NEET TEST PAPER NO – 2-2

Date…… **Time: 3 Hours** **Maximum marks : 720**

Important Instructions

1. **The test is of 3 hours duration and Test Booklet contains180 multiple choice questions (Four options with a single correct answer).**
2. **Each question carries 4 marks. For each correct response, the candidate will get 4 marks. For every wrong response 1 mark shall be deducted from the total score. Unanswered / unattempt questions will be given no marks. The maximum marks are 720.**
3. **Use Blue / Black Ball point Pen only for writing particulars on this page/marking responses.**
4. **Rough work is to be done in the space provided for this purpose in the Test Booklet only.**
5. **On completion of the test, the candidate must handover the Answer Sheet to the Invigilator before leaving the Room / Hall. The candidates are allowed to take away this Test Booklet with them.**
6. **The candidates 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. Use of whiste fluid for correction is NOT permissible on the Answer Sheet.**
7. **Each candidate must show on demand his/her Admission Card to the Invigilator.**
8. **No candidate, without special permission of the Superintendent or Invigilator, would leave his/her seat.**
9. **Use of Electronic/Manual Calculator is prohibited.**
10. **The candidates are governed by all Rules and Regulations of the examination with regard to their conduct in the Examination Hall. All cases of unfair means will be dealt with as per Rules and Regulations of this examination.**
11. **No part of the Test Booklet and Answer Sheet shall be detached under any circumstances.**
12. **The candidates will write the Correct Test Booklet Code as given in the Test Booklet / Answer Sheet in the Attendance Sheet.**

Name of Candidate:…….

Roll No…….....

1. ***n*** **small drops of the same size are charged to** ***V*** **volt each. If they coalesce to form a single large drop, then its potential**

(a) (V / n) (b) Vn

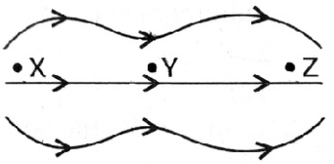
(c) $Vn^{1/3}$ (d) $Vn^{2/3}$

2. **A positively charged ball hangs from a silk thread. We put a positive test charge** q_0 **at a point and measure** F / q_0**; then it can be predicated that the electric field strength** E**:**

(a) (F / q_0) (b) (F / q_0)

(c) (F / q_0) (d) cannot be estimated

3. **In this figure, electric field lines in a certain region are shown. The figure suggests that:**



(a) $E_x \quad E_y \quad E_z$ (b) $E_x \quad E_y \quad E_z$

(c) $E_x \quad E_y \quad E_z$ (d) $E_x \quad E_z \quad E_y$

4. **A positive charge is moved from a low potential point (*A*) to a high potential point (*B*). Then the electric potential energy.**

(a) increases

(b) decreases

(c) will remain the same

(d) nothing definite can be predicted

5. **A semi circular are of radius** ***a*** **is charged uniformly and the charge per unit length is . The electric field at the centre is:**

(a) $\frac{}{2 \quad _0 a}$ (b) $\frac{}{2 \quad _0 a^2}$

(c) $\frac{}{4 \quad _0 a}$ (d) $\frac{}{2 \quad _0 a}$

6. **A charge** ***q*** **is placed at the mid-point of the line joining two equal charges** ***Q*****. The system of three charges will be in equilibrium when** ***q*** **has the value:**

(a) $Q / 4$ (b) $Q / 2$

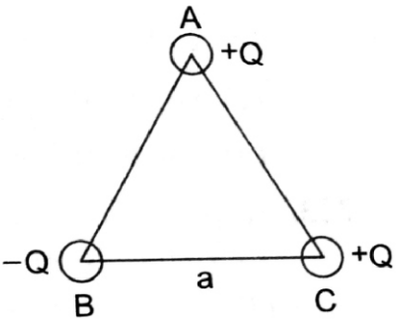
(c) $Q / 4$ (d) $Q / 2$

7. **A hollow metal sphere of radius 5 cm is charged such that the potential on its surface is 10 volt. The potential at the centre of the sphere will be:**

(a) zero (b) 5 volt

(c) 10 volt (d) 0.2 volt

8. **Three charges are placed at the vertices of an equilateral triangle of side** ***a*** **as shown in the figure. The force experienced by the charge placed at the vertex** ***A*** **in a direction normal to** ***BC*** **is:**



(a) $\frac{Q^2}{4 \quad _0 a^2}$ (b) $\frac{Q^2}{2 \quad _0 a^2}$

(c) $Q^2(4 \quad _0 a^2)$ (d) zero

9. **What is the flux through a cube of side** ***a*** **if a point charge** ***q*** **is at one of its corner?**

(a) $\frac{q}{_0}$ (b) $\frac{q}{2 \quad _0} 6a^2$ (c) $\frac{2q}{_0}$ (d) $\frac{q}{_0}$

10. **Two point charges** $8q$ **and** $2q$ **are located at** $x \quad 0$ **and** $x \quad L$ **respectively. The location of a point on the x-axis at which net electric field due to these two point charges is zero, is:**

(a) $8L$ (b) $4L$

(c) $2L$ (d) $L / 4$

11. **Which of the following is not the property of equipotential surfaces?**

(a) They do not cross each other.

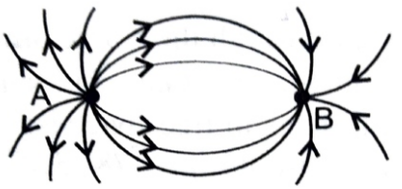
(b) They are concentric spheres for uniform electric fields.

(c) Rate of change of potential with distance on them is zero.

(d) They can be imaginary spheres.

12. **Two parallel large thin metal sheets have equal surface charge densities (26.4 10 ^{12} c / m^2) of opposite signs. The electric field between these plates is:**
(a) 1.5 N/C
(b) 1.5 10 ^{10} N/C
(c) 3 N/C
(d) 3 10 ^{10} N/C

13. **The spatial distribution of the electric field due to two charges (*A* and *B*) is shown in figure. Which one of the following statements is correct?**



(a) *A* is is ve and *B* is ve and *A* *B*
(b) *A* is is ve and *B* is ve and *A* *B*
(c) Both are ve but *A* *B*
(d) Both are ve but *A* *B*

14. **A charge *q* is at a distance *L*/2 above a square of side *L*. Then, what is the flux linked with the surface?**
(a) $\frac{q}{4 \quad 0}$ (b) $\frac{2q}{3 \quad 0}$
(c) $\frac{q}{6 \quad 0}$ (d) $\frac{6q}{0}$

15. **Two similar charges having masses *m* and 2*m* are placed in an electric field. The ratio of their kinetic energy is:**
(a) 4 : 1 (b) 1 : 1
(c) 2 : 1 (d) 1 : 2

