

**NEET- TARGET 2018 – 2019****Code:- S-O****MINOR –TEST 04****Do not open this test Booklet until you are asked to do so.****DATE-30/12/2018*****Important Instructions:***

1. The answer sheet is inside this Test Booklet. When you are directed to open the Test Booklet, take out the Answer Sheet and fill in the particulars on **Side-1** and **Side-2** carefully with **blue/black** ballpoint pen only.
2. The test is of **3 hours** duration and Test Booklet contains **180** questions. Each question carries **4** marks. For each correct response, the candidate will get **4** marks. For each incorrect response, one mark will be deducted from the total score. The maximum marks are **720**.
3. Use **Blue/Black Ballpoint Pen only** for writing particulars on this page / marking responses.
4. Rough work is to be done on the space provided for this purpose in the Test Booklet only.
5. On completion of the test, the candidate must hand over the Answer Sheet to the Invigilator before leaving the Room / Hall. The candidates are allowed to take away Test Booklet only with them.
6. The CODE for this Test Booklet is **S-O** Make sure that the CODE Printed on **Side-2** of the answer sheet is the same as that on this Test Booklet. In case of discrepancy, the candidate should immediately report the matter to the Invigilator for replacement of both the Test Booklet and the Answer Sheet.
7. The candidate should ensure that the Answer Sheet is not folded. Do not make any stray marks on the Answer Sheet. Do not write your Roll No. anywhere else except in the specified space in the Test Booklet/Answer Sheet.
8. Use of white fluid for correction is **not** permissible on the Answer Sheet.
9. Each candidate must show on demand his/her Admit Card to the Invigilator.
10. No candidate, without special permission of the Superintendent or Invigilator, would leave his/her seat.
11. The candidates should not leave the Examination Hall without handing over their Answer Sheet to the Invigilator on duty and sign the Attendance Sheet twice. **Cases where a candidate has not signed the Attendance Sheet second time will be deemed not to have handed over the Answer Sheet and dealt with as an unfair means case.**
12. Use of Electronic / Manual Calculator is prohibited.
13. The candidates are governed by all Rules and Regulations of the Board with regard to their conduct in the Examination Hall. All cases of unfair means will be dealt with as per Rules and Regulations of the Board.
14. No part of the Test Booklet and Answer sheet shall be detached under any circumstances.
15. The candidates will write the correct Test Booklet Code as given in the Test Booklet / Answer sheet in the Attendance Sheet.

Name of the Candidate ( in Capitals ) : \_\_\_\_\_

Roll Number ( in Figures ) : \_\_\_\_\_

( in Words ) : \_\_\_\_\_

Centre of Examination ( in Capitals ) : \_\_\_\_\_

Candidate's Signature: \_\_\_\_\_ Invigilator's Signature: \_\_\_\_\_

Facsimile Signature Stamp of

Centre Superintendent: \_\_\_\_\_

1. The formula of the induced emf due to rate of change of magnetic flux passing through a coil will be-

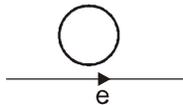
(1)  $e = -\frac{d}{dt}(\vec{B} \cdot \vec{A})$       (2)  $e = \frac{dB}{dt}$       (3)  $e = -\vec{A} \cdot \left( \frac{d\vec{B}}{dt} \right)$       (4)  $e = -\vec{B} \cdot \frac{d\vec{A}}{dt}$

2. If  $\phi = 0.02 \cos 100\pi t$  weber/turns and number of turns is 50 in the coil, the maximum induced emf is-
- (1) 314 volt      (2) 100 volt      (3) 31.4 volt      (4) 6.28 volt

3. Magnetic flux  $\phi$  (in weber) linked with a closed circuit of resistance 10 ohm varies with time  $t$  (in seconds) as  $\phi = 5t^2 - 4t + 1$ . The induced electromotive force in the circuit at  $t = 0.2$  sec. is-

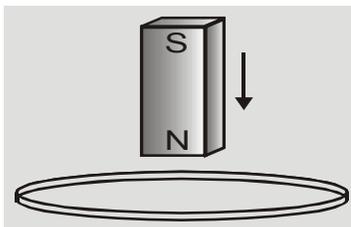
(1) 0.4 volts      (2) -0.4 volts      (3) -2.0 volts      (4) 2.0 volts

4. An electron is passing near a ring and approaches to ring, then direction of induced current in ring is :



- (1) clockwise      (2) anticlockwise      (3) both (1) and (2)      (4) no current

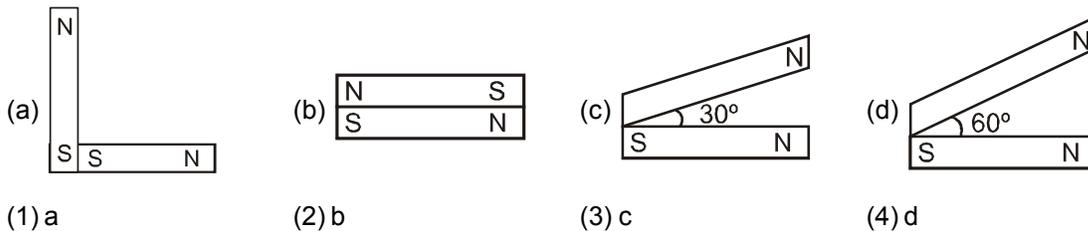
5. The north pole of a magnet is brought near a metallic ring as shown in fig. The direction of induced current in the ring will be-



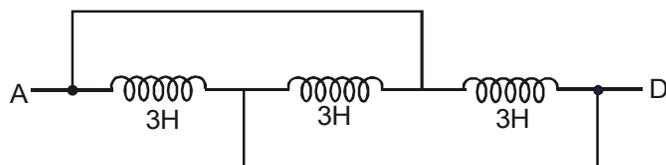
- (1) Anticlock wise from magnet side  
 (2) Clock wise from magnet side  
 (3) First anticlock wise and then clock wise from magnet side  
 (4) First clock wise and then anticlock wise from magnet side

6. The magnetic needle of a tangent galvanometer is deflected by an angle  $30^\circ$  due to a magnet. The horizontal component of earth's magnetic field is  $0.34 \times 10^{-4}$  T along the plane of the coil. The intensity of magnetic field of magnet is :
- (1)  $1.96 \times 10^{-4}$  T      (2)  $1.96 \times 10^{-5}$  T      (3)  $1.96 \times 10^4$  T      (4)  $1.96 \times 10^5$  T

7. A charged particle (charge  $q$ ) is moving in a circle of radius  $R$  with uniform speed  $v$ . The associated magnetic moment  $\mu$  is given by :
- (1)  $\frac{qvR}{2}$                       (2)  $qvR^2$                       (3)  $\frac{qvR^2}{2}$                       (4)  $qvR$
8. A hydrogen atom is paramagnetic. A hydrogen molecule is-
- (1) diamagnetic                      (2) paramagnetic                      (3) ferromagnetic                      (4) none of these
9. Two long parallel wires are at a distance of 1 m. Both of them carry one ampere of current. The force of attraction per unit length between the two wires is :
- (1)  $2 \times 10^{-7}$  N/m                      (2)  $2 \times 10^{-8}$  N/m                      (3)  $5 \times 10^{-8}$  N/m                      (4)  $10^{-7}$  N/m
10. Following figures show the arrangement of bar magnets in different configurations. Each magnet has magnetic dipole  $\vec{m}$ . Which configuration has highest net magnetic dipole moment ?



