branch  
 4) Cladophylls are modified leaves performing photosynthesis
33. Identify plodies of the following parts of a flowering plant such as Ovary, Anther, Egg, Pollen, Malegamete, Zygote respectively  
 1)  $2n, 2n, n, n, n, 2n$       2)  $2n, n, 2n, 2n, n, 2n$       3)  $n, 2n, 2n, n, 2n, n$       4)  $2n, 2n, n, n, n, n$
34. Assertion A: Pollen pistil interaction is a dynamic process.  
 Reason R: It involves pollen recognition followed by promotion (or) inhibition of pollen germination in fertilization.  
 1) A and R are true and R is the correct explanation of A  
 2) A and R are true and R is not the correct explanation of A  
 3) A is true but R is false      4) A is false but R is true
35. In Datura if each anther lobe contains eighty pollen grains, find out the total number of pollen mother cells formed in a flower  
 1) 20      2) 160      3) 400      4) 200
36. Match the list-I with list – II and find the correct combination
- |                     |                                      |
|---------------------|--------------------------------------|
| <b>List –I</b>      | <b>List- II</b>                      |
| A) Theophrastus     | I) Die Naturulichen planten familien |
| B) Linnaeus         | II) Genera plantarum                 |
| C) Bentham & Hooker | III) Species plantarum               |
| D) Engler & prantl  | IV) Historia plantarum               |
- |    |          |          |          |          |    |          |          |          |          |
|----|----------|----------|----------|----------|----|----------|----------|----------|----------|
|    | <b>A</b> | <b>B</b> | <b>C</b> | <b>D</b> |    | <b>A</b> | <b>B</b> | <b>C</b> | <b>D</b> |
| 1) | II       | III      | I        | IV       | 2) | I        | II       | IV       | III      |
| 3) | IV       | III      | II       | I        | 4) | IV       | II       | III      | I        |
37. Under what conditions do lysosomes cause autolysis.  
 1) Starvation      2) Excess of food      3) Injection      4) Respiration
38. Find out the correct match with regard to stored food
- |   |  |
|---|--|
| <b>I. Aleuroplasts – Proteins</b>       | <b>II. Elaioplasts – Fats and oils</b> |
| <b>III. RER – Glycogen</b>              | <b>IV) Amyloplasts – starch</b>        |
| 1) I and II only      2) I, II, III, IV | 3) I, II and IV      4) I, III, IV     |
39. In dsDNA with 150 Nucleotides, then calculate the total number of Nitroten bases with two CN rings – into that DNA  
 1) 60      2) 30      3) 120      4) 75
40. Number of meiosis required to produce 100 embryosacs in angiosperms is  
 1) 125      2) 100      3) 25      4) 75



52. The following stages are formed in the life cycle of *Plasmodium*. Arrange them in the correct sequence.  
**a. Schizogony**                      **b. Sporogony**                      **c. Gametogony**  
 1) a-b-c                                  2) c-b-a                                  3) a-c-b                                  4) b-c-a
53. Read the following statements.  
**a. Typhoid can be confirmed by widal test**  
**b. Typhoid is caused by gram positive bacteria**  
**c. Typhoid is infected by inoculation**                      **d. Typhoid is basically a disease of intestine**  
 The correct statements are  
 1) a & b                                  2) b & c                                  3) c & d                                  4) a & d
54. Marijuana, hashish, charas, ganja are  
 1) Opioids                                  2) Cannabinoids                                  3) Cocaine                                  4) Barbiturates
55. Note the following.  
**A. Tarsus**                                  **B. Trochanter**                                  **C. Tibia**                                  **D. Femur**                                  **E. Coxa**  
 Identify the correct sequence of podomeres in the leg of cockroach.  
 1) E-B-D-A-C                                  2) E-B-C-D-A                                  3) E-B-D-C-A                                  4) B-E-D-C-A
56. The following structures penetrate each cell in cockroach and intimately associated with mitochondria  
 1) Trachea                                  2) Trichomes                                  3) Tracheoles                                  4) Spiracles
57. The sensory impulses from the compound eyes through optic nerves is received by  
 1) Protocerebrum                                  2) Deutocerebrum  
 3) Tritocerebrum                                  4) Sub-oesophageal ganglia
58. Endosmosis is a severe problem in  
 1) Fresh water animals                                  2) Brackish water animals  
 3) Marine water animals                                  4) Organisms living in hot springs
59. One of the following is a zooplankton  
 1) Rotifers                                  2) *Volvox*                                  3) *Phacus*                                  4) Diatoms
60. Verhulst-Pearl logistic growth equation is  
 1)  $dN/dT = rN[K-N/K]$                                   2)  $dN/dK = rN[T-N/K]$   
 3)  $dK/dt = rN[K-N/K]$                                   4)  $\frac{dN}{dt} = rN \frac{K-N}{K}$
61. In man's alimentary canal, the fundic region lies between  
 1) Oesophagus and cardiac stomach                                  2) Cardiac stomach and pyloric stomach  
 3) Fundic stomach and pyloric stomach                                  4) Pyloric stomach and Ileum
62. The peristaltic movements of the gut and the contraction and relaxation of sphincters are caused by  
 1) Sympathetic nervous system                                  2) Striated muscles  
 3) Muscularis externa                                  4) Para-sympathetic nervous system
63. The exchange of O<sub>2</sub> and CO<sub>2</sub> between systemic capillaries and tissues is called  
 1) Alveolar exchange                                  2) External respiration                                  3) Pulmonary exchange                                  4) Systemic exchange
64. Study the following statements.  
**A. Haemoglobin supplies O<sub>2</sub> for survival for 4-5 minutes after stopping of heart.**  
**B. 7 percent of CO<sub>2</sub> combines directly with free amino group of the haemoglobin.**  
**C. Haemoglobin is an amphoteric compound reacting chemically as an acid or base.**  
**D. The chloride shift is also called Hamburger's phenomenon.**  
 The correct statements are  
 1) A, C, D                                  2) B, C                                  3) B,C,D                                  4) A,B