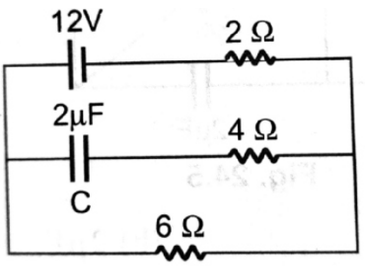
16. **Two positive point charges of 12 and 5 microcoulombs, are placed 10 cm apart in air. The work needed to bring them 4 cm closer is:**
(a) 2.4 J (b) 3.6 J
(c) 4.8 J (d) 6.0 J

17. **Four point charges *Q*, *q*, 2*q* and 2*Q* are placed, one at each corner of the square. The relation between *Q* and *q* for which potential at the centre of the square is zero, is:**
(a) *Q* *q* (b) *Q* $\frac{1}{q}$
(c) *Q* *q* (d) *Q* $\frac{1}{q}$

18. **A parallel plate capacitor is made by stacking *n* equally spaced plates connected alternately. If the capacitance between any two plats is *C*, then the resulting capacitance is:**
(a) *C* (b) *nC*
(c) (*n* 1)*C* (d) (*n* 1)*C*

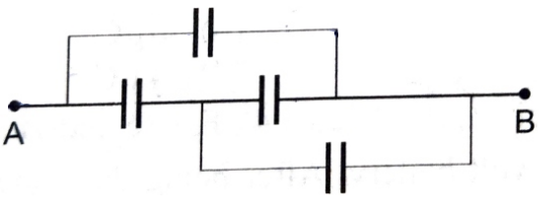
19. **Three capacitors of capacitances 12 F each are available. The minimum and maximu capacitances which may be obtained from these are:**
(a) 12 F, 36 F (b) 4 F, 12 F
(c) 4 F, 36 F (d) 0 F, F

20. **Find the charge on the capacitor *C* in the given circuit:**



(a) 12 C (b) 14 C (c) 20 C (d) 18 C

21. **In the circuit shown in the figure, each capacitor has a capacity of 3 F. The equivalent capacity between *A* and *B* is:**

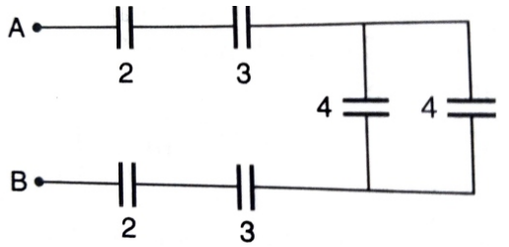


(a) (3 / 4) C (b) 6 C
(c) 3 C (d) 5 C

22. Three capacitors of 2 F, 3 F and 6 F, are joined in series and the combination is charged by means of a 24 volt battery. The potential differece between the plates of the 6 F capacitor is:

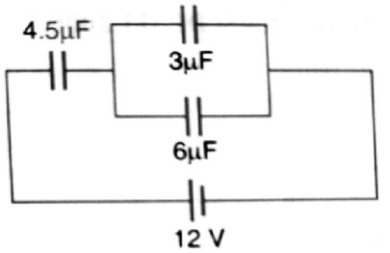
(a) 4 volt (b) 6 volt (c) 8 volt (d) 10 volt

23. The effective capacity between *A* and *B* in the figure given is: (in F)



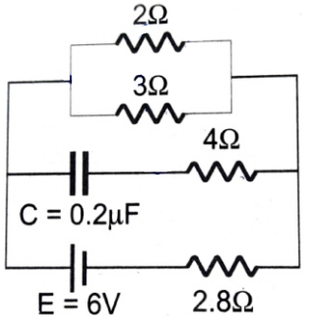
(a) $\frac{43}{24}$ (b) $\frac{24}{43}$ (c) $\frac{43}{12}$ (d) $\frac{12}{43}$

24. In the circuit shown in the figure, the potential difference across the 4.5 F capacitor:



(a) 8 volt (b) 6 volt (c) 4 volt (d) $\frac{8}{3}$ volt

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



(a) 0.6 A (b) 0.9 A (c) 1.2 A (d) 1.5 A

26. The maximum current that flows in the fuse wire, before it blows out, varies with the radius *r* as:

(a) $r^{3/2}$ (b) r

(c) $r^{2/3}$ (d) $r^{1/2}$

27. The masses of three wires of copper are in the ratio of 1 : 3 : 5 and the their length are in the ratio 5 : 3 : 1. The ratio of their electrical resistances is:

(a) 1 : 3 : 5 (b) 5 : 3 : 1

(c) 1 : 5 : 125 (d) 125 : 15 : 1

28. Kirchhoff's first law is based on the law of conservation of:

(a) charge

(b) energy

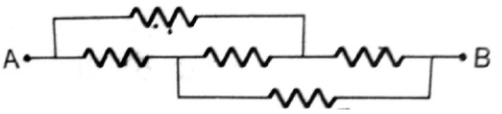
(c) momentum

(d) sum of mass and energy

29. The wire of resistance *R* is stretched till its length is double of the original wire. Then, the resistance of the stretched wire is:

(a) $2R$ (b) $4R$ (c) $8R$ (d) $16R$

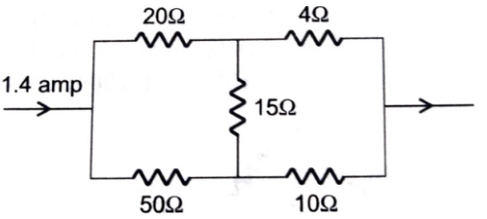
30. Five equal resistors, each equal to *R*, are connected as shown in the following figure; then the equivalent resistance between points *A* and *B* is:



(a) R (b) $5R$

(c) $R/5$ (d) $2R/3$

31. In the following figure the current through 4 ohm resistor is:



(a) 1.4 amp (b) 0.4 amp

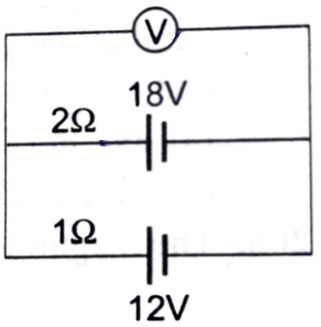
(c) 1.0 amp (d) 0.7 amp

32. Force a cell the terminal potential difference is 2.2 V when the circuit is open and reduces to 1.8 V when the cell is connected to a resistance R 5 . The internal resistance of the cell (r) is:

(a) $\frac{10}{9}$ (b) $\frac{9}{10}$

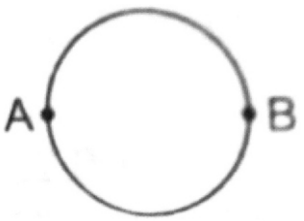
(c) $\frac{11}{9}$ (d) $\frac{5}{9}$

33. Two batteries, one of emf 18 volt and internal resistance 2 and the other of emf 12 volt and internal resitance 1 , are connected as shown in the adjoining figure. The voltmeter V will record a reading of:



(a) 30 volt
(b) 18 volt
(c) 15 volt
(d) 14 volt

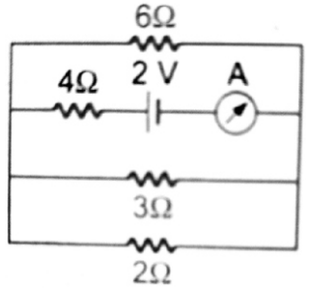
34. A wire of resistance 12 ohm per meter is bent to form a complete circle of radius 10 cm. The resistance between its two diametrically opposite points. A and B as shown in the figure is:



(a) 3 (b) 6

(c) 6 (d) 0.6

35. The reading of the ammeter in the adjoining figure will be:



(a) 0.8 A (b) 0.6 A

(c) 0.4 A (d) 0.2 A

36. A coil of one turn is made of a wire of certain length and then from the same length a coil of two turns is made. If the same current is passed in both the cases, then the ratio of the magnetic induction at their centres will be:

(a) 2 : 1 (b) 1 : 4

(c) 4 : 1 (d) 1 : 2

37. A straight thin conductor is bent as shown in the figure. It carries a current I ampere. The radius of the circular are is r metre. Then, the magnetic induction at the centre of semicircular are is:

(a) zero (b)

(c) $\frac{0}{4}\ \frac{I}{r}$ tesla (d) $\frac{0}{4}\ \frac{I}{r}$ tesla

38. A proton moving with a velocity 3 10^5 m/s entres in a magnetic field of 0.3 tesla at an angle of 30 with the field. The radius of curvature of its path will be:

(e/m for proton 10^8 coul/kg)

(a) 2 cm
(b) 0.5 cm
(c) 0.02 cm
(d) 1.25 cm

39. A proton and an -particle, moving with the same velocity, enter into a uniform magnetic field, acting normal to the plane of their motion. The ratio of the radii of the circular paths described by the proton and -particle is:

(a) 1 : 2 (b) 1 : 4
(c) 1 : 16 (d) 4 : 1

40. The magnetic field B_0 due to a current carrying circular loop of radius 12 cm at its centre is 0.50 10 ^{4} T. The magnetic field due to this loop at a point on the axis at a distance of 5 cm from the centre is:

(a) 3.5 10 ^{9} T
(b) 5.3 10 ^{9} T
(c) 9.3 10 ^{5} T
(d) 3.9 10 ^{5} T

41. Energy associated with a moving charge is due to a:

(a) electric field
(b) magnetic field
(c) both electric field and magnetic field
(d) none of the above

42. A wire of length 2 m carrying a current of 1 A is bent to form a circle. The magnetic of the coil is:

(a) 2 Am ^{2}
(b) $\frac{1}{-}$ Am ^{2}
(c) Am ^{2}
(d) $\frac{2}{-}$ Am ^{2}

43. An infinitely long straight wire contains a uniformly continuous current of 10A. The radius of the wire is 4 10 ^{2} m. The magnetic field at 2 10 ^{2} m from the centre of the wire will be:

(a) 0 (b) 2.5 10 ^{5} T
(c) 5.0 10 ^{5} T (d) none of these

44. An electron is travelling with velocity $\vec{v}$ 3$\hat{i}$ 5$\hat{j}$ m/s in a magnetic field $\vec{B}$ 6$\hat{i}$ 4$\hat{j}$ tesla. What is the magnitude and direction of the force $\vec{F}$ acting on the electron?

(a) 18e N along ve z-axis
(b) 18e N along ve z-axis
(c) 36e N along ve z-axis
(d) 54e N along ve z-axis

45. If the radius of a coil is halved and the number of turns doubled, then the magnetic field at the centre of the coil, for the same current will:

(a) get doubled
(b) get halved
(c) become 4 times
(d) remain unchanged

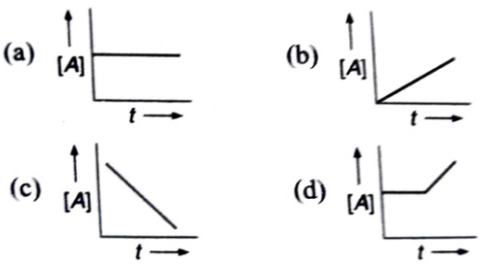
46. In a reaction, the rate expression is, rate $K[A][B]^{2/3}[C]^{0}$, the order of reaction is:

(a) 1 (b) 2
(c) 5/3 (d) zero

47. The activation energy of a reaction is zero. The rate constant of reaction:

(a) increases with increase of temperature
(b) decrease with decrease of temperature
(c) decrease with increase of temperature
(d) none of the above

48. Which curve represents zero order reaction?



49. In Arrhenius equation K $Ae^{-E_a/RT}$, the eqantity $e^{-E_a/RT}$ is referred as:

(a) Boltzmann factor (b) frequency factor
(c) activation factor (d) none of these

50. The hydrolysis of ethyl acetate,

$CH_3COOC_2H_5 \quad H_2O \xrightarrow{H} CH_3COOH \quad C_2H_5OH$ **is:**

(a) first order (b) second order
(c) third order (d) zero order

51. The rate law of the reaction,

$A \quad 2B \quad$ **Product.**

Product is given by $\frac{d[P]}{dt} \quad K[A]^2 \ [B]$**. If** A **is taken in large excess, the order of the reaction will be:**

(a) zero (b) 1
(c) 2 (d) 3

52. The unit of rate constant for the first and zero order reaction is:

(a) $s^{-1}, M^{1}s^{-1}$ (b) s^{-1}, M^{-2}
(c) $M^{-1}s^{-1}, s^{-1}$ (d) M^{-2}, s^{-1}

53. For a reaction $\frac{1}{2} \ A \quad 2B$**, rate of disappearance of 'A' is related to the rate of appearance of 'B' by the expression:**

(a) $\frac{d[A]}{dt} \quad 4\frac{d[B]}{dt}$ (b) $\frac{d[A]}{dt} \quad \frac{1}{2}\frac{d[B]}{dt}$
(c) $\frac{d[A]}{dt} \quad \frac{1}{4}\frac{d[B]}{dt}$ (d) $\frac{d[A]}{dt} \quad \frac{d[B]}{dt}$

