Section A General Aptitude

Question Numbers: (1 to 5)
Question Label: Comprehension
Read the passage and answer the questions that follow

The opportunity that beckons India is to make optimal use of technology, management, entrepreneurship and investments to overcome the challenges of this decade and beyond. Yesterday's goals Cannot be a benchmark as India contemplates graduating to the company of the developed nations of the world. Our targets must be higher, our coverage more inclusive and above all, the methods to achieve must be unique.

Since Independence, India as a nation has indeed made massive progress in almost every social and economic field. But as we strive to have an economically developed nation by 2020. Each incremental step opens up new vistas before us. After every few pages, we mark our place in history, heading for a new chapter of challenges not experienced earlier.

Following a steady decline in world income — from about 33 percent in 0 CE to around 25 percent in 1600 CE — India's share declined even further during the British Raj, falling sharply from about 16 per cent in 1820 CE, to less than 4 per cent at the time of Independence. Since Independence, there has been a steady rise in income, and the per capita national product has increased by more than five times, from Rs. 5,700 in 1950 to about Rs. 32,000 in 2008, and today, India's share in world income — purchasing power parity (PPP) — stands at about 6.3 percent But while the economy has been growing steadily and poverty, as a percentage, declining steadily, the absolute number of people below the poverty line has been constant.

Sub questions

1. According to the passage, use of the phrase "make optimal use of" means:
   (a) Set a higher benchmark for growth.
   (b) Using the methods effectively and efficiently.
   (c) Experiment with new challenges.
   (d) Mark our place in history.

2. Which word in the given passage means "without interruption"?
   (a) Consistent
   (b) Steady
   (c) Optimal
   (d) Constant

3. What does India need to become a developed nation?
   A. Take rapid and incremental steps towards progress.
   B. Contemplate on only yesterday's goals.
   C. Make thoughtful usage of technology in various fields.
   D. Work steadily on economic indicators.
   E. Set higher, inclusive and unique targets.
   Choose the CORRECT answer from the options given below:
   (a) A, B, C only.
   (b) B, D, E, only.
   (c) A, D, E only.
   (d) C D, E only.

4. Given below are two statements:
   Statement A: Since Independence, there has been a steady rise in income and the increase of per capita national product by five times from 5,700 in 1947 to about 32000 in 2008.

Statement B: Poverty has declined while the economy has grown but the absolute number of people below poverty line has been constant.

In the light of the above statements, choose the most appropriate answer from the options given below:

(a) Both Statement A and Statement B are correct.
(b) Both Statement A and Statement B are incorrect.
(c) Statement A is correct but Statement B is incorrect.
(d) Statement A is incorrect but Statement B is correct.

5. Read the given passage and Match List I with List II.

	List I (India's share in world GDP)		List II (Year)
A	16 percent	i	0CE
B	33 percent	ii	1820 CE
C	25 percent	iii	1947 CE
D	4 percent	iv	1600 CE

Choose the CORRECT options given below:

(a) A-i, B-ii, C-iv, D-iii
(b) A-iii, B-ii, C-i, D-iv
(c) A-ii, B-i, C-iv, D-iii
(d) A-iv, B-ii, C-iii, D-i

Question Numbers: (6 to 10)

Question Label: Comprehension

Read the following passage and answer the questions that follow:

Let us discuss coal, another fossil fuel. Even though India has abundant quantities of coal, it is constrained by regional locations, a high ash content that affects the thermal efficiency of our power plants, besides which there are also environmental concerns. Thus, a movement towards energy independence would demand accelerated work in the production of energy from the coal sector through integrated gasification and a combined cycle route.

In 2030, the total energy requirement of the nation is expected to be 4,00,000 MW. By that time, if we were to follow the present route, the power generated from coal-based power plants would increase from the existing 80,000 MW to 2,00,000 MW. This would demand a significant build-up of thermal power stations and a large-scale expansion of coal fields, leading, naturally, to much higher levels of pollution.

The hydel capacity generated through normal water sources and by the interlinking of rivers is expected to contribute an additional 50,000 MW- Numerous large-scale solar energy farms with a capacity of hundreds of megawatts could together contribute around 55,000 MW. The nuclear power plants should have a target of 50,000 MW of power. At least 64,000 MW of electrical power should come from wind energy. The balance 51,000 MW has to be generated through conventional thermal plants, through coal and gas, and renewable sources of energy such as biomass, through municipal solid waste and solar thermal power. The most significant aspect, however, is that the power generated through renewable energy technologies has to be increased to 28 percent from the present 5 percent.