- 65. Valve of Thebesius guards the opening of**  
 1) Superior vena cava into the right atrium    2) Coronary sinus into the right atrium  
 3) Inferior vena cava into the right atrium    4) Coronary sinus into the left atrium
- 66. Match the following.**
- |                            |                      |
|----------------------------|----------------------|
| <b>List – I</b>            | <b>List-II</b>       |
| <b>A. Proaccelerin</b>     | <b>1. Factor IX</b>  |
| <b>B. Proconvertin</b>     | <b>2. Factor VI</b>  |
| <b>C. Christmas factor</b> | <b>3. Factor V</b>   |
| <b>D. Hageman Factor</b>   | <b>4. Factor VII</b> |
|                            | <b>5. Factor XII</b> |
- The correct match is**
- |    |          |          |          |          |    |          |          |          |          |
|----|----------|----------|----------|----------|----|----------|----------|----------|----------|
|    | <b>A</b> | <b>B</b> | <b>C</b> | <b>D</b> |    | <b>A</b> | <b>B</b> | <b>C</b> | <b>D</b> |
| 1) | 4        | 3        | 1        | 5        | 2) | 3        | 4        | 1        | 5        |
| 3) | 2        | 4        | 1        | 5        | 4) | 3        | 4        | 5        | 1        |
- 67. ‘Renin’ catalyses the conversion of**  
 1) Vitamin D to calcitrol    2) Angiotensinogen to angiotensin I  
 3) Angiotensin I to angiotensin II    4) Angiotensinogen to angiotensin II
- 68. Correct one with Dobie’s line in a myofibril is**  
 1) It bisects sarcomere    2) It bisects ‘A’ band  
 3) Meromyosin molecules attached to it    4) Thin filaments are attached to it
- 69. Study the following.**  
**I. Synarthroses are slightly movable joints**  
**II. Amphiarthroses are totally immovable joints**  
**III. Diarthroses are freely movable joints**  
**Correct one/ones of the above**  
 1) Only I    2) Only II    3) Only III    4) I, II, III
- 70. Anterior choroid plexus is present in**  
 1) Roof of Diencephalon    2) Roof of medulla    3) Floor of cerebrum    4) Floor of medulla
- 71. The threshold potential of axolemma for the generation of an action potential is**  
 1) 70mV    2) -45mV    3) -90mV    4) -55mV
- 72. Basilar membrane is present in between**  
 1) Scala media and scala tympani    2) scala tympani and scala vestibuli  
 3) Scala media and scala vestibuli    4) External ear and middle ear
- 73.  $CD^{4+}$  cells are also called**  
 1)  $T_8$  cells    2)  $T_H$  cells    3) T cells    4) B cells
- 74. Derivative hormones of ‘eicosanoids’ among the following.**  
 1) TSH    2) Prostaglandins    3) Progesterone    4) Aldosterone
- 75. Identify the correct sequence of phases of menstrual cycle**  
 1) Ovulatory – follicular – menstrual – luteal    2) Menstrual – follicular – ovulatory – luteal  
 3) Menstrual – luteal – ovulatory – follicular    4) Luteal – menstrual – ovulatory – follicular
- 76. Cystic fibrosis, sickle cell diseases are cited as examples for**  
 1) Multiple allelism    2) Pleiotropy  
 3) Polygenic inheritance    4) Codominance

77. Match the following correctly.

Sed-determination method

- A. XX-XO
- B. XX-XY
- C. ZW-ZZ
- D. ZO-ZZ

Example

- I. *Fumea*
- II. Human being
- III. Honey bee
- IV. Grasshopper
- V. Fowls

The correct match is

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

78. The following are different descendants in the line of human evolution. Arrange them in sequential order of evolution.

- A. *Australopithecus*      B. *Homo habilis*      C. *Homo erectus*      D. *Homo sapiens*  
E. Cro-magnon

The correct answer is

- 1) B-E-A-C-D      2) A-B-C-E-D      3) A-B-E-C-D      4) E-A-B-C-D

79. Hisardale is a new breed of sheep developed in Punjab by crossing the following

- 1) Bikaneri ewes and Marino rams      2) Bikaneri ewes and shali rams  
3) Shali rams and marino rams      4) Murrah rams and Ongole ewes

80. In children below 5 years age and during emotional stress in adults, the following waves are recorded

- 1) Alpha waves      2) Beta waves      3) Delta waves      4) Theta waves

### PHYSICS

81. When charges are at rest the force is given by the law

- 1) Coulomb's      2) Newton-stoke's      3) Ampere's      4) Faraday's

82. If unit of length is doubled and mass is Quadrupled the unit of density is

- 1) Doubled      2) Halved      3) Quadrupled      4) Not effected

83. A particle is moving in a circular path with constant speed  $v$ . When its angular displacement is  $120^\circ$ , change in its velocity is

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

84. Two vectors  $\vec{A}$  and  $\vec{B}$  are of equal magnitude and mutually perpendicular. Then the angle between  $\vec{A} + \vec{B}$  and  $\vec{A} - \vec{B}$  is (in radian)

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

85. A boy throws  $n$  balls per second at regular time intervals, when the first ball reaches the maximum height he throws the second one vertically up. The maximum height reached by each ball is

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

86. The coordinates of a moving particle at any time  $t$  are given by  $x = rt^3$  and  $y = St^3$ . The speed of the particle at time 't' is given by

- 1)  $\sqrt{r^2 + s^2}$       2)  $3t\sqrt{r^2 + s^2}$       3)  $3t^2\sqrt{r^2 + s^2}$       4)  $t^2\sqrt{r^2 + s^2}$

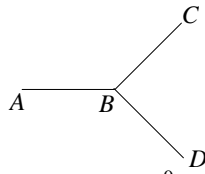
87. At a certain height a shell at rest explodes into two equal fragments. One of the fragments receives a horizontal velocity  $u$ . The time interval after which, the velocity vector will be inclined at  $120^\circ$  to each other is

- 1)  $\frac{u}{\sqrt{3}g}$       2)  $\frac{\sqrt{3}u}{g}$       3)  $\frac{2u}{\sqrt{3}g}$       4)  $\frac{u}{2\sqrt{3}g}$