11. An LCR series circuit with  $100 \Omega$  resistance is connected to an AC source of 200 V and angular frequency 300 radians per second. When only the capacitance is removed, the current lags behind the voltage by  $60^\circ$ . When only the inductance is removed, the current leads the voltage by  $60^\circ$ . Then the current and power dissipated in LCR circuit are respectively
- (1) 1A, 200 watt.                      (2) 1A, 400 watt.                      (3) 2A, 200 watt.                      (4) 2A, 400 watt.
12. An alternating voltage  $E = 200\sqrt{2} \sin(100 t)$  is connected to a 1 microfarad capacitor through an A.C. ammeter. The reading of the ammeter shall be -
- (1) 10 mA                      (2) 20 mA                      (3) 40 mA                      (4) 80 mA
13. An electric bulb and a capacitor are connected in series with an AC source. On increasing the frequency of the source, the brightness of the bulb :
- (1) increase                      (2) decreases  
 (3) remains unchanged                      (4) sometimes increases and sometimes decreases
14. The inductance between A and D is :



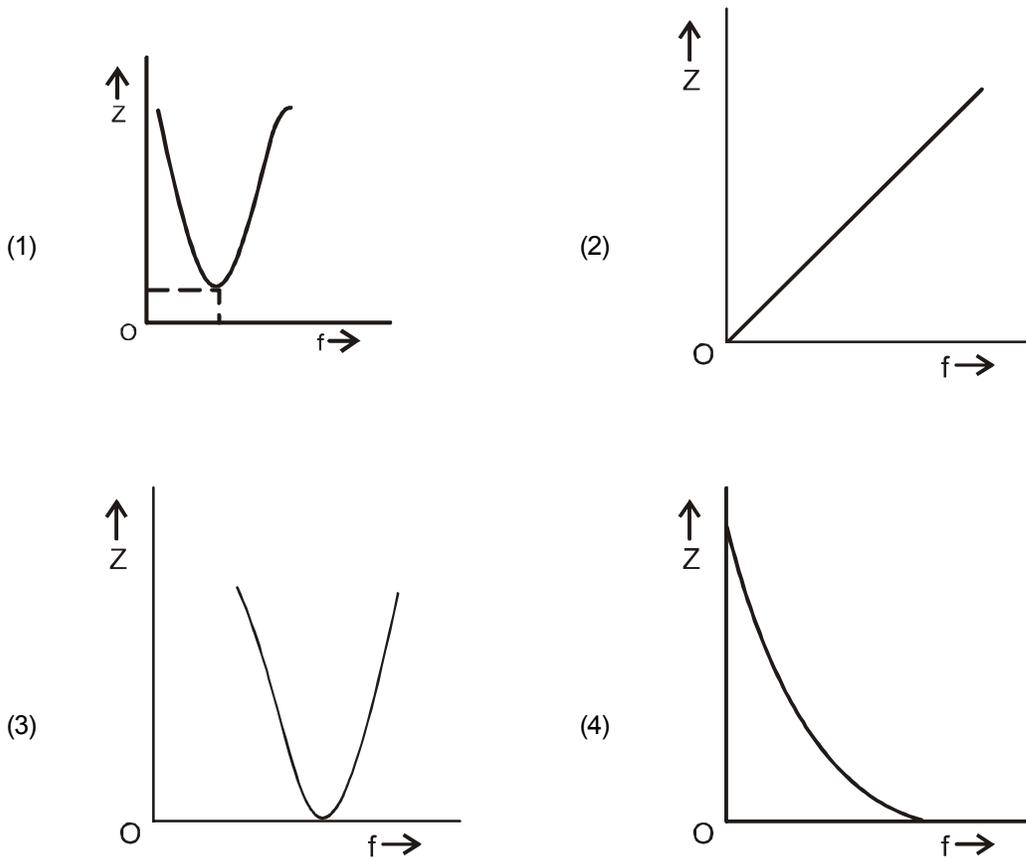
- (1) 3.66 H                      (2) 9 H                      (3) 0.66 H                      (4) 1 H
15. When the current changes from +2 A to -2 A in 0.05 second, an emf of 8 V is induced in a coil. The coefficient of self-induction of the coil is :
- (1) 0.2 H                      (2) 0.4 H                      (3) 0.8 H                      (4) 0.1 H



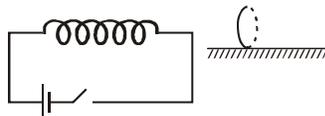




28. A series LCR circuit is connected to a.c. source of variable frequency 'f'. The graphical representation of variation of impedance 'z' of the circuit with frequency f will be

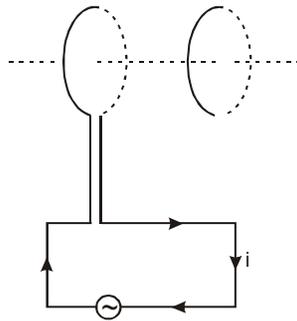


29. Fig. shows a horizontal solenoid connected to a battery and a switch. A copper ring is placed on a frictionless track, the axis of the ring being along the axis of the solenoid. As the switch is closed, the ring will



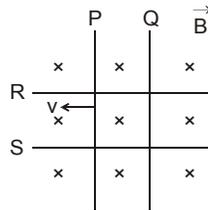
- (1) remain stationary
- (2) move towards the solenoid
- (3) move away from the solenoid
- (4) move towards the solenoid or away from it depending on which terminal (positive or negative) of the battery is connected to the left end of the solenoid.

30. Two circular coils A and B are facing each other as shown in figure. The current i through A can be altered



- (1) there will be repulsion between A and B if  $i$  is increased
- (2) there will be attraction between A and B if  $i$  is increased
- (3) there will be neither attraction nor repulsion when  $i$  is changed
- (4) attraction or repulsion between A and B depends on the direction of current. It does not depend whether the current is increased or decreased.