Sub questions

6. To meet the energy requirements of the nation, the power generation through renewable energy technologies should be:

(a) Increased from 80,000 MW to 400,000 MW.
(b) Covering the remaining balance of 51,000 MW generated through various modes.
(c) Accelerated through integrated gasification and combined cycle route.
(d) Increased by 23 percent from the present 5 percent.

7. Which word in the passage is the antonym of "rare"?
   (a) Existing
   (b) Numerous
   (c) Significant
   (d) Additional

8. Which of the following factor(s) are a reason behind the constrained utilization of coal as a fuel for generating energy?
   A. Low thermal efficiency of our power plants.
   B. Regional locations.
   C. Lack of integrated gasification.
   D. High ash content.
   E. Environmental concerns.
   Choose the CORRECT answer from the options given below:
   (a) A, B, C only
   (b) B, C, D only
   (c) B, D, E only
   (d) B, D, A only

9. Given below are two statements that are based on the passage mentioned above:
   Statement A: To meet the expected energy requirements in 2030, the power generation through renewable energy technologies has to be increased by percent.
   Statement B: The balance 51,000 MW will be generated through conventional thermal plants.
   In the light of the above statements, choose the most appropriate answer from the options given below:
   (a) Both Statement A and Statement B are correct.
   (b) Both Statement A and Statement B are incorrect.
   (c) Statement A is correct but Statement B is incorrect.
   (d) Statement A is incorrect but Statement B is correct.

10. Match List I with List II on the basis of the passage mentioned above:

	List I (power)		List II (energy source)
A	50.000 MW	i	Wind energy
B	55,000 MW	ii	Thermal energy
C	51.000 MW	iii	Hydel energy
D	64000 MW	iv	Solar energy

   Choose the CORRECT options given below:
   (a) A-i, B-iii, C-iv, D-ii
   (b) A-ii, B-iii, C-iv, D-i
   (c) A-iii, B-ii, C-iv, D-i
   (d) A-iii, B-iv, C-ii, D-i

11. If it was Saturday 17th December, 2002, what was the day on 26th December 2004?
   (a) Monday
   (b) Sunday
   (c) Tuesday
   (d) Thursday

12. Study the given pattern and select the number that can replace question mark in the given matrix:

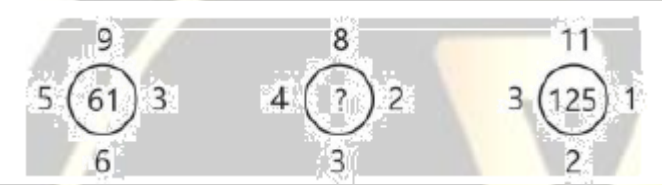
11	103	9

13	157	6
15	?	7

(a) 175
(b) 196
(c) 211
(d) 225

13. If in a certain code language 'FRIEND' is written as 'JPMCRB', 'UNCLE' is written as YLGJI% then what will be the code for 'LEADER'?
(a) QCDBIP
(b) PDFBDL
(c) PCEBIP
(d) RBFCNR

14. Find the missing number from the given alternatives:



(a) 41
(b) 56
(c) 67
(d) 79

15. If, P ×Q means P is the husband of Q:
P + Q means P is the father of Q.
P - Q means P is the mother of Q.
P ÷Q means P is the sister of Q,
Then, which of the following relations shows that C is the paternal grandfather of D?
(a) C × B − E ÷ D + A
(b) C + A × B ÷ E ÷ D
(c) C + B × A − E ÷ D
(d) C × B ÷ E + A − D

16. In this question a number series is given. Choose the CORRECT alternative that will continue the same pattern and replace the question mark in the given series. 856, 849, 824 763, ?, 431:
(a) 681
(b) 642
(c) 535
(d) 495

17. Sunita starts from her home towards North. After walking 15 meters, she turned to her right and walked 55 meters. Then she turned to her left and after walking a distance of 20 meters turned to her left again and walked 67 meters. What is the shortest distance between her home and final position and what is the direction of final position with respect to her home?
(a) 26 m, North-West.
(b) 35 m, North-East.
(c) 37 m, North-West.
(d) 49 m, North-East.