88. At what temperature the density of a liquid is 2% less than that at  $0^\circ\text{C}$ .

- 1)  $49x_r$       2)  $\frac{1}{49x_r}$       3)  $\frac{x_r}{49}$       4)  $\frac{49}{x_r}$

89. Three rods AB, BC and BD are of the same material and having the same cross section have been joined as shown in the figure. The ends A, C and D are held at temperatures of  $20^\circ\text{C}$ ,  $80^\circ\text{C}$  and  $80^\circ\text{C}$  respectively. If each rod is of same length, then the temperature at the junction B of the three rods is

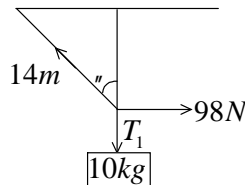


- 1)  $90^\circ\text{C}$       2)  $60^\circ\text{C}$       3)  $40^\circ\text{C}$       4)  $30^\circ\text{C}$

90. Five moles of hydrogen initially at STP is compressed adiabatically so that its temperature becomes  $673\text{K}$ . The increase in internal energy of the gas, in kilo joules is ( $R = 8.35\text{J/mole-K}$ ;  $\gamma = 1.4$  for diatomic gas)

- 1) 21.55      2) 41.80      3) 65.55      4) 80.5

91. A mass of  $10\text{kg}$  is suspended by a rope of length  $2.8\text{m}$  from a ceiling. A force of  $98\text{N}$  is applied at the midpoint of the rope as shown in figure. The angle which the rope makes with the vertical in equilibrium



- 1)  $30^\circ$       2)  $60^\circ$       3)  $45^\circ$       4)  $90^\circ$

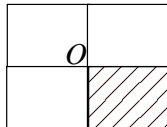
92. A neutron moving with a certain kinetic energy collides head on with an atom of mass number  $A$ . The fractional kinetic energy retained by it is

- 1)  $\frac{A-1}{A+1}$       2)  $\left(\frac{A+1}{A-1}\right)^2$       3)  $\frac{A+1}{A-1}$       4)  $\left(\frac{A-1}{A+1}\right)^2$

93. An electric pump draws water from a well of depth  $50\text{m}$  at a rate of  $2\text{m}^3$  per second. The water is ejected from the pump with velocity  $v = 10\text{m/s}$ . If the efficiency of the pump  $\eta = 80\%$ , the input power consumption of the pump is ( $g = 10\text{m/s}^2$ )

- 1)  $1100\text{kW}$       2)  $880\text{kW}$       3)  $1375\text{kW}$       4)  $1080\text{kW}$

94. A square plate of side 6cm and uniform thickness is divided into four equal parts. If one of them is cut off, then find the position of centre of mass of the remaining portion from O.



- 1) 0.045cm                      2) 0.075cm                      3) 0.707cm                      4) 0.5cm
95. A solid cylinder of mass M and Radius R rolls down an inclined plane with out slipping. The speed of its centre of mass when it reaches the bottom is (h is the height of inclined plane)
- 1)  $\sqrt{2gh}$                       2)  $\sqrt{\frac{4}{3}gh}$                       3)  $\sqrt{\frac{3gh}{4}}$                       4)  $\sqrt{\frac{4g}{h}}$
96. The temperature, at which the r.m.s speed of gas molecules become double its value at  $0^\circ\text{C}$ , is
- 1)  $224^\circ\text{C}$                       2)  $819^\circ\text{C}$                       3)  $273^\circ\text{C}$                       4)  $760^\circ\text{C}$
97. An elongation of 0.1% in a wire of cross section  $10^{-6}\text{m}^2$  causes a tension of 100N. Y for the wire is
- 1)  $10^{12}\text{N/m}^2$                       2)  $10^{10}\text{N/m}^2$                       3)  $10^{11}\text{N/m}^2$                       4)  $100\text{N/m}^2$
98. A bubble of radius ( $r_1$ ) is inside another bubble of radius  $r_2$  ( $r_2 > r_1$ ). The radius of a single bubble whose excess pressure is equal to difference in pressure between inside of inner bubble and outside the other bubble
- 1)  $\frac{r_1 r_2}{r_1 + r_2}$                       2)  $\frac{r_1 - r_2}{r_1 r_2}$                       3)  $\frac{r_1 r_2}{r_2 - r_1}$                       4)  $\frac{2(r_1 r_2)}{r_1 - r_2}$
99. The frequency of a simple pendulum is n oscillations per minute and that of another is (n+1) per minute. The ratio of length of first pendulum to that of second one is
- 1)  $\left(n + \frac{1}{n}\right)^2$                       2)  $\left(\frac{n+1}{n}\right)^2$                       3)  $n(n+1)$                       4)  $\left(\frac{n}{n+1}\right)^2$
100. A satellite is revolving very close to a planet of density ... . The period of revolution of satellite is
- 1)  $\sqrt{\frac{3f}{\dots G}}$                       2)  $\sqrt{\frac{3f}{2\dots G}}$                       3)  $\sqrt{\frac{3f G}{\dots}}$                       4)  $\sqrt{\frac{3f\dots}{G}}$
101. A source of sound producing wavelength 50cm is moving away from a stationary observer with  $\frac{1}{5}$ th speed of sound. Then what is the wavelength of sound heard by the observer?
- 1) 55cm                      2) 40cm                      3) 60cm                      4) 70cm
102. At a certain place, the angle of dip is  $60^\circ$  and the horizontal component of earth's magnetic field ( $B_H$ ) is  $0.8 \times 10^{-4}\text{T}$ . The earth's overall magnetic field is
- 1)  $1.6 \times 10^{-3}\text{T}$                       2)  $1.5 \times 10^{-3}\text{T}$                       3)  $1.6 \times 10^{-4}\text{T}$                       4)  $1.5 \times 10^{-4}\text{T}$
103. The ratio of speed of electron in ground state of hydrogen atom to that of light is
- 1)  $\frac{1}{137}$                       2)  $\frac{1}{207}$                       3)  $\frac{2}{237}$                       4)  $\frac{1}{237}$
104. The limit of Balmer series is  $3646\text{\AA}$  the wavelength to first member of this series will be
- 1)  $6563\text{\AA}$                       2)  $3646\text{\AA}$                       3)  $7200\text{\AA}$                       4)  $1000\text{\AA}$