54. Which rate expression suggests an over all order of 0.5 for the reaction involving substances X, Y, Z**?**

(a) Rate $K[X][Y][Z]$
(b) Rate $K[X]^{0.5}[Y]^{0.5}[Z]^{0.5}$
(c) Rate $K[X]^{1.5}[Y]^{-1}[Z]^{0}$
(d) Rate $K[X][Y]^{0} / [Z]^{2}$

55. The rate of elementary reaction, $A \quad B$**, increases by 100 times when the concentration of** A **is increased ten folds. The order of the reaction with respect to** A **is:**

(a) 1 (b) 2
(c) 10 (d) 100

56. For the reaction $N_2 \quad 3H_2 \quad 2NH_3$**, the rate** $\frac{d[NH_3]}{dt} \quad 2 \quad 10^{-4} M s^{-1}$**. Therefore, the rate** $\frac{d[N_2]}{dt}$ **is given is:**

(a) $10^{-4} M s^{-1}$ (b) $10^{4} M s^{-1}$
(c) $10^{-2} M s^{-1}$ (d) $10^{-4} s M^{-1}$

57. For a first order reaction $A \quad$ **Products, the rate of reaction at** $[A] \quad 0.2M$ **is** $1.0 \quad 10^{-2}$ **mol litre** $^{-1}$ **min** $^{-1}$**. The half life period for the reaction is:**

(a) 832 sec (b) 440 sec
(c) 416 sec (d) 14 sec

58. The rate constant for the reaction $2N_2O_5 \quad 4NO_2 \quad O_2$ **is** $3.0 \quad 10^{-5}$ **sec** $^{-1}$**, if the rate is** $2.40 \quad 10^{-5}$ **mol litre** $^{-1}$ **sec** $^{-1}$**, then the concentration of** N_2O_5 **(mol litre** $^{-1}$**) is:**

(a) 1.4 (b) 1.2
(c) 0.04 (d) 0.8

59. The rate of a chemical reaction doubles for every 10 C rise of temperature. If the temperature is raised by 50 C, the rate of the reaction increases by about:

(a) 10 times
(b) 24 times
(c) 32 times
(d) 64 times

60. The Arrhenius equation expresssing the effect of temperature on the rate constant of reaction is:

(a) $K \quad \frac{E_a}{RT}$ (b) $K \quad Ae^{-E_a/RT}$
(c) $K \quad \log_e \frac{E_a}{RT}$ (d) $K \quad e^{-E_a/RT}$

61. Rate constant of a chemical reaction can be kept constant by:

(a) stirring the compounds
(b) keeping the temperature constant
(c) both (a) and (b)
(d) none of the above

62. For a first order reaction, the half-life period is independent of:
(a) first power of final concentration
(b) cube root of initial concentration
(c) initial concentration
(d) square root of final concentration

63. Activation energy of a chemical reaction can be determined by:
(a) evaluating rate constants at two differnet temperatures
(b) evaluating velocities of reaction at two different temperatures
(c) evaluating rate constant at standard temperatures
(d) changing concentration of reactants

64. Considr the reaction

$$N_2(g) \quad 3H_2(g) \qquad 2NH_3(g)$$

The equality relationship between $\frac{d[NH_3]}{dt}$ and $\frac{d[H_2]}{dt}$ is:

(a) $\frac{d[NH_3]}{dt} \quad \frac{3}{2}\frac{d[H_2]}{dt}$
(b) $\frac{d[NH_3]}{dt} \quad \frac{d[H_2]}{dt}$
(c) $\frac{d[NH_3]}{dt} \quad \frac{1}{3}\frac{d[H_2]}{dt}$
(d) $\frac{d[NH_3]}{dt} \quad \frac{2}{3}\frac{d[H_2]}{dt}$

65. The rate of reaction between two reactants *A* and *B* decreases by a factor 4 if the concentration of reactnat *B* is doubled. The order of this reaction with respect to *B* is:
(a) 1 (b) 2
(c) 2 (d) 1

66. If 60% of a first order reaction was completed in 60 minute, 50% of the same reaction would be completed in approximately:
(a) 45 minute (b) 60 minute
(c) 40 minute (d) 50 minute

67. The rate constant of a first order reaction is 3 10 ^{6} sec ^{1}. If initial concentration is 0.10 *M*, the initial rate is (*M* s ^{1}):
(a) 3 10 ^{6} (b) 3 10 ^{5}
(c) 3 10 ^{8} (d) 3 10 ^{7}

68. Ther order for the reaction, H_2 Cl_2 $\xrightarrow{h\nu}$ 2HCl over water is:
(a) 0 (b) 1
(c) 2 (d) 3

69. Half life period of a first order reaction is 1386 seconds. The specific rate constant of the reaction is:
(a) 5.0 10 ^{2} s ^{1} (b) 5.0 10 ^{3} s ^{1}
(c) 0.5 10 ^{2} s ^{1} (d) 0.5 10 ^{3} s ^{1}

70. In a reaction, *A* *B* Product, rate is doubled when the concentration of *B* is doubled, and rate increases by a factor of 8 when the concentrations of both the reactants (*A* and *B*) are doubled, rate law for the reaction can be written as:
(a) Rate $k[A][B]$ (b) Rate $k[A]^2[B]$
(c) Rate $k[A][B]^2$ (d) Rate $k[A]^2[B]^2$

71. Dyeing of fibre involves the process of:
(a) adsorption (b) absorption
(c) sorption (d) all of these

72. Hydrolysis of cane sugar is catalysed by:
(a) H (b) mineral acids
(c) enzymes (d) all of these

73. Protons accelerate the hydrolysis of esters. This is an example of:
(a) a heterogeneous catalysis
(b) an acid-base catalysis
(c) a promoter
(d) a negative catalyst

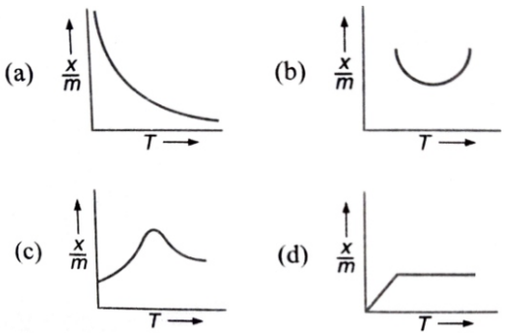
74. The process of froth floatation and chromatography are based on:
(a) emulsification (b) adsorption
(c) absorption (d) either of them

75. A substance which promotes the activity of a catalyst is known is:
(a) initiator
(b) catalyst
(c) promoter
(d) auto-catalyst

76. Which gas is adsorbed strongly by charcoal?
(a) CO (b) N_2
(c) H_2 (d) NH_3

77. Which forms multi molecular layers during adsorption?
(a) Physical adsorption
(b) van der Waal's adsorption
(c) Freundlich adsorption
(d) All of the above

78. Which plot is the adsorption isobar for chemisorption, where X is the amount of gas adsorbed on mass m (at constant pressure) at temperature T.