**31.** Two identical conductors P and Q are placed on two frictionless fixed conducting rails R and S in a uniform magnetic field directed into the plane. If P is moved in the direction shown in figure with a constant speed, then rod Q

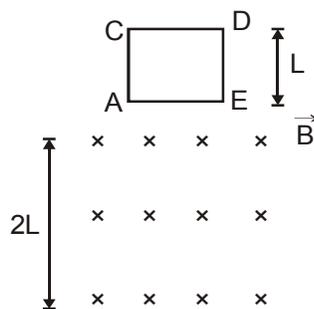


- (1) will be attracted towards P
- (2) will be repelled away from P
- (3) will remain stationary
- (4) may be repelled or attracted towards P

**32.** A circuit has a resistance of 12 ohm and an impedance of 15 ohm. The power factor of the circuit will be

- (1) 0.8
- (2) 0.4
- (3) 1.25
- (4) 0.125

**33.** A square coil ACDE with its plane vertical is released from rest in a horizontal uniform magnetic field  $\vec{B}$  of length  $2L$ . The acceleration of the coil is

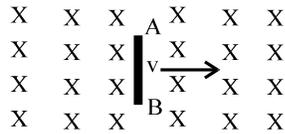


- (1) less than  $g$  for all the time till the loop crosses the magnetic field completely
- (2) less than  $g$  when it enters the field and greater than  $g$  when it comes out of the field
- (3)  $g$  all the time
- (4) less than  $g$  when it enters and comes out of the field but equal to  $g$  when it is within the field



34. Energy dissipates in LCR circuit in :  
 (1) L only                      (2) C only                      (3) R only                      (4) all of these

35. A rod AB moves with a uniform velocity  $v$  in a uniform magnetic field as shown in fig.

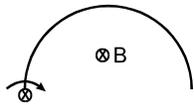


- (1) The rod becomes electrically charged                      (2) The end A becomes positively charged  
 (3) The end B become positively charged                      (4) The rod becomes hot because of Joule heating

36. A rod of length  $l$  rotates with a uniform angular velocity  $\omega$  about its perpendicular bisector. A uniform magnetic field  $B$  exists parallel to the axis of rotation. The potential difference between the two ends of the rod is

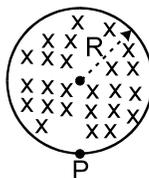
- (1) zero                      (2)  $\frac{1}{2} \omega B l^2$                       (3)  $B \omega l^2$                       (4)  $2B \omega l^2$

37. A semicircular wire of radius  $R$  is rotated with constant angular velocity  $\omega$  about an axis passing through one end and perpendicular to the plane of the wire. There is a uniform magnetic field of strength  $B$ . The induced e.m.f. between the ends is:



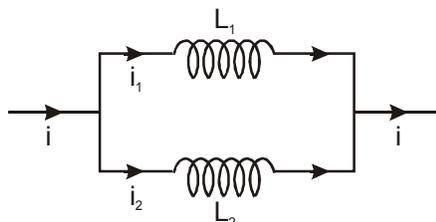
- (1)  $B \omega R^2/2$                       (2)  $2 B \omega R^2$                       (3) is variable                      (4) none of these

38. A uniform magnetic field of induction  $B$  is confined to a cylindrical region of radius  $R$ . The magnetic field is increasing at a constant rate of  $\frac{dB}{dt}$  (tesla/second). An electron of charge  $q$ , placed at the point  $P$  on the periphery of the field experiences an acceleration :



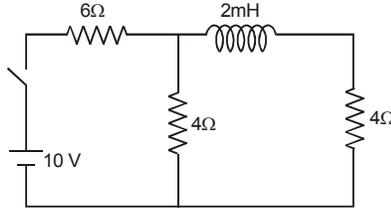
- (1)  $\frac{1}{2} \frac{eR}{m} \frac{dB}{dt}$  toward left                      (2)  $\frac{1}{2} \frac{eR}{m} \frac{dB}{dt}$  toward right  
 (3)  $\frac{eR}{m} \frac{dB}{dt}$  toward left                      (4) zero

39. Two inductors  $L_1$  and  $L_2$  are connected in parallel and a time varying current  $i$  flows as shown. The ratio of currents  $i_1/i_2$  at any time  $t$  is

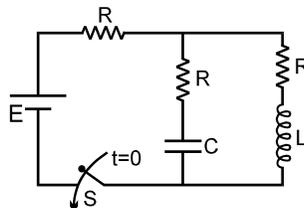


- (1)  $L_1/L_2$                       (2)  $L_2/L_1$                       (3)  $\frac{L_1^2}{(L_1+L_2)^2}$                       (4)  $\frac{L_2^2}{(L_1+L_2)^2}$

40. In the given circuit find the ratio of  $i_1$  to  $i_2$ . Where  $i_1$  is the initial (at  $t = 0$ ) current, and  $i_2$  is steady state (at  $t = \infty$ ) current through the battery :



- (1) 1.0                      (2) 0.8                      (3) 1.2                      (4) 1.5
41. In the circuit shown in figure, switch S is closed at  $t = 0$ . Then:



- (1) after a long time interval potential difference across capacitor and inductor will be equal.  
 (2) after a long time interval charge on capacitor will be  $EC$ .  
 (3) after a long time interval current in the inductor will be  $E/R$ .  
 (4) after a long time interval current through battery will be same as the current through it initially.
42. A  $40\Omega$  electric heater is connected to a 200V, 50 Hz mains supply. The peak value of electric current flowing in the circuit is approximately-
- (1) 2.5 A                      (2) 5.0 A                      (3) 7 A                      (4) 10 A
43. The potential difference  $V$  across and the current  $I$  flowing through an instrument in an AC circuit are given by :
- $V = 5 \cos \omega t$  volt  
 $I = 2 \sin \omega t$  volt
- The power dissipated in the instrument is :
- (1) zero                      (2) 5 watt                      (3) 10 watt                      (4) 2.5 watt
44. A direct current of 2 A and an alternating current having a maximum value of 2 A flow through two identical resistances. The ratio of heat produced in the two resistances in the same time interval will be:
- (1) 1 : 1                      (2) 1 : 2                      (3) 2 : 1                      (4) 4 : 1
45. A coil of inductance 5.0 mH and negligible resistance is connected to an alternating voltage  $V = 10 \sin (100t)$ . The peak current in the circuit will be :
- (1) 2 amp                      (2) 1 amp                      (3) 10 amp                      (4) 20 amp

## SECTION – B (CHEMISTRY 45 QUESTION)

46. The hybridization of the central carbon in

$\text{CH}_3\text{C}\equiv\text{N}$  and the bond angle  $\text{CCN}$  are

a.  $sp^2$ ,  $180^\circ$ .

b.  $sp$ ,  $180^\circ$ .

c.  $sp^2$ ,  $120^\circ$ .

d.  $sp^3$ ,  $109^\circ$ .

47. Which of the following statements about an  $sp$  hybridized carbon is FALSE?

a. It is divalent.

b. It forms bonds that are linear.

c. It has two p orbitals.

d. It always forms triple bonds to carbon.