105. If in a photoelectric cell, the wavelength of incident light is changed from  $4000\text{Å}$  to  $3000\text{Å}$  then change to stopping potential will be  
 1) 0.66V                      2) 1.03V                      3) 0.33V                      4) 0.49V

106. The de-Broglie wavelength associated with an electron accelerated to potential difference of  $V$  volt is

- 1)  $V \times 10^{-10} m$                       2)  $\sqrt{\frac{150}{V}} \text{Å}$                       3)  $\frac{150}{V} \text{Å}$                       4)  $150V \times 10^{-8} m$

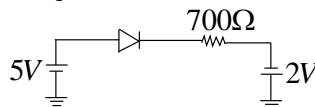
107. If  $E_c = 24 \sin 10^6 f t$  and  $E_m = 12 \sin 500 f t$  are carrier and modulating signal then the modulation index is

- 1) 50%                      2) 60%                      3) 40%                      4) 46%

108. An amplitude modulated voltage is expressed as  $e = 10(1 + 0.8 \cos 2000 f t) \cos 3 \times 10^6 f t$  volt. The minimum and maximum value of modulated carrier wave is

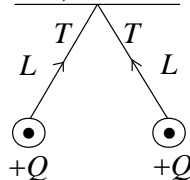
- 1) 2V, 18V                      2) 4V, 16V                      3) 2V, 8V                      4) 4V, 12V

109. The current through an ideal P-N junction shown in the following circuit diagram will be



- 1) 5mA                      2) 10mA                      3) 70mA                      4) 100mA

110. Two small spheres each having equal positive charge  $Q$  on each are suspended by two insulating strings of equal length  $L$  (metre) from a rigid hook (shown in figure). The whole set up is taken into satellite where there is no gravity. The two balls are now held by electrostatic force in horizontal position, the tension in each string is then

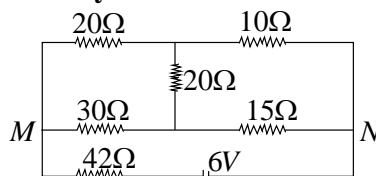


- 1)  $\frac{Q^2}{16f \epsilon_0 L^2}$                       2)  $\frac{Q^2}{8f \epsilon_0 L^2}$                       3)  $\frac{Q^2}{4f \epsilon_0 L^2}$                       4)  $\frac{Q^2}{2f \epsilon_0 L^2}$

111. The capacity of each mercury drop is  $10^{-8} F$ . 64 drops are combined to form a single drop. Its resultant capacity is

- 1)  $10^{-8} F$                       2)  $20^{-8} F$                       3)  $160^{-8} F$                       4)  $40^{-8} F$

112. Current 'i' coming from the battery



- 1) 0.1A                      2) 0.2A                      3) 1A                      4) 2A

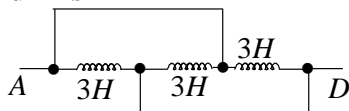
113. If only 2% of the main current is to be passed through a galvanometer of resistance  $G$ , then the resistance of the shunt will be

- 1)  $G/50$                       2)  $G/49$                       3)  $50G$                       4)  $49G$

114. A wire in the form of a square of side 'a' carries a current i. Then the magnetic induction at the centre of the square wire is (magnetic permeability of free space =  $\mu_0$ )

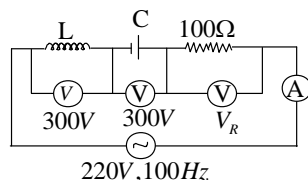
- 1)  $\frac{\mu_0 i}{2fa}$       2)  $\frac{\mu_0 i\sqrt{2}}{fa}$       3)  $\frac{2\sqrt{2}\mu_0 i}{fa}$       4)  $\frac{\mu_0 i}{\sqrt{2fa}}$

115. The inductance between A and D is



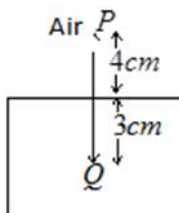
- 1) 3.66H      2) 9H      3) 0.66H      4) 1H

116. In an LCR circuits shown in the following figure what will be the reading of the voltmeter across the resistor and ammeter if an a.c. source of 220V and 100Hz is connected to it as shown in figure.



- 1) 800V, 8A      2) 300V, 3A      3) 220V, 2.2A      4) 110V, 1.1A

117. A point object is located at a point Q in a glass slab as shown in the figure. The distance of the object as measured by an observer at P will be ( $\mu = 1.5$ )



- 1) 7.0cm      2) 6.0cm      3) 5.0cm      4) 7.5cm

118. A ray incident at  $15^\circ$  on one refracting surface of a prism of angle  $60^\circ$ , suffers a deviation of  $55^\circ$ . The angle of emergence is

- 1)  $95^\circ$       2)  $45^\circ$       3)  $30^\circ$       4)  $100^\circ$

119. Two coherent sources whose intensity ratio is 64 : 1 produce interference fringes. The ratio of intensities of maxima and minima is

- 1) 9 : 7      2) 8 : 1      3) 81 : 49      4) 81 : 7

120. A sample containing 16g of a radioactive substance has half life period of 2 days. After 32 days the amount of the radioactive substance left in the sample is

- 1) less than one mg      2)  $\frac{1}{4}$  g      3)  $\frac{1}{2}$  g      4) 1g

### CHEMISTRY

121. The impossible set of quantum numbers is

- 1)  $n = 2, l = 0, m = 0, s = +1/2$       2)  $n = 2, l = 1, m = 0, s = +1/2$   
 3)  $n = 2, l = 0, m = 1, s = -1/2$       4)  $n = 3, l = 1, m = -1, s = -1/2$