79. Hydrolysis of maltose ($C_{12}H_{22}O_{11}$) by maltase gives:
(a) glucose (b) fructose
(c) both (a) and (b) (d) none of these

80. Which is used in the Haber's process for the manufacture of NH_3?
(a) Al_2O_3 (b) Fe Mo
(c) CuO (d) Pt

81. The efficiency of an enzyme in catalysing a reaction is due to its capacity:
(a) to form an enzyme-substrate complex
(b) to decrease the bond energies of the substrate molecule
(c) to change the shape of the substrate molecule
(d) none of the above

82. Which is not correct for heterogeneous catalysis?
(a) The catalyst decreases the energy of activation
(b) The surface of catalyst plays an important role
(c) The catalyst actually forms a compound with reactants
(d) There is no change in the energy of activation

83. For adsorption of gas on solid surface, the plots of log x/m *vs* log P is linear with a slope equal to:
(a) K (b) $\log K$
(c) $1/nK$ (d) $1/n$ (n being integer)

84. Which type of metals form effective catalysts?
(a) Alkali metals (b) Transition metals
(c) Alkaline earth metals (d) Radioactive metals

85. If x is amount of adsorbate and m is amount of adsorbent, which of the following relations is related to adsorption process?
(a) $\frac{x}{m}$ P T
(b) x/m $f\ P^{\frac{1}{n}}$ at constant T
(c) x/m $f\ T^{\frac{1}{n}}$ at constant P
(d) P $f(T)$ at constant (x/m)

86. Efficiency of a catalyst depends on its:
(a) particle size (b) solubility
(c) molecular weight (d) none of these

87. Which of the following is used to provide smoke screens:
(a) Calcium phosphide (b) Zinc sulphate
(c) Sodium carbonate (d) Zinc phosphide

88. Catalyst:
(a) lowers activation energy
(b) increase activation energy
(c) may increase or may decrease activation energy
(d) brings out equlilibrium

89. In Freundlich adsorption isotherm, the value of $1/n$ is:
(a) 1 in case of physical adsorption
(b) 1 in case of chemisorption
(c) Between 0 and 1 in all cases
(d) Between 2 and 4 in all cases

90. The catalytic of transition metals and their compounds is ascribed mainly to:
(a) their magnetic behaviour
(b) their unfilled *d*-orbitals
(c) their ability of adopt variable oxiation states
(d) their chemical reactivity

91. How many contrasting characters were selected by Mendel?
(a) One (b) Two
(c) Three (d) Seven

92. An allele is dominant, if it is expressed in -
(a) second generation
(b) homozygous combination
(c) heterozygous combination
(d) both homozygous and heterozygous conditions

93. A test cross enables one to
(a) determine the viability of cross
(b) distinguish between homozygous dominant and heterozygous dominant
(c) determine whether two species can interbreed
(d)determine the similarities in the DNA of two species

94. Which is / are correct is correct about F2 generation obtained by Mendelian dihybrid cross?
A. Phenotypic ratio is 9 : 3 : 3 : 1
B. The ratio of homozygous plants is 1 : 1 : 1 : 1
C. 1/4 plant is completely heterozygous
D. F2 generation is obtained through selfing of F1 plants
(a) A, C, D
(b) A, B, C, D
(c) B, C, D
(d) A, B, C

95. ABO blood groups is determined by
(a) three recessive alleles
(b) three codominant alleles
(c) three alleles, two dominant and one recessive
(d) three alleles, two recessive and one dominant

96. Mendel's dihybrid ratio is
(a) 15:1 (b) 9:3:3:1
(c) 1 : 2 : 1 (d) 9 : 6 : 1

97. Mendel did not propose the theory of -
(a) dominance
(b) incomplete dominance
(c) segregation
(d) independent assortment

98. Inheritance of skin colour in human beings is an example of
(a) polygenic inheritance
(b) Mendelian inheritance
(c) monogenic inheritance
(d) complementary genes

99. Which of the following proved an exception to Mendel's principles?
(a) dominance
(b) linkage
(c) independent assortment
(d) purity of gametes/segregation

100. In the AB blood group the two genes are
(a) codominant
(b) corecessive
(c) incompletely dominant
(d) dominant-recessive

101. Human skin colour is controlled by .
(a) a single allele
(b) two alleles
(c) atleast three separate genes
(d) four alleles

102. Choose the correct incorrect option.
(a) Recombination and mutation are phenomenons that lead to variations in DNA.
(b) Chromosomal aberrations are commonly observed in cancer cells
(c) A change in a single base pair of DNA is not sufficient to cause mutation
(d) Point mutation arises due to change in a single base pair

103. Two dominant independently assorting genes react with each other. They are
(a) supplementary
(b) complementary
(c) duplicate
(d) collaborative

104. Which one of the following is the genotypic ratio in monohybrid cross?

(a) 9:3:3:1 (b) 1:2:1
(c) 9:7 (d) 3 : 1

105. Which of the following truly represents a heterozygous organism?

(a) XXyy (b) RRYy (c) xxYY (d) RrYy

106. In a family pedigree:

A. Circles represent males
B. Squares represent females
C. A solid / blackened symbol represents^he individual with a recessive trait always
D. Mating is shown by a horizontal line connecting a male and a female symbol

(a) Only A (b) Only B
(c) Only C (d) Only D

107. Trisomy has a chromosome complement of -

(a) 2n-1 (b) 2n + 2 (c) 2n + 3 (d) 2n + 1

108. The correct match is

	Column A		Column B
I.	Nonparental gene combination	A.	Crossing over
II.	Nonsisterchromatids	B.	X and Y
III.	Sex chromosomes	C.	Sex-linked disease
IV.	Haemophilia	D.	Recombination

(a) I-B, II-D, III-A, IV-C
(b) I-D, II-A, III-B, IV-C
(c) I-B, II-D, III-C, IV-A
(d) I-B, II-A, III-D, IV-C

109. The correct match is

	Column A		Column B
I.	Chromosomal aberration	A.	Additional sex chromosome
II.	Down's syndrome	B.	Inversion
III.	Klinefelter's syndrome	C.	Presence of extra chromosome
IV.	Turner's syndrome	D.	Absence of sex chromosome

(a) I-B, II-D, III-A, IV-C
(b) I-B, II-D, III-C, IV-A
(c) I-B, II-C, III-A, IV-D
(d) I-C, II-D, III-A, IV-B

110. Which one / ones is / are correct about the person suffering from Klinefelter's syndrome?

A. It is a case of trisomy.
B. The sufferer has 47 chromosomes.
C. He / She is fertile
D. Tall stature with breast development,

(a) A, B, D (b) A, B, C, D
(c) B, C, D (d) A, B, C

111. Klinefelter's syndrome results from the fusion of

(a) an X egg and a YY sperm.
(b) an XY egg and an X sperm,
(c) an XX egg and a Y sperm.
(d) an XX egg and a YY sperm.