48. Which molecule has the largest dipole moment ?

a. HCl

b.  $\text{CCl}_4$

c.  $\text{H}_2\text{S}$

d.  $\text{CO}_2$

49. What are the hybridizations of carbons 1 and 2 respectively in the following structure?



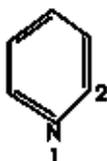
a.  $sp^3$  and  $sp^2$

b.  $sp^2$  and  $sp^3$

c.  $sp^3$  and  $sp$

d.  $sp^2$  and  $sp^2$

50. What are the hybridizations of atoms 1 and 2 respectively in the following structure?



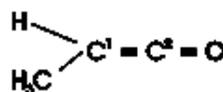
a.  $sp^3$  and  $sp^2$

b.  $sp^2$  and  $sp^3$

c.  $sp^3$  and  $sp$

d.  $sp^2$  and  $sp$

51. Identify the orbital hybridization at the two indicated carbons in the molecule below.



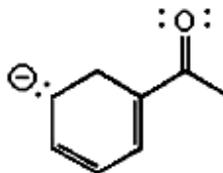
a. C1:  $sp$ ; C2:  $sp$

b. C1:  $sp^2$ ; C2:  $sp^2$

c. C1:  $sp$ ; C2:  $sp^2$

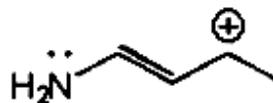
d. C1:  $sp^2$ ; C2:  $sp$

52. How many total resonance structures can be drawn for the following anion (include those without separation of charge)?



- a. 1  
 b. 2  
 c. 3  
 d. 4

53. How many resonance structures can be drawn for the following molecule?



- a. 1  
 b. 4  
 c. 3  
 d. 2

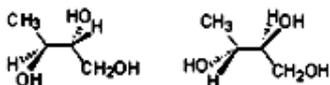
54. The correct geometry around oxygen in  $\text{CH}_3\text{OCH}_3$  is

a. linear.

b. bent.

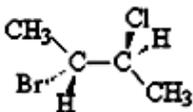
- c. tetrahedral.  
 d. trigonal planar

55. Determine the relationship between the two molecules shown.



- a. constitutional isomers  
 b. enantiomers  
 c. diastereomers  
 d. identical molecules

56. What is the correct name for this molecule ?



- a. (2*R*,3*R*)-2-bromo-3-chlorobutane  
 b. (2*S*,3*R*)-2-bromo-3-chlorobutane  
 c. (2*S*,3*S*)-2-bromo-3-chlorobutane  
 d. (2*R*,3*S*)-2-bromo-3-chlorobutane

57. What is the specific rotation  $20[\alpha]_D$  of the following molecule?



$$\alpha = 4.42^\circ$$

$$C = 0.1 \text{ g} \cdot \text{ml}^{-1}$$

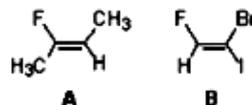
$$l = 10 \text{ cm}$$

- a. +4.42 degree  
 b. +0.442 degree  
 c. +44.2 degree  
 d. - 44.2 degree

58. Which of the following physical properties differ for each of a pair of enantiomers?

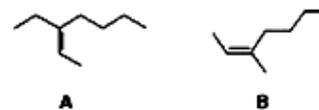
- a. solubility in ethanol  
 b. direction of rotation of plane-polarized light  
 c. boiling point and melting point  
 d. index of refraction

59. Determine the double bond stereochemistry (*E* or *Z*) for the following molecules.



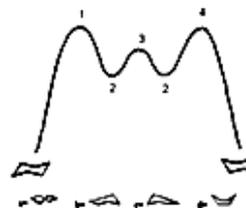
- a. A: *E*; B: *E*  
 b. A: *Z*; B: *Z*  
 c. A: *E*; B: *Z*  
 d. A: *Z*; B: *E*

60. Determine the double bond stereochemistry (*E* or *Z*) for the following molecules.



- a. A: *E*; B: *E*  
 b. A: *Z*; B: *Z*  
 c. A: *E*; B: *Z*  
 d. A: *Z*; B: *E*

61. Place the following structures properly on the (abbreviated) energy surface for cyclohexane ring reversal.



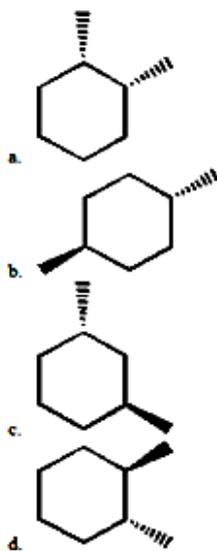
- a. 1 = b or c, 2 = a, 3 = d, 4 = b or c  
 b. 1 = d, 2 = b or c, 3 = d, 4 = a  
 c. 1 = d, 2 = b or c, 3 = a  
 d. 1 = b or c, 2 = d 3 = a, 4 = b or c

62. Which of the following cyclohexane conformations has the MOST energy (is the LEAST stable)?

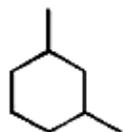
- a. chair  
 b. half-chair

- c. boat  
 d. twist-boat

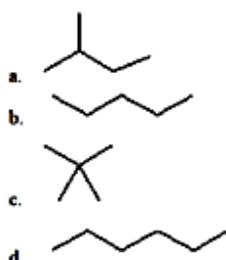
63. Which of the following molecules is *trans*-1, 2-dimethylcyclohexane ?



64. What is the IUPAC name of the following molecule ?



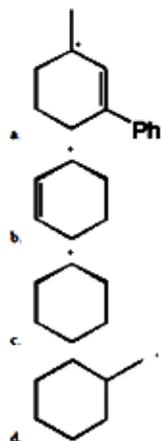
- a. 1,2-dimethylhexane  
 b. 2,4-dimethylcyclohexane  
 c. Dimethylcyclohexane  
 d. 1,3-dimethylcyclohexane
65. Which compound has the highest melting point ?
- a. decane  
 b. 2,2,3,3-tetramethylbutane  
 c. 2,2,3-trimethylpentane  
 d. 4-methylnonane
66. Which of the following alkanes will have the



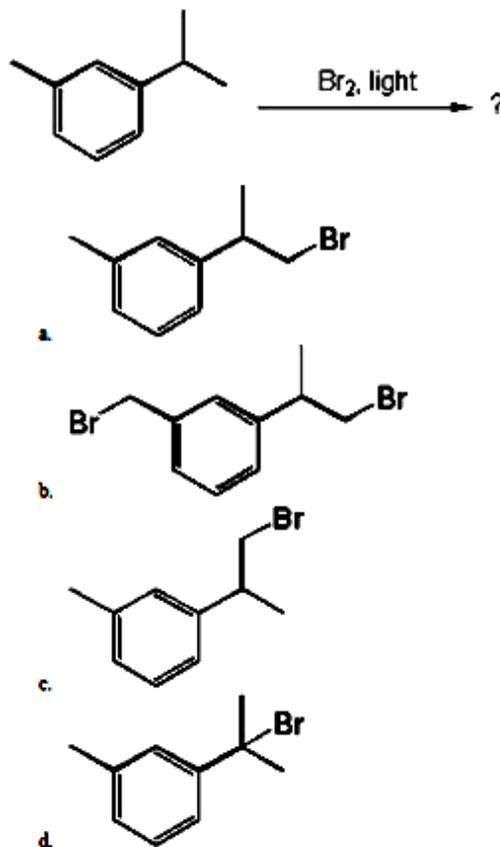
lowest boiling point ?