- 122.** The wavelength of the first line of the Balmer series in hydrogen spectrum is  $\lambda A^0$ . Then the wavelength (in  $\text{Å}^0$ ) of the first line of Lyman series in the same spectrum is
- 1)  $\frac{5}{27}x$                       2)  $\frac{4}{3}x$                       3)  $\frac{27}{5}x$                       4)  $\frac{5}{36}x$
- 123.** Increasing order of second ionization energies of Na, Ne, Mg and Al is
- 1) Na < Al < Mg < Ne                      2) Al < Mg < Na < Ne  
 3) Mg < Al < Ne < Na                      4) Al < Mg < Ne < Na
- 124.** Energy released in the process of
- 1)  $Na_{(g)} \rightarrow Na_{(g)}^+ + e^-$     2)  $O_{(g)}^- + e^- \rightarrow O_{(g)}^{-2}$     3)  $N_{(g)}^{-2} + e^- \rightarrow N_{(g)}^{-3}$     4)  $O_{(g)} + e^- \rightarrow O_{(g)}^-$
- 125.** In which of the following compounds resonances does not occur
- a)  $H_2O$                       b)  $SiO_2$                       c)  $SO_3$                       d)  $CO_2$
- correct answer is
- 1) a and d                      2) a and b                      3) c and d                      4) b, c and d
- 126.** Which of the following statements is true about  $[Cu(NH_3)_4]SO_4$
- 1) It has coordinate as well as covalent bonds  
 2) It has only coordinate bonds                      3) It has only electrovalent bonds  
 4) It has electrovalent, covalent as well as coordinate bonds
- 127.** The molecular interactions responsible for hydrogen bonding in HF
- 1) dipole-dipole                      2) dipole-induced dipole    3) ion-dipole                      4) ion-induced dipole
- 128.** Two samples of gases 'a' and 'b' are at the same temperatures. The molecules of 'a' are travelling 4 times faster than molecules of 'b'. The ratio of  $\frac{M_a}{M_b}$  of their mass will be
- 1)  $\frac{1}{4}$                       2)  $\frac{16}{1}$                       3)  $\frac{4}{1}$                       4)  $\frac{1}{16}$
- 129.** The relative number of atoms of different elements in a compound are as follows. A = 1.33, B = 1 and C = 1.5. The empirical formula of the compound is
- 1)  $A_2B_2C_3$                       2) ABC                      3)  $A_8B_6C_9$                       4)  $A_3B_3C_4$
- 130.** 10gms of each  $O_2$ ,  $N_2$  and  $Cl_2$  are kept in three bottles. The correct order of arrangement of bottles containing decreasing number of molecules.
- 1)  $O_2$ ,  $N_2$ ,  $Cl_2$                       2)  $Cl_2$ ,  $N_2$ ,  $O_2$                       3)  $Cl_2$ ,  $O_2$ ,  $N_2$                       4)  $N_2$ ,  $O_2$ ,  $Cl_2$
- 131.** In which of the following reactions  $H_2O_2$  acts as a reducing agent?
- 1)  $H_2O_2 + 2H^+ + 2e^- \rightarrow 2H_2O$                       2)  $H_2O_2 \rightarrow O_2 + 2H^+ + 2e^-$   
 3)  $H_2O_2 + 2e^- \rightarrow 2OH^-$                       4)  $H_2O_2 + 2OH^- \rightarrow O_2 + 2H_2O + 2e^-$
- 132.** List – I
- A) Peroxide  
 B) Deliquescent  
 C) Superoxide  
 D) Washing soda
- List – II
- 1)  $KO_2$   
 2)  $Na_2CO_3$   
 3)  $Na_2SO_4 \cdot 10H_2O$   
 4)  $Na_2O_2$   
 5) LiCl
- The correct match is
- |    |          |          |          |          |    |          |          |          |          |
|----|----------|----------|----------|----------|----|----------|----------|----------|----------|
|    | <b>A</b> | <b>B</b> | <b>C</b> | <b>D</b> |    | <b>A</b> | <b>B</b> | <b>C</b> | <b>D</b> |
| 1) | 2        | 3        | 4        | 5        | 2) | 1        | 2        | 4        | 3        |
| 3) | 3        | 2        | 4        | 5        | 4) | 4        | 5        | 1        | 2        |