112. A comparison of the karyotypes of a normal human male and a male sufferer of Down's syndrome shows the latter to possess

(a) one extra chromosome
(b) two Y chromosomes
(c) one extra pair of chromosomes
(d) twice the normal number of chromosomes

113. Which of the following statements about mutations is false?

(a) Mutations are the source of new alleles for genes.
(b) Organisms are able to create mutations to meet their specific needs.
(c) Mutations are random events and can happen in any cell at any time.
(d) Most mutations tend to be harmful or have no effect on organisms.

114. In 1900 Mendelism was rediscovered by:

A. Morgan B. deVries
C. Correns D. Tschermak

(a) A,C,D (b) A,B, C, D
(c) B, C, D (d) A, B,C

115. A. Myotonic dystrophy is an autosomal dominant trait.
B. Sickle cell anemia is an autosomal recessive trait.
C. Cystic fibrosis is a Mendelian disorder.
D. Failure of segregation of chromatids during cell division cycle results in the gain or loss of a chromosome(s) called aneuploidy.
(a) Only C is incorrect (b) All incorrect
(c) Only C is correct (d) All are correct

116. A. Sutton united the knowledge of chromosomal segregation with Mendelian principles and called it the chromosomal theory of inheritance.
B. Genes are the units of inheritance.
C. There are 6 different alleles which determine ABO blood types.
D. The phenotypic ratio of Mendelian monohybrid cross is 3 :1
(a) All are correct
(b) All are incorrect
(c) A, B, D are correct
(d) A, B, and C are correct

117. If T = tall and t - short, the genotype of an animal with the "short" phenotype must be
(a) Tt (b) TT (c) tt (d) t

118. Drosophila melanogaster (fruit fly) is a suitable for genetical studies because:
A. It can be grown on simple synthetic medium in the laboratory.
B. Life Cycle is short (about 2 weeks)
C. A single mating produces large number of progenies.
D. Visible sexual dimorphisms and many types of genetical variations can be easily observed,
(a) A, C, D (b) A, B, C, D
(c) B, C, D (d) A, B, C

119. Polyploidy
A. Is the occurrence of more than 2 sets of chromosomes or genome
B. Is resulted due to non-formation of spindle fibres.
C. Is resulted due to failure of cytokinesis
D. Is more common in plants
(a) A,C,D (b) A,B,C,D (c) B, C, D (d) A,B,C

120. Which of the following options is wrong?
(a) Sickle Cell Anemia is the classical example of gene mutation
(b) Deletion or gain (insertion / duplication) of a segment of DNA does not results in alteration in chromosome
(c) Frameshift, mutation is resulted to deletion or insertion of base pairs of DNA
(d) Mutation changes genotype and phenotype

121. Among the seven pairs of contrasting traits'in pea plant as studied by MendeJv the numberof traits related to; flower, pod and seed respectively were
(a) 2,2,2
(b) 2,2,1
(c) 1,2,2
(d) 1,1,2

122. Some of the dominant traits studied by Mendel were :
(a) round seed shape, constricted pod shape and axial flower position ,
(b) green pod colour, inflated pod shape and axial flower position
(c) yellow seed colour, violet flower colour and yellow pod,colour
(d) axial flower'position, green pod colour and green, seed colour

123. The colour based contrasting traits in seven contrasting, pairs studied by Mendel in pea plant were
(a) 1 (b) 2 (c) 3 (d) 4

124. Hydrogen bonds occur between which of the following constituents of DNA?
(a) sugar and base
(b) phosphate and base
(c) complementary bases
(d) phosphate and sugar

125. In 1957, Meselson and Stahl concluded from their studies that
(a) DNA replicates conservatively
(b) DNA replicates semiconservatively
(c) DNA replicates dispersively
(d) DNA does not replicate

126. Replication is continuous in
(a) the leading strand
(b) the lagging strand
(c) the strand where okazaki fragments are present
(d) both the strands

127. Which of the following RNA polymerase catalyses the formation of transfer RNA in eukaryotes?
(a) RNA polymerase I
(b) RNA polymerase II
(c) RNA polymerase I and II
(d) RNA polymerase III

128. Transcription refers to the
(a) transfer of genetic code or sequences of DNA into RNA
(b) formation of DNA from RNA
(c) formation of protein
(d) polymerisation of RNA in cell-free system

129. One gene one enzyme hypothesis was proposed by
(a) Jacob and Monod (b) Watson and Crick
(c) Garrod and Jenson (d) Beadle and Tatum

130. The chain-terminating codon is
(a) AUG (b) CCC
(c) UAG (d) GGG

131. In one strand of DNA the sequence of bases is AAATGGCCCTT, then the complementary sequence of bases on the other side of the strand would be
(a) ATATGGCCCCA (b) TTTACCGGGAA
(c) TTTTGGCCAM (d) TTTTGGCCCAA

132. How many pairs nucleotides are present in one turn of DNA helix?
(a) 4 (b) 8 (c) 9 (d) 10

133. RNA that picks up specific amino acid from amino acid pool of cytoplasm to carry it to ribosome during protein synthesis is
(a) mRNA (b) tRNA (c) rRNA (d) gRNA

134. The sequence of structural gene in lac operon is
(a) Lac A, Lac Y, Lac Z (b) Lac A, Lac Z, Lac Y
(c) Lac Y, Lac Z, Lac A (d) Lac Z, Lac Y, Lac A

135. The functional unit of gene that specifies synthesis of one polypeptide is
(a) muton (b) recon
(c) cistron (d) codon

136. Okazaki fragments are formed during
(a) transcription (b) translation
(c) replication (d) transduction

137. Termination of polypeptide chain is brought about by
(a) UUG,UAG and UCG
(b) UCG,GCG and ACC
(c) UAA, UAG and UGA
(d) UUG, UGC and UCA.