67. Which of the following cycloalkanes has the MOST strain energy?
- a. cyclobutane  
 b. cyclopentane  
 c. cyclohexane  
 d. cycloheptane

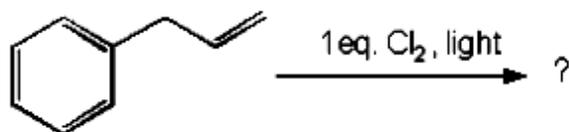
68. Which of the following is the most stable radical?



69. What is the major product of the following reaction ?

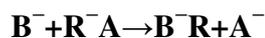


70. What is the major product of the following reaction ?



- a.
- b.
- c.
- d.

71. Which of the following occurs during the initiation stage of a radical mechanism?
- Nonradicals are formed from radicals.
  - Radicals are formed from other radicals.
  - Radicals are formed from nonradicals.
  - Nonradicals are formed from other nonradicals.
72. Which version of the radical halogenation of an alkane is MOST selective?
- fluorination
  - chlorination
  - bromination
  - iodination
73. To which of the following four types does this reaction belong



- Unimolecular electrophilic substitution
- Bimolecular electrophilic substitution
- Unimolecular nucleophilic substitution
- Bimolecular nucleophilic substitution

74. An alkyl halide may be converted into an alcohol by

- Elimination
- Addition
- Substitution
- Dehydrohalogenation

75. The above reaction proceeds through

- Nucleophilic substitution
- Electrophilic substitution
- Free radical substitution
- More than one of the above processes

76. Geometry of reaction intermediate in  $S_N1$  reaction is

- Tetrahedral
- Planar
- Triangular bipyramidal
- None of these

77. above reaction is

- $S_N1$
- $S_N2$
- $E_1$
- Both A and B

78. In electrophilic substitution reaction nitrobenzene is

- Meta-directing
- Ortho-directing
- Para-directing
- Not reactive and does not undergo any substitution

79. The most common type of reaction in aromatic compounds is

- Elimination reaction
- Addition reaction
- Electrophilic substitution reaction

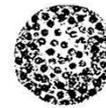
- (D) Rearrangement reaction
80. The function of  $\text{AlCl}_3$  in Friedel-Craft's reaction is
- To absorb  $\text{HCl}$
  - To absorb water
  - To produce nucleophile
  - To produce electrophile
81. Which of the following can't be used in Friedel-Craft's reactions
- $\text{FeCl}_3$
  - $\text{FeBr}_2$
  - $\text{AlCl}_3$
  - $\text{NaCl}$
82. The nitration of a compound is due to the
- $\text{NO}_2$
  - $\text{NO}_3$
  - $\text{NO}$
  - $\text{NO}^{+2}$
83. Dehydrohalogenation of an alkyl halide is a/an
- Nucleophilic substitution reaction
  - Elimination reaction
  - Both nucleophilic substitution and elimination reaction
  - Rearrangement
84. Addition of  $\text{HCl}$  to vinyl chloride gives 1, 1-dichloroethane because of
- Mesomeric effect of  $\text{Cl}$
  - Inductive effect of  $\text{Cl}$
  - Restricted rotation around double bond
  - None of these
85. Formation of ethylene from acetylene is an example of
- Elimination reaction
  - Substitution reaction
  - Addition reaction
  - Condensation reaction
86. Conversion of  $\text{CH}_4$  to  $\text{CH}_3\text{Cl}$  is an example of which of the following reaction
- Electrophilic substitution
  - Free radical addition
  - Nucleophilic substitution
  - Free radical substitution
87. Following reaction
- $$(\text{CH}_3)_3\text{CBr} + \text{H}_2\text{O} \rightarrow (\text{CH}_3)_3\text{COH} + \text{HBr}$$
- is an example of
- Elimination reaction
  - Free radical substitution
  - Nucleophilic substitution
  - Electrophilic substitution
88. Which is an electrophile
- $\text{BCl}_3$
  - $\text{CH}_3\text{OH}$
  - $\text{NH}_3$
  - $\text{AlCl}_4^-$
89. The electrophile in the nitration of benzene is
- $\text{NO}^{+2}$
  - $\text{NO}_2$
  - $\text{NO}^+$
  - $\text{NO}^{-2}$
90. The following compound will undergo electrophilic substitution more readily than benzene
- Nitrobenzene
  - Benzoic acid
  - Benzaldehyde
  - Phenol



**SECTION – C**  
**(BIOLOGY 90 QUESTION)**

91. Which one of the following growth regulators is known as 'stress hormone' ?  
 (A) Abscisic acid (B) Ethylene  
 (C) GA<sub>3</sub> (D) Indole acetic acid
92. Phototropic curvature is the result of uneven distribution of  
 (A) gibberelin (B) phytochrone  
 (C) Cytokinins (D) auxin
93. Coiling of garden pea tendrils around any support is an example of  
 (A) thigmotaxis (B) thigmonasty  
 (C) thigmotropism (D) thermotaxis
94. One of the commonly used plant growth hormone in tea plantation is  
 (A) ethylene (B) abscisic acid  
 (C) zeatin (D) indole-3-acetic acid
95. An enzyme that can stimulate germination of barley seeds is  
 (A) invertase (B) α-amylase  
 (C) lipase (D) protease
96. Treatment of seeds at low temperature under moist condition to break its dormancy is called  
 (A) stratification (B) searification  
 (C) vernalization (D) chelation
97. A large proportion of oxygen remains unused in the human blood even after its uptake by the body tissues this O<sub>2</sub>  
 (A) acts as a reserve during muscular exercise  
 (B) raise the pCO<sub>2</sub> of blood to 75 mm of Hg  
 (C) is enough to keep oxyhaemoglobin saturation at 96%  
 (D) helps in releasing more O<sub>2</sub> o the epithelial tissues
98. When CO<sub>2</sub> concentration in blood increases breathing becomes  
 (A) shallower and slow  
 (B) there is no effect on breathing  
 (C) slow and deep  
 (D) faster and deeper

99. The respiratory centres , which control inspiration and expiration , are located in  
 (A) diencephalon (B) medulla oblongata  
 (C) Cerebellum (D) spinal cord
100. The CO<sub>2</sub> content by volume , in the atmospheric air is about  
 (A) 3.34% (B) 4%  
 (C) 0.0314% (D) 0.34%
101. Which vertebrate organ receives only oxygental blood  
 (A) spleen (B) liver  
 (C) gill (D) lung
102. The figure shows a human blood cell. Identity it and give its charecteristics.