133. When one mole of A and one mole of B were heated in a one litre flask at T(k), 0.5moles of C was formed in the equilibrium  $A + B \rightleftharpoons C + D$ . The equilibrium constant,  $K_C$  is  
 1) 0.25                      2) 0.5                      3) 1                      4) 2
134. If the solubility of  $\text{Ca}_3(\text{PO}_4)_2$  in water is 'X' moles  $\text{lit}^{-1}$ , its solubility product in  $\text{mol}^5\text{lit}^{-5}$  is  
 1)  $6X^5$                       2)  $36X^5$                       3)  $64X^5$                       4)  $108X^5$
135. Which one of the following is applicable for an adiabatic expansion of an ideal gas  
 1)  $\Delta E = 0$                       2)  $\Delta W = \Delta E$                       3)  $\Delta W = -\Delta E$                       4)  $\Delta W = 0$
136. For a reaction at  $25^\circ\text{C}$ , enthalpy and entropy changes are  $-11.7 \times 10^3 \text{ J.mol}^{-1}$  and  $-105 \text{ J.mol}^{-1} \text{ K}^{-1}$  respectively.  $\Delta G$  would be  
 1) 15.05kJ                      2) 2.55kJ                      3) 22.55kJ                      4) 19.59kJ
137. **Statement I: Diborane has two types of hydrogens.**  
**Statement II : By methylation only four hydrogen atoms are involved.**  
 1) Both I and II are true and II is the correct explanation of I  
 2) Both I and II are true and II is not the correct explanation of I  
 3) I is true but II is false                      4) I is false but II is true
138. Which of the following is not a frame work silicate  
 1) Zeolite                      2) Kaolin                      3) Ultramarine                      4) Feldspar
139. The set of gases causing greenhouse effect is  
 1)  $\text{CO}_2, \text{CO}, \text{SO}_2, \text{N}_2$                       2)  $\text{CO}_2, \text{CH}_4, \text{O}_3, \text{NO}$   
 3)  $\text{CH}_4, \text{SO}_2, \text{N}_2, \text{O}_2$                       4)  $\text{CO}_2, \text{Br}_2, \text{N}_2, \text{O}_2$
140. In a face centred cubic arrangement of A and B atoms whose A atoms are at the corner of the unit cell and B atom at the face centres. One of the A atoms is missing from one corner in unit cell. The simplest formula of compound is  
 1)  $\text{A}_7\text{B}_3$                       2)  $\text{AB}_3$                       3)  $\text{A}_7\text{B}_{24}$                       4)  $\text{A}_8\text{B}_{21}$
141. The boiling point of 0.1 molal  $\text{K}_4[\text{Fe}(\text{CN})_6]$  solution will be (given  $K_b$  for water =  $0.52 \text{ K Kg mol}^{-1}$ )  
 1)  $100.52^\circ\text{C}$                       2)  $100.104^\circ\text{C}$                       3)  $100.26^\circ\text{C}$                       4)  $102.6^\circ\text{C}$
142.  $E_{\text{Sn}^{+2}/\text{Sn}}^0 = -0.14\text{V}, E_{\text{Pb}^{+2}/\text{Pb}}^0 = -0.126\text{V}$ . The cell reaction of the cell constructed from these two electrodes is  
 1)  $\text{Pb}^{+2} + \text{Sn}^{+2} \rightarrow \text{Pb} + \text{Sn}$                       2)  $\text{Sn}^{+2} + \text{Pb} \rightarrow \text{Sn} + \text{Pb}^{+2}$   
 3)  $\text{Pb} + \text{Sn} \rightarrow \text{Pb}^{+2} + \text{Sn}^{+2}$                       4)  $\text{Sn} + \text{Pb}^{+2} \rightarrow \text{Sn}^{+2} + \text{Pb}$
143. For a first order reaction at  $27^\circ\text{C}$ , the ratio of time required for 75% completion to 25% completion  
 1) 3.0                      2) 2.303                      3) 4.8                      4) 0.477
144. Lyophilic sols are more stable than lyophobic sols because  
 1) The colloidal particles have positive charge    2) The colloidal particles have no charge  
 3) The colloidal particles are solvated  
 4) There are strong electrostatic repulsion between the negatively charged colloidal particles
145. The number of S-S bonds in  $\text{SO}_3, \text{S}_2\text{O}_3^{-2}, \text{S}_2\text{O}_6^{-2}$  and  $\text{S}_2\text{O}_8^{-2}$  respectively are  
 1) 1, 0, 1, 0                      2) 0, 1, 0, 1                      3) 0, 1, 1, 0                      4) 1, 0, 0, 1
146. The order of bond energies in halogen molecules is  
 1)  $F_2 < \text{Cl}_2 < \text{Br}_2 < \text{I}_2$                       2)  $F_2 > \text{Cl}_2 > \text{Br}_2 > \text{I}_2$   
 3)  $\text{Cl}_2 > \text{Br}_2 > \text{F}_2 > \text{I}_2$                       4)  $\text{Cl}_2 > \text{F}_2 > \text{Br}_2 > \text{I}_2$



147. List – I(Noble gas)

- A) Helium
- B) Neon
- C) Krypton
- D) Radon

List – II(use)

- 1) Treatment of cancer
- 2) Beacon lights
- 3) Miner cap lamps
- 4) Cryogenic liquid
- 5) Fluorescent tubes

The correct match is

	A	B	C	D
1)	4	2	3	1
2)	4	3	1	2
3)	4	2	1	3
4)	4	5	2	1

148. Which one of the following ions has same number of unpaired electrons as those present in  $V^{3+}$  ion?

- 1)  $Ni^{2+}$
- 2)  $Mn^{2+}$
- 3)  $Cr^{3+}$
- 4)  $Fe^{3+}$

149. Type of isomerism which exists between  $[Pd(C_6H_5)_2(SCN)_2]$  and  $[Pd(C_6H_5)_2(NCS)_2]$  is

- 1) Coordination isomerism
- 2) Ionisation isomerism
- 3) Linkage isomerism
- 4) Solvate isomerism

150. Froth floatation process is based on

- 1) wetting properties of ore particles
- 2) specific gravity of ore particles
- 3) magnetic properties of ore particles
- 4) electrical properties of ore particles

151. Which one of the following monomers gives the polymer Neoprene on polymerization?

- 1)  $CH_2 = CHCl$
- 2)  $CCl_2 = CCl_2$
- 3)  $CH_2 = CCl - CH = CH_2$
- 4)  $CF_2 = CF_2$

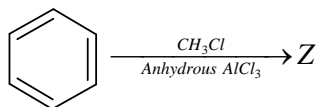
152. The substance which is not used as antiseptic is

- 1) Bithional
- 2) 0.2% phenol
- 3) 2-3% iodine
- 4) Norethindrone

153. Among the following vitamins the one whose deficiency causes rickets is

- 1) Vitamin A
- 2) Vitamin B
- 3) Vitamin D
- 4) Vitamin C

154. The product (z) of the following reaction is



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

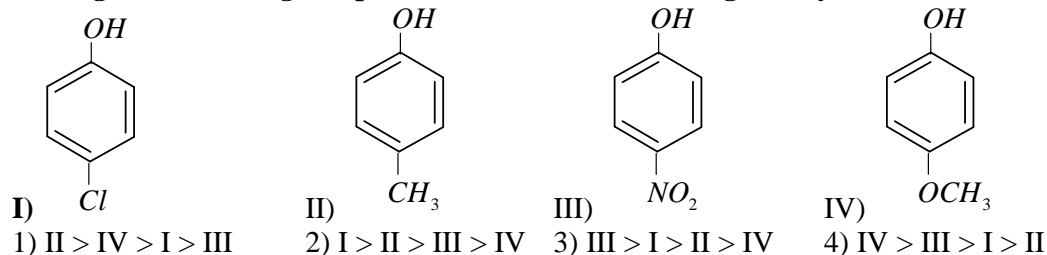
155.  $CH_3MgBr + CO_2 \rightarrow X \xrightarrow{H_3O^+} Y$ . In this reaction Y is