138. Viruses parasiting in bacteria are-
(a) Bacteriophages (b) Phytophages
(c) Cyanophages (d) Bacterio-viruses

139. How much of DNA base sequence among humans is same?
(a) 50% (b) 80% (c) 99.9% (d) 3.4%

140. Lac operon and tryptophan operon are the models of gene expression in
(a) bacteria (b) viruses
(c) eukaryotes (d) all of these

141. Lac operon is-
(a) a set of overlapping genes
(b) repressible operon
(c) inducible operon
(d) arabinose operon

142. The correct match is

	Column A		Column B
I.	Operator site	A.	Binding site for RNA polymerase
II.	Promoter site	B.	Binding site for represser molecule
III.	Structural gene	C.	Codes for enzyme protein
IV.	Regulator gene	D.	Code for represser molecules

(a) I- B II-A III-C IV-D (b) I-B II-A. III-D. IV-C
(c) I-D. II-C. III-A. IV-B (d) I-B. II-C. Ill-A. IV-D

143. The correct match is

	Column A		Column B
I.	mRNA	A.	tRNA
II.	Anticodon	B.	Codon
III.	Semiconservative mode of DNA Replication	C.	Transformation
IV.	Griffith	D.	Meselson & Stahl

(a) I- D. II- B. III-A. IV-C
(b) I-B. II-A. III-D. IV-C
(c) I-D. II-C. III-A, IV-B
(d) I-B. II-C. III-A. IV-D

144. DNA-

A. acts as genetic material in ail cellular organisms
B. was discovered by F. Miescher who named it as "Nuclein".
C. Is acidic in nature
D. Cannot be digested by DNAase

(a) A,C (b) A, B,C, D
(c) A, B, C, D (d) A, B, C

145. The correct match is

	Column A		Column B
I.	Griffith	A.	Nucleoid
II.	Hershey and Chase	B.	Active chromatin
III.	Prokaryotic DNA	C.	Transduction
IV.	Euchromatin	D.	Transformation

(a) I- B.ll- A, III-C, IV-D (b) I-C, II-A, III-D, IV-B
(c) I-D, II-C, III-A, IV-B (d) I-B.II-C.III-A, IV-D

146. Repressor protein in produced by-

(a) Regulator gene (b) Operator gene
(c) Structural gene (d) Promotor gene

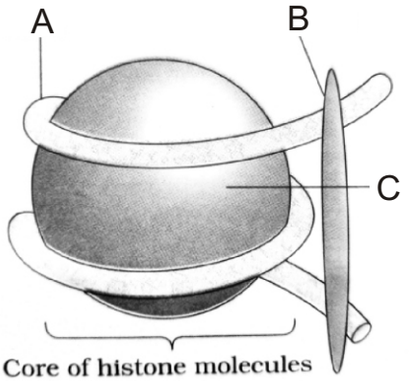
147. A. Both DNA and RNA are able to mutate:
B. RNA being unstable, mutates at a faster rate
C. RNA is also known to be catalytic, hence reactive
D. The presence of thymine at place of uracil confers additional stability to DNA.

(a) All are correct (b) All are incorrect
(c) Only A, B and D are correct
(d) Only D is correct

148. In the lac oeron the structural genes are switched off when-

(a) Repressor binds to operator
(b) Repressor binds to pramotor
(c) Repressor binds to regulator
(d) Repressor binds to inducer

149. Go through the following diagram of Nucleosome (structural unit of chromatin). Identify its componental parts indicated by A, B and C.



	A	B	C
(a)	RNA	Non histone	Histone
(b)	DNA	H1 histone	Histone Octamer
(c)	RNA	Histone Octamer	H1 histone
(d)	DNA	Non histone	Histone

150. Intron is -

A. coding sequence
B. Non-coding sequence
C. Character of Prokaryotic genome
D. Character of eukaryotic genome

151. In human-

A. Non-coding DNA is the most abundant.
B. The function of more than 50% discovered genes are unknown.
C. Less than 2% of genome codes for protein
D. Total number of genes is 30,000.

(a) A, C
(b) A, B, C, D
(c) B, C, D
(d) A, B, C

152. In prokaryotes, gene regulation occurs at the level of:

(a) Transcription
(b) Translation
(c) Post transcription
(d) Post translation

153. Genetic code is

A. triplet B. degenerate
C. nonambiguous D. universal
(a) A, C (b) A.B.C.D
(c) B, C, D (d) A,B,C

154. Which of the following statements is correct about Human Genome Project -

(a) To develop ways of mapping the human genome at increasing fine level of precision
(b) To store this information in databases and develop tools for data analysis
(c) To address the ethical, legal and social issue that may arise from this project
(d) All of the above

155. The fact that the genetic code is almost universal in living organisms is considered to be evidence that all organisms

(a) are evolutionary related
(b) are genetically identical
(c) have the same sequence of anticodons
(d) none of the above

156. Which of the following statements is correct?

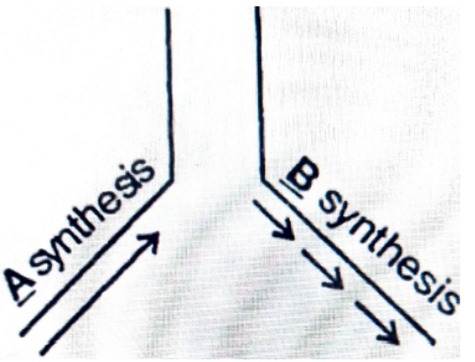
I. The biochemical nature of genetic material was not defined from the experiments conducted by Griffith
II. Working on transformation Avery, Mcleod, McCarty/concluded DNA is genetic material but not all biologists were convinced
III. RNAis the genetic material in TMV, Q8 bacteriophage etc.
IV. DNA is the predominant genetic material while RNA performs dynamic functions of messenger adapter
V. Viruses having DNAgenome and having shorter life span mutate and evolve faster

(a) All (b) I and II
(c) All except V (d) III and IV

157. The length of DNA molecule greatly exceeds the dimensions of the nucleus in the eukaryotic cells. How is this DNA accomodated?

(a) Super coiling in nucleosomes
(b) DNAse digestion
(c) Through elimination of repetitive DNA
(d) Deletion of non-essential genes

158. Name the types of synthesis A and B occurring in the replication fork of DNA as shown below:



(a) A - Continuous synthesis (synthesis of leading strand); B - Discontinuous synthesis (Synthesis of lagging strand)
(b) A - Discontinuous synthesis (Synthesis of leading strand); B - Continuous of synthesis (Synthesis of lagging strand)
(c) A - Continuous of synthesis (Synthesis of lagging strand); B - Discontinuous synthesis (Synthesis of leading strand)
(d) A - Discontinuous synthesis (Synthesis of lagging strand); B - Continuous of synthesis (Synthesis of leading strand)

159. The enzyme DNA ligase is required continuously during DNA replication because

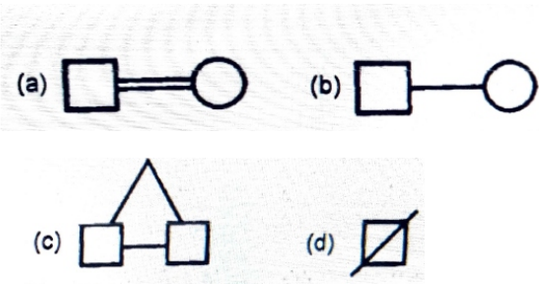
(a) fragments of the leading strand must be joined together.
(b) fragments of the lagging strand must be joined together.
(c) the parental strands must be joined back together.
(d) S'-deoxynucleoside triphosphates must be converted to 5'-deoxynucleoside triphosphates.