- | Blood cell       | Characteristics   |
|------------------|---|
| (A) Basophil     | Secretes serotonin, inflamntory response                  |
| (B) B-lymphocyte | Forms about 20% of blood cell involved in immune response |
| (C) Netrophil    | Most abundant blood cells, phagocytic                     |
| (D) Monocyte     | Life span of 3 days , products antibodies                 |
103. A certain road accident patient with unknown blood group needs immediate blood his blood.What was the blood group of the donor ?  
 (A) Blood group B (B) Blood group AB  
 (C) Blood group O (D) Blood group A
104. Which one of the following statements is correct regarding blood pressure ?  
 (A) 130/90 mm Hg is considered high and requires treatment  
 (B) 100/55 mm Hg is considered an ideal blood pressure  
 (C) 105/50 mm Hg makes one very active  
 (D) 190/110 mm Hg may harm vital organs like brain and kedney.

- 105.** The most active phagocytic white blood cells are  
 (A) eosinophils and lymphocytes  
 (B) neutrophils and monocytes  
 (C) neutrophils and eosinophils  
 (D) lymphocytes and macrophages
- 106.** Which is the principal cation in the plasma of the blood ?  
 (A) potassium (B) magnesium  
 (C) calcium (D) sodium
- 107.** The thickening of walls of arteries is called  
 (A) atherosclerosis (B) arthritis  
 (C) aneurysm (D) both(b) and (c)
- 108.** The correct route through which pulse-making impulse travels in the heart is  
 (A) SA node → Purkinje fibers → bundle of His → AV node → heart muscles  
 (B) SA node → AV node → bundle of His → Purkinje fibers → heart muscles  
 (C) AV node → bundle of His → SA node → Purkinje fibers → heart muscles  
 (D) AV node → SA node → Purkinje fibers → bundle of His → heart muscles
- 109.** The neurogenic heart is the characteristic feature of  
 (A) humans (B) arthropods  
 (C) rabbits (D) rats
- 110.** A condition of failure of kidney to form urine is called  
 (A) anuria (B) deamination  
 (C) urmia (D) none of these
- 111.** Glucose is taken back from glomerular filtrate through  
 (A) active transport (B) passive transport  
 (C) osmosis (D) diffusion
- 112.** Which one of the following pairs of chemical substances, is correctly categorized ?  
 (A) Calcitonin and thyroxine – thyroid hormones  
 (B) Pepsin and prolactin – two digestive enzymes secreted in stomach  
 (C) Troponin and myosin – complex proteins in striated muscles  
 (D) Secretin and rhodospin – polypeptide hormones
- 113.** Three of the following pairs of the human skeletal parts are correctly matched with their respective inclusive skeletal category and one pair is not matched. Identify the non-matching pair.
- | Pair of skeletal parts          | Category                |
|---------------------------------|-------------------------|
| (A) sternum and ribs            | - axial skeleton        |
| (B) clavicle and glenoid cavity | - pelvic girdle         |
| (C) humerus and ulna            | - appendicular skeleton |
| (D) malleus and stapes          | - ear ossicles          |
- 114.** An acromian process is characteristically found in the  
 (A) pelvic girdle of mammals  
 (B) pectoral girdle of mammals  
 (C) skull of frog  
 (D) sperm of mammals
- 115.** Which statement is correct for muscle contraction ?  
 (A) length of H-zone decreases  
 (B) length of A-band remains constant  
 (C) length of I-band increases  
 (D) length of two z-line increases
- 116.** The cervical vertebrae in human is  
 (A) same as in whale  
 (B) more than that of horse  
 (C) double than that of horse  
 (D) less than that in giraffe
- 117.** Long bones function in  
 (A) support  
 (B) support, erythrocyte and leucocyte synthesis  
 (C) support and erythrocyte synthesis  
 (D) erythrocyte formation
- 118.** The pineapple which under natural condition is difficult to blossom has been made to produce fruits throughout the year by application of  
 (A) NAA, 2, 4-D (B) Phenyl acetic acid  
 (C) Cytokinin (D) IAA, IBA
- 119.** An interesting modification of flower shape for insect pollination occurs in some orchids in which a male insect mistakes the pattern on the orchid flower for the female species and tries to copulate with it,



thereby pollinating the flower . This phenomenon is called

- (a) pseudopollination
- (b) pseudoparthenocarpy
- (c) mimicry
- (d) pseudocopulation

**120.** If an angiospermic male plant is diploid and female plant tetraploid, the ploidy level of endosperm will be

- (a) tetraploid (b) pentaploid (c) haploid (d) triploid

**121.** In an angiosperm, how many microspore mother cells are required to produce 100 pollen grains ?

- (a) 75 (b) 100 (c) 25 (d) 50

**122.** Number of meiotic divisions required to produce 200/400 seeds of pea would be

- (a) 200/400 (b) 400/800
- (c) 300/600 (d) 250/500

**123.** Embryo sac occurs in

- (a) embryo (b) axis part of embryo
- (c) ovule (d) endosperm

**124.** Cellular totipotency was demonstrated by

- (a) Theodore Schwann (b) A.V. Leeuwenhoek
- (c) F.C. Steward (d) Robert Hooke

**125.** Entry of pollen tube through micropyle is

- (a) chalazogamy (b) mesogamy

(c) progamy (d) pseudogamy

**126.** Leaf fall can be prevented with the help of

- (a) abscisic acid (b) auxins
- (c) florigen (d) cytokinins

**127.** Parthenogenesis is

- (a) development of embryo without fertilization
- (b) development of fruits without fertilization
- (c) development of fruit without hormones
- (d) development of embryo from egg without fertilization

**128.** Select the correct option describing gonadotropin activity in a normal pregnant female

- (a) High level of FSH and LH stimulates the thickening of endometrium
- (b) High level of FSH and LH facilitates implantation of embryo
- (c) High Level of hCG stimulates the synthesis of estrogen and progesterone
- (d) High Level of hCG stimulates the thickening of endometrium

**129.** In a normal pregnant woman, the amount of total gonadotropin activity was assessed. The result expected was

- (a) high level of circulating of FSH and LH in the uterus to stimulate implantation of the embryo
- (b) high level of circulating hCG to stimulate endometrial thickening