- 1) HCOOH
- 2)  $CH_3COOH$
- 3)  $C_2H_5COOH$
- 4) HCHO

156. Which of the following undergoes cannizaro reaction?

- A) HCHO
  - B)  $CH_3CHO$
  - C)  $Cl_3C-CHO$
  - D)  $(CH_3)_3C-CHO$
- 1) only A and B      2) only B and C      3) only C and D      4) A, C, D only

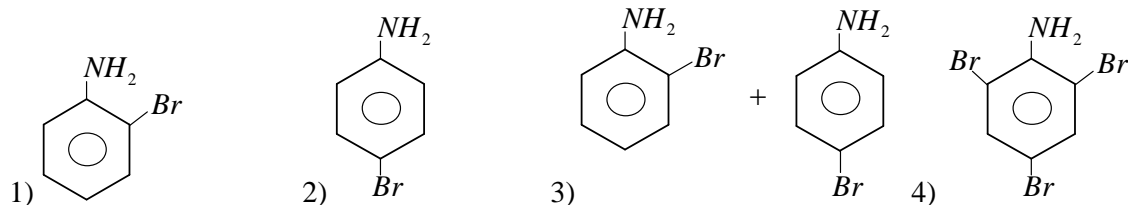
157. Arrange the following compounds in order of decreasing acidity.



158.  $C_2H_5Cl \xrightarrow{KOH(aq)} A \xrightarrow{Na} B \xrightarrow{C_2H_5Cl} C$  Identify 'C' in the above reaction

- 1)  $C_2H_5ONa$       2)  $C_2H_5OH$       3)  $C_2H_5-O-C_2H_5$       4)  $C_4H_{10}$

159. Aniline is treated with Br<sub>2</sub> in the presence of H<sub>2</sub>O gives the following.



160. The kind of delocalization involving sigma bond orbitals is called

- 1) Inductive effect      2) Hyper conjugation effect  
3) Electromeric effect      4) Mesomeric effect

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# KEY SHEET

EAMCET (MEDICAL)  
Time: 3 Hours

Date: 00-00-2017  
Max. Marks: 160

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## BOTANY

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

## ZOOLOGY

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

## PHYSICS

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

## CHEMISTRY

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

# HINTS & SOLUTIONS

## PHYSICS

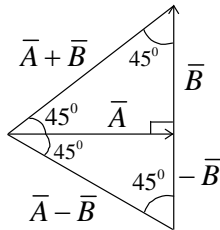
81. Conceptual.

82. Density =  $\frac{M}{L^3} \Rightarrow d^1 = \frac{4M}{(2L)^3}$

83.  $\overline{\Delta V} = \overline{V}_2 - \overline{V}_1 \quad \&_{\text{r}} = 120^\circ$   
 $\overline{\Delta V} = \sqrt{V_1^2 + V_2^2 - 2V_1V_2 \cos 120^\circ}$  here  
 $|V_1| = |V_2|$

$$\Delta V = \sqrt{V^2 + V^2 - 2V^2 \cos 120^\circ}$$

$$\Delta V = \sqrt{3}V$$



84.

85.  $v = u - gt, h_{\text{max}} = \frac{u^2}{2g}$

86.  $v_x = \frac{dx}{dt}, v_y = \frac{dy}{dt} \Rightarrow v = \sqrt{v_x^2 + v_y^2}$

87.  $t = \frac{u}{g \tan \theta}$

88.  $r_r = \frac{d_0 - d_i}{d_i(t)}$

89.  $(\theta - 20^\circ) = (80^\circ - \theta) + (80^\circ - \theta)$

90.  $\Delta U = n \frac{R}{\gamma - 1} dT = 5 \times \frac{8.3}{0.4} \times 400 = 41.50$

91.  $\tilde{S} = mg \cdot \tan \theta = \frac{F}{\tilde{S}}$

92. Kinetic energy regained =  $\left( \frac{m_1 - m_2}{m_1 + m_2} \right)^2$

93.  $p = \frac{mgh + \frac{1}{2}mv^2}{t} = \frac{p}{p_{in}} = \frac{80}{100}$

94.  $shift = \frac{-ad}{A-a}$ , a = area of removed part,  
 A – area of original part, d = distance  
 between centre of mass point

95.  $\frac{3}{4}mv^2 = mgh$

$$v = \sqrt{\frac{4gh}{3}}$$

96.  $C_{rms} = \sqrt{T}$

97.  $y = \frac{Fl}{Ae}$

98.  $P = P_1 + P_2$   
 $\frac{4T}{r} = \frac{4T}{r_1} + \frac{4T}{r_2}$

99.  $n \propto \frac{1}{\sqrt{l}}$

$$\frac{n}{n+1} = \sqrt{\frac{l_2}{l_1}}$$

$$\frac{l_2}{l_1} = \left( \frac{n+1}{n} \right)^2$$

100.  $T = 2f \sqrt{\frac{R^3}{GM}} = 2f \sqrt{\frac{R}{g}}$

$$T = 2f \sqrt{\frac{R}{\frac{4}{3}f \dots GR}} = \sqrt{\frac{3f}{\dots G}}$$

101.  $\gamma^1 = \gamma \left( \frac{V + V_s}{V} \right)$

102.  $B_H = B \cos \theta$   
 $0.8 \times 10^{-4} = B \cos \theta$   
 $B = 1.6 \times 10^{-4}$

103.  $V_n = \frac{CZ}{137n} \Rightarrow \frac{V_n}{C} = \frac{1}{137}$

104.  $\frac{1}{\gamma} = R \left[ \frac{1}{n_1^2} - \frac{1}{n_2^2} \right]$

105.  $E(\text{in eV}) = 12400 \left( \frac{1}{\gamma_1} - \frac{1}{\gamma_2} \right)$

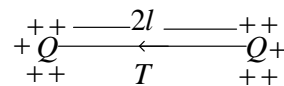
106.  $\gamma = \frac{h}{\sqrt{2mVq}}$

107.  $\sim = \frac{12}{24} \times 100 = 50\%$

108.  $E_{\text{min}} = (1 - \sim) A_c$ ,  
 $E_{\text{max}} = (1 + \sim) A_c$

109.  $V = 5 + 2 = 7V$  diode in forward

$$i = \frac{V}{R} = \frac{7}{100} = 10^{-2} A = 10mA$$



110.