160. The building blocks for a new DNA molecule are
(a) deoxyribose nucleoside monophosphates.
(b) deoxyribose nucleoside diphosphates.
(c) deoxyribose nucleoside triphosphates.
(d) deoxyribose nucleotide diphosphates

161. The force that holds DNA together in a double helix is
(a) the force of the twist
(b) covalent bonds,
(c) ionic bonds or ionic interactions
(d) hydrogen bonds.

162. International Human Genome Project began in
(a) 1990 (b) 1996 (c) 2000 (d) 2001

163. In pedigree analysis, symbol given for consanguineous marriage is



164. Which of the following statements about DNA replication is false?
(a) Okazaki fragments are the initiators of continuous DNA synthesis along the leading strand.
(b) Replication forks represent areas of active DNA synthesis on the chromosomes.
(c) Error rates for DNA replication are often less than one in every billion base pairings.
(d) Ligases and polymerases function in the vicinity of replication forks.

165. What are the mini-satellites?
(a) r-DNA (b)VNTR
(c)c-DNA (d)SAT

166. Which of the following model organisms has been sequenced?
(a) Drosophila' (b) Bacteria
(c) Yeast (d) All

167. The last human chromosome which sequence was completed in May 2006 is
(a) Chromosome 22 (b) Chromosome 14
(c) Chromosome 1 (d) Chromosome X and Y

168. The unequivocal proof of DNA as the genetic material came from the studies on a
(a)Viroid (b) Bacterial virus
(c) Bacterium (d) Fungus

169. Which mode of information transfer usually does not occur?
(a) DNA to DNA (b) DNA to RNA
(c) DNA to protein
(d) all occur in a working cell

170. Of the __ different possible codons, __ specify amino acids and ___ signal stop,
(a) 20,17,3 (b) 180,20,60
(c) 64,61,3 (d) 61,60,1

171. Removal of introns and joining of exons in a defined order during transcription is called :
(a) Looping (b) Inducing
(c) Slicing (d) Splicing

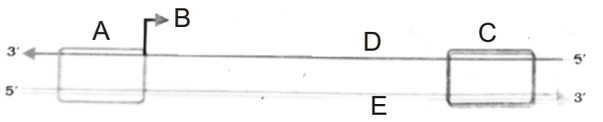
172. What is it that forms the basis of DNA Fingerprinting ?
(a) The relative proportions of purines and pyrimidines in DNA
(b) The relative difference in the DNA occurrence in blood, skin and saliva
(c) The relative amount of DNA in the ridges and grooves of the fingerprints.
(d) Satellite DNA occurring as highly repeated short DNA segments

173. Isotopes used in proving semiconservative replication of DNA were
(a) $^{14}N^{14}C$ (b) $^{14}N^{15}N$ (c) $^{14}N^{31}P$ (d) $^{14}C^{31}P$

174. Which is true according to Chargaff's rule?
(a) A = C (b) G = T
(c) A G T C (d) $\frac{A \quad T}{C \quad G}$ 1

175. In PCR.it is __ that creates single-stranded template molecules.
(a) heat (b) high salt concentration
(c) DNA polymerase (d) exonuclease

176. Following is the schematic structure of transcription unit having some important components indicated by A, B, C, D and E. In which of four option the components are identified correctly



	A	B	C	D	E
(a)	Termin ator	Transcr iption start site	Promot er	Templa te strand	Coding strand
(b)	Promot er	Transcr iption start site	Termin ator	Coding strand	Templa te strand
(c)	Promot er	Transcr iption start site	Termin ator	Templa te strand	Coding strand
(d)	Termin ator	Transcr iption start site	Promot er	Coding strand	Templa te strand

177. Semi-comervative mode of DNA replication was first reposted in in E-coli with the help of N^{15} heavy nitrogen by

(a) Kornbery and ochea (b) Limia and Delbruck
(c) Meselson and stahl (d) Watson and crick

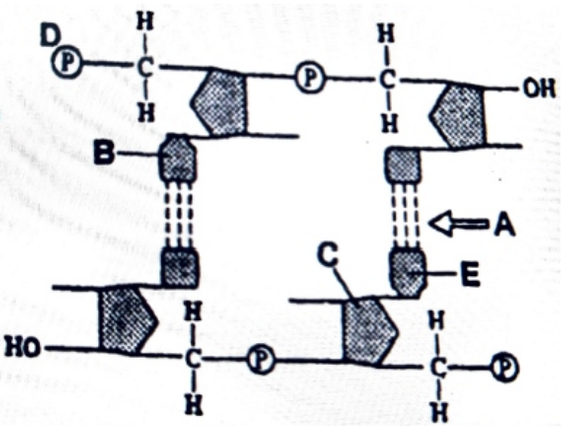
178. Complete the central dogma of molecular basis of inheritance (by Crick):

(a) A - Replication, B- Transcription, C - Translation
(b) A - Replication, B- Termination, C - Translation
(c) A - Replication, B- Translocation, C - Translation
(d) A - Replication, B- Transposition, C - Translation

179. Information used by Watson and Crick to determine the structure of DNA included

(a) electron micrographs of individual DNA molecules.
(b) light micrographs of bacteriophage particles,
(c) nuclear magnetic resonance analysis of DNA
(d) X-ray crystallography of double-stranded DNA

180. The following diagram is the polynucleotide chain. Identify A, B, C, D and E



	A	B	C	D	E
(a)	Hydrog en bonds	Pyrimid ine	Hexose (deoxyr ibose) sugar	5 end	Purine base
(b)	Hydrog en bonds	Purine base	Hexose (deoxyr ibose) sugar	5 end	Pyrimid ine
(c)	Hydrog en bonds	Pyrimid ine	Pentose (deoxyr ibose) sugar	5 end	Purine base
(d)	Hydrog en bonds	Purine base	Pentose (deoxyr ibose) sugar	5 end	Pyrimid ine