- (c) high level of FSH and LH in uterus to stimulate estrone and progesterone synthesis
- (d) none of these
- 130.** Secretion from which one of the following are rich in fructose, calcium and some enzymes?
- (a) male accessory glands
- (b) liver
- (c) pancreas
- (d) salivary glands
- 131.** Seminal plasma in human males is rich in
- (a) fructose and calcium
- (b) glucose and calcium
- (c) DNA and testosterone
- (d) ribose and potassium
- 132.** The first movements of the foetus and appearance of hair on its head are usually observed during which month of pregnancy (a) fourth month (b) fifth month (c) sixth month (d) third month
- 133.** Which of the following hormones can replace vernalisation ?
- (a) auxin (b) cytokinin (c) gibberellins (d) ethylene
- 134.** In the human female, menstruation can be deferred by the administration of
- (a) combination of FSH and LH
- (b) combination of estrogen and progesterone
- (c) FSH only
- (d) LH only
- 135.** If mammalian ovum fails to get fertilized, which one of the following is unlikely ?
- (a) corpus luteum will disintegrate
- (b) progesterone secretion rapidly declines
- (c) estrogen secretion further increases
- (d) primary follicle starts developing
- 136.** Fertilizin is a chemical substance produced from
- (a) polar bodies
- (b) middle piece of sperm
- (c) mature eggs
- (d) acrosome
- 137.** Extrusion of second polar body from egg nucleus occurs
- (a) after entry of sperm before completion of fertilization
- (b) after completion of fertilization
- (c) before entry of sperm
- (d) without any relation of sperm entry
- 138.** Acrosome reaction in sperm is triggered by
- (a) capacitation (b) release of lysin
- (c) influx of  $\text{Na}^+$  (d) release of fertilizin
- 139.** Meroblastic cleavage is a division which is



- (a) horizontal
- (b) partial/parietal
- (c) total
- (d) spiral
- 140.** Eye lens is formed from
- (a) ectoderm
- (b) mesoderm
- (c) endoderm
- (d) ectoderm and mesoderm
- 141.** During cleavage, what is true about cells ?
- (a) nucleocytoplasmic ratio remains unchanged
- (b) size does not increase
- (c) there is less consumption of oxygen
- (d) the division is like meiosis
- 142.** Middle piece of mammalian sperm possesses
- (a) mitochondria and centriole
- (b) mitochondria only
- (c) centriole only
- (d) nucleus and mitochondria
- 143.** How many sperm are formed from a secondary spermatocyte ?
- (a) 4 (b) 8 (c) 2 (d) 1
- 144.** Which of the following is a hormone releasing intra uterine device(IUD) ?
- (a) Multiload 375 (b) LNG-20
- (c) Cervical cap (d) Vault
- 145.** The test-tube baby programme employs which one of the following techniques ?
- (a) intra cytoplasmic sperm injection (ICSI)
- (b) intra uterine insemination(IUI)
- (c) gamete intra fallopian transfer(GIFT)
- (d) Zygote intra Fallopian transfer (ZIFT)
- 146.** The technique called Gamete Intra Fallopian Transfer(GIFT ) is recommended for those females
- (a) who cannot produce an ovum
- (b) who cannot retain the foetus inside uterus
- (c) whose cervical canal is too narrow to allow passage for the sperms
- (d) who cannot provide suitable environment for fertilization
- 147.** Cu ions released from copper-releasing intra uterine device(IUDs)
- (a) make uterus unsuitable for implantation
- (b) increase phagocytosis of sperms
- (c) suppress sperm motility
- (d) prevent ovulation



**148.** Consider the statement given below regarding contraception and answer as directed there after

- (1) medical termination of pregnancy(MTP) during first trimester is generally safe
- (2) generally chances of conception are nil until mother breast-feeds the infant upto two years
- (3) intrauterine devices like copper-T are effective contraceptives
- (4) contraceptive pills may be taken upto one week after coitus to prevent conception

Which two of the above statements are correct

- (a) 1,3 (b) 1,2 (c) 2,3 (d) 3,4

**149.** What are about true about the isolated small tribal populations ?

- (a) wrestlers who develop strong muscles in their life pass this character on to their progeny
- (b) there is no change in population size as they have a large gene pool
- (c) there is a decline in population as boys marry girls only from their own tribe
- (d) hereditary diseases like colour blindness do not spread in the isolated population

**150.** The formula for exponential population growth is

- (a)  $dN/dt=rN$  (b)  $dt/dN=rN$   
 (c)  $dN/rN=dt$  (d)  $rN/dN=dt$

**151.** In a population, untested reproductive capacity is called is

- (a) biotic potential (b) fertility rate

- (c) carrying capacity (d) birth rate

**152.** The present population of the world is about

- (a) 15 trillion (b) 6 billion  
 (c) 500 million (d) 100 million

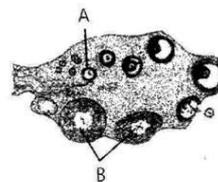
**153.** Fowl sex can be determine by examining cells from the amniotic fluid by looking for

- (a) chiasmata (b) kinetochores  
 (c) barr bodies (d) autosomes

**154.** Menstrual flow occurs due to lack of

- (a) oxytocin (b) vasopresin  
 (c) progesterone (d) FSH

**155.** The figure show a section of human ovary . select the option which gives the correct identification of either A or B with function / characteristic.



- (a) B-Corpus luteum – secrete progesterone  
 (b) A-Tertiary follicle- forms Graafian follicle  
 (c) B-Corpus luteum- Secretes estrogen  
 (d) A- primary oocytes – it is in the prophase-1 of the meiotic division

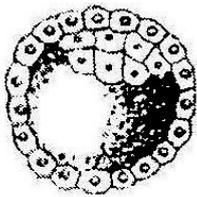
**156.** The foetal ejaculation reflex in human triggers the release of

- (a) oxytocin from foetal pituitary
- (b) human chorionic gonadotropin (hCG) from placenta
- (c) human placental lactogen (hPL) from placenta
- (d) oxytocin from maternal pituitary.

**157.** Which one of the following statement is false in respect of viability of mammalian sperm ?

- (a) sperm of viability for only up to 24 hours.
- (b) survival of sperm depends on the pH of the medium and is more active in alkaline medium
- (c) Viability of sperm is determined by its motility.
- (d) Sperm must be concentrated in a thick suspension.

**158.** Identify the human development stage shown below as well as the related right place of its occurrence in a normal pregnant woman, and select the right option from the two, together



**Developmental stage      site of occurrence**

- (a) Late morula - middle part of Fallopian tube
- (b) Blastula - end part of Fallopian tube
- (c) Blastocyst - uterine point of Fallopian tube

(d) 8-celled morula – starting point of fallopian tube

**159.** The secretory phase in the human menstrual cycle is also called

- (a) luteal phase and lasts for about 6 days
- (b) follicular phase and lasts for about 6 days
- (c) luteal phase and lasts for about 13 days
- (d) Follicular phase and lasts for about 13 days

**160.** If for male sex reason, the vasa efferentia in the human reproductive system get blocked, the gametes will not be transported from

- (a) testis to epididymis
- (b) epididymis to vas deferens
- (c) ovary to uterus
- (d) vagina to uterus

**161.** The figure given below depicts a diagrammatic sectional view of the human female reproductive system. Which set of three parts out I-VI have been correctly identified ?