$$T = F = \frac{1}{4f \epsilon_0} \frac{Q^2}{(2l)^2}$$

111.  $C^1 = n^{\frac{1}{3}} C$

112. % of energy released =  $\frac{V}{E} \times 100$

113.  $S = \frac{G}{n-1}$   
 114.  $B = \frac{\tilde{0}^i}{4f r} (\sin \nu_1 + \sin \nu_2)$ , &  $B^1 = 4B$   
 115.  $L_p = \frac{L}{3}$   
 116. It is in resonance,  $V_R = V_m \Rightarrow I = \frac{V_R}{R}$

117.  $d_a = h + \frac{d}{\sim}$   
 118.  $d = i_1 + i_2 - A$   
 119.  $\frac{I_1}{I_2} = \frac{a_1^2}{a_2^2} = \frac{64}{1} \Rightarrow \frac{I_{\max}}{I_{\min}} = \frac{(a_1 + a_2)^2}{(a_1 - a_2)^2}$   
 120.  $N = \frac{N_0}{2^n}$

### CHEMISTRY

121. Conceptual  
 122.  $\frac{1}{\lambda_1} = R \left( \frac{1}{4} - \frac{1}{9} \right)$  for Balmer series  
 $\frac{1}{\lambda_2} = R \left( \frac{1}{1} - \frac{1}{4} \right)$  for Lyman series  
 123. Conceptual  
 124. 1<sup>st</sup> electron affinity  
 125. Conceptual  
 126. Conceptual  
 127. Conceptual  
 128.  $\frac{r_1}{r_2} = \sqrt{\frac{M_2}{M_1}}$   

A	B	C
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 129.  $1.33 \times 6 \quad 1 \times 6 \quad 1.5 \times 6$   
 $A : B : C = 8 : 6 : 9$   
 130. No. of molecules =  $\frac{w}{m.wt} \times N$   
 131. Conceptual  

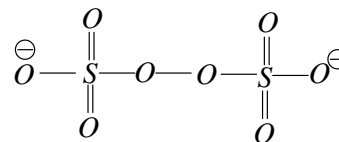
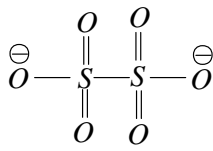
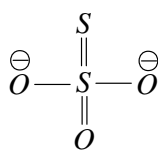
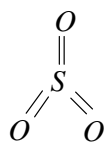
A	B
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 140.  $7 \times \frac{1}{8} \quad 6 \times \frac{1}{2}$   
 $\frac{7}{8} \quad 3$   
 Formula =  $A_7B_{24}$   
 141.  $\Delta T_b = i k_b \times m$   
 $K_4 [Fe(CN)_6] \rightarrow 4K^+ + [Fe(CN)_6]^{4-}$   
 $i = 5$   
 $\Delta T_b = T_6 - 100 = 5 \times 0.52 \times 0.1 = 100.262^\circ C$   
 142.  $Sn \longrightarrow Sn^{+2} + 2e^-$   
 $Pb^{+2} + Cl^- \rightarrow Pb$   
 $Sn + Pb^{+2} \rightarrow Sn^{+2} + Pb$   
 143.  $t = \frac{2.303}{K} \cdot \log \frac{a}{(a-x)}$   
 144. Conceptual

132. Conceptual  
 $A + B \rightleftharpoons C + D$   
 133.  $\begin{matrix} 1 & 1 & 0 & 0 \\ (1-x)(1-x) & 0.5 & 0.5 \\ 0.5 & 0.5 & 0.5 & 0.5 \end{matrix}$   
 $K_c = \frac{[C][D]}{[A][B]}$   
 134.  $Ca_3(PO_4)_2 \rightarrow 3Ca^{+2} + 2PO_4^{-3}$   

$3s$	$2s$
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 $K_{sp} = (3s)^3 \times (2s)^2 = 27s^3 \times 4s^2 = 108s^5$   
 135. Conceptual  
 136.  $\Delta G = \Delta H - T\Delta S$   
 137. Conceptual  
 138. Conceptual  
 139. Conceptual



145.

146. Conceptual

147. Conceptual

148.  $V^{3+}$  has  $2e^-$

$Ni^{+2}$  has  $2e^-$ ,  $Mn^{+2} - 5e^-$ ,  $Cr^{3+} - 3e^-$ ,  $Fe^{3+} - 5e^-$

149. SCN and NCS are ambidentate ligands

150. Conceptual

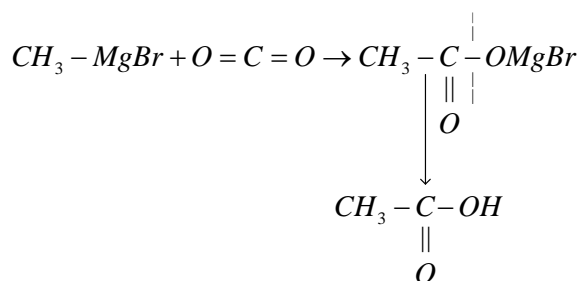
151. Neoprene is the polymer of 2-chloro-1,3-butadiene

152. Conceptual

153. Conceptual

154. Friedel-Craft's alkylation

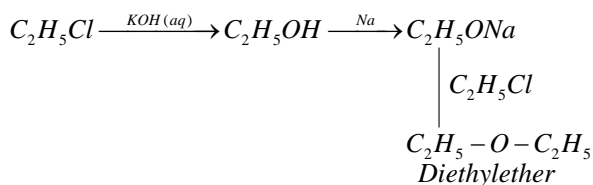
155.



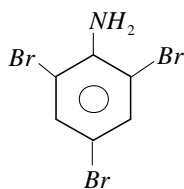
156. HCHO,  $Cl_3CCHO$  and  $(CH_3)_3C-CHO$  not having  $\alpha$  - hydrogens.

157. Electron withdrawing groups increases the acidity of phenols

158.



159.



160. Hyper conjugation