- (a) (II) endometrium, (III) infundibulum, (IV) fimbriae
- (b) (III) infundibulum, (IV) fimbriae, (V) cervix
- (c) (IV) oviducal funnel, (V) uterus, (VI) cervix

- (d) (I) perimetrium , (II) myometrium , (III) Fallopian tube
- 162.** What happens during fertilizing in human after many sperms reach close to the ovum ?
- (a) secretions of acrosome helps one sperm enter cytoplasm of ovum through zona pellucida
- (b) all sperm except the one nearest to the ovum lose their tails
- (c) cells of corona radiata trap all the sperms except one
- (d) only two sperms nearest the ovum penetrate zona pellucida
- 163.** Vasa efferentia are the ductiles leading from
- (a) testicular lobules to rete testis
- (b) rete tissue to vas deferens
- (c) vas deferens to epididymis
- (d) epididymis to urethra
- 164.** The second maturation division of the mammalian ovum occurs
- (a) shortly after ovulation before the ovum makes entry into the Fallopian tube
- (b) until after the ovum has been penetrated by a sperm
- (c) until the muscles of the sperm has with that of the ovum
- (d) in the Graffian follicle following the first maturation division
- 165.** The part of Fallopian tube closest to the ovary is
- (a) estrogen from placenta
- (b) oxytocin from maternal pituitary
- (c) oxytocin from foetal pituitary
- (d) relaxin from placenta
- 166.** Which one of the following is the correct matching of the events occurring during menstrual cycle ?
- (a) Proliferative phase : rapid regeneration of myometrium and maturation of Graffian follicle
- (b) Secretory phase : development of corpus luteum and increased secretion of progesterone
- (c) menstruation : breakdown of myometrium and ovum not fertilised
- (d) Ovulation : LH and FSH attain peak level and sharp fall in the secretion of progesterone
- 167.** A change in the amount of yolk and its distribution in the egg will affect
- (a) pattern of cleavage
- (b) number of blastomers produced
- (c) fertilization
- (d) formation of zygote
- 168.** In humans, at the end of the first meiotic division the male germ cell differentiate into the
- (a) spermatids
- (b) spermatozoa



- (c) primary spermatocytes
- (d) none of these
- 169.** Which one of the following statements is **incorrect** ?
- (a) at menopause in the female , there is especially abrupt increase in gonadotropic hormones
- (b) the beginning of the cycle of menstruation is called menarche
- (c) during normal menstruation about 40 ml blood is lost
- (d) secondary spermatocytes
- 170.** Which part of ovary in mammals act as an endocrine gland after ovulation ?
- (a) stroma (b) germinal epithelium
- (c) vitelline membrane (d) graafian follicle
- 171.** Sertoli cells are regulated by the pituitary hormone known as
- (a) LH (b) FSH (c) GH (d) prolactin
- 172.** Which of the following hormones is not a secretion product of human placenta ?
- (a) human chorionic gonadotropin
- (b) prolactin
- (c) estrogen
- (d) progesterone
- 173.** What is true for cleavage ?
- (a) size of embryo increases
- (b) size of cells decreases
- (c) size of cells increases
- (d) size of embryo decreases
- 174.** Blastopore is the pore of
- (a) achenelon (b) blastocoel
- (c) coelom (d) alimentary canal
- 175.** The middle piece of the sperm contains
- (a) proteins (b) mitochondria
- (c) centriole (d) nucleus
- 176.** The extra embryonic membranes of the mammalian embryo are derived from
- (a) trophoblast (b) innercell mass
- (c) formative cells (d) follicle cells
- 177.** Artificial intination means
- (a) artificial introduction of sperm of a healthy donor into the vagina
- (b) introduction of sperm of a healthy donor directly the ovary
- (c) transfer of sperms of a healthy donor t a test tube containing ova



(d) transfer of sperm of husband to a test tube containing ova.

**178.** Assisted reproductive technology , IVF involves transfer of

(a) ovum into the fallopian tube

(b) zygote into the fallopian tube

(c) Zygote into the uterus

(d) embryo with 16 blastomers into the fallopian tube

**179.** Fowtal sex can be determine by examining cells from the amniotic fluid by looking for

(a) chiasmata (b) kinetochore

(c) barr bodies (d) autosomes

**180.** The present population of the word is about

(a) 15 trillion (b) 6 billion

(c) 500 million (d) 100 million



**Section A Physics Answer Key**

1	(4)	10	(4)	19	(3)	28	(1)	37	(2)
2	(3)	11	(3)	20	(3)	29	(2)	38	(3)
3	(3)	12	(1)	21	(3)	30	(1)	39	(4)
4	(4)	13	(2)	22	(2)	31	(3)	40	(C)
5	(2)	14	(3)	23	(2)	32	(4)	41	(B)
6	(2)	15	(4)	24	(4)	33	(2)	42	(A)
7	(2)	16	(2)	25	(3)	34	(1)	43	(D)
8	(4)	17	(2)	26	(2)	35	(3)	44	(B)
9	(2)	18	(1)	27		36	(2)	45	(A)

**Section B Chemistry Answer Key**

46	(b)	55	(b)	64	(d)	73	()	82	()
47	(d)	56	(d)	65	(b)	74	()	83	()
48	(a)	57	(c)	66	(c)	75	()	84	()
49	(a)	58	(b)	67	(a)	76	()	85	()
50	(d)	59	(d)	68	(a)	77	()	86	()
51	(d)	60	(b)	69	(d)	78	()	87	()
52	(d)	61	(a)	70	(a)	79	()	88	()
53	(c)	62	(b)	71	(c)	80	()	89	()
54	(b)	63	(d)	72	()	81	()	90	()

**Section C Biology Answer Key**

91	(a)	112	(c)	133	(a)	154	(c)	175	(b)
92	(d)	113	(b)	134	(b)	155	(a)	176	(a)
93	(c)	114	(b)	135	(c)	156	(d)	177	(a)
94	(d)	115	(a,b)	136	(c)	157	(a)	178	(b)
95	(b)	116	(a)	137	(a)	158	(c)	179	(c)
96	(c)	117	(b)	138	(c)	159	(c)	180	(b)
97	(a)	118	(a)	139	(b)	160	(a)		
98	(d)	119	(d)	140	(a)	161	(b)		
99	(b)	120	(b)	141	(b)	162	(a)		
100	(c)	121	(c)	142	(a)	163	(b)		
101	(a)	122	(d)	143	(b)	164	(b)		
102	(a)	123	(c)	144	(b)	165	(b)		
103	(c)	124	(c)	145	(d)	166	(b)		
104	(d)	125	(c)	146	(a)	167	(a)		
105	(b)	126	(d)	147	(c)	168	(d)		
106	(d)	127	(d)	148	(a)	169	(d)		
107	(a)	128	(c)	149	(c)	170	(d)		
108	(b)	129	(d)	150	(a)	171	(b)		
109	(b)	130	(a)	151	(a)	172	(d)		
110	(a)	131	(a)	152	(b)	173	(b)		
111	(a)	132	(b)	153	(c)	174	(a)		