18. Seven friends A, B, C, D, E, F and G are sitting on a straight bench all facing north. There are exactly three friends sitting between A and B. D is sitting to the left of B. Only one friend is sitting

to the left of A. B is sitting immediately left of F. Only one friend is sitting between D and A Who is sitting at the extreme right end?
(a) E
(b) F
(c) C
(d) D

19. Select the option that is related to the third term in the same way as the second term is related to the first term and the sixth term is related to the fifth term. BSNT: Y X G C : : M X R V : ? : : F P C Y : C U V H :
(a) JDKE
(b) JCKD
(c) JCKE
(d) JCLE

20. A cube is painted black on two adjacent faces and on one apposite face, yellow on two apposite faces and green on the remaining face. It is then cut into 64 equal cubes. How many cubes have one black coloured face only?
(a) 12
(b) 24
(c) 16
(d) 8

21. In the given question, two statements are given followed by two conclusions numbered A and B. You have to take the given statements to be TRUE even if seem to be at variance from the commonly known facts and then decide which of the given conclusions logically follows from the given statements disregarding Commonly known facts:
Statements: All Hammers are pliers. All screws are pliers.
Conclusions A: Some hammers are screws.
B: Some screws are hammers is a possibility.
(a) Both Conclusions A and B follow.
(b) Both Conclusions A and B do not follow.
(c) Conclusion A follows but conclusion B does not follow.
(d) Conclusion A does not follow but conclusion B follows.

22. In this question there is a statement followed by two assumptions numbered A and B. You have to consider the statement and the following assumptions and decide which of the assumption(s) is/are implicit in the statement:
Statement: Rohan always studies from the reference books of publication X for his competitive exams.
Assumptions A: many of the questions asked in competitive exams are from the reference books of publication X.
B: Studying from reference books are necessary for competitive exams.
(a) Only Assumption A is implicit.
(b) Only Assumption B is implicit.
(c) Neither assumption A nor B is implicit.
(d) Both assumptions A and B are implicit.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Tanya
(B.Tech)
English Faculty
बडा लालपुर,चांदमारी, सिंधोरा रोड, वाराणसी

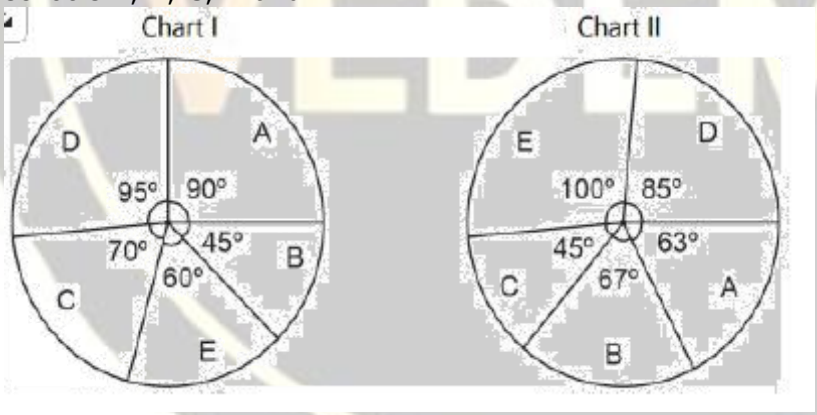
23. Following table provides the marks obtained by four friends in five different subjects. Maximum marks in each subject are 100:

Friends	Physics	Chemistry	Mathematics	English	Physical Education
Rahul	89	92	79	81	90
Vinay	75	96	85	86	92
Abeer	94	90	89	77	90
Sudesh	93	91	84	86	92

Who has scored exactly 88% marks in total?
(a) Rahul
(b) Vinay
(c) Abeer
(d) Sudesh

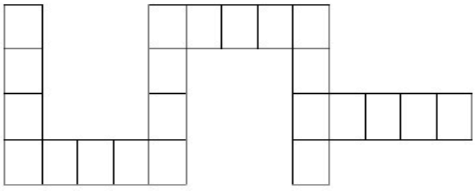
24. In this question there is a statement, followed by two courses of action numbered A and B. You have to assume everything in the statement to be TRUE and on the basis of the information given in the statement, decide which of the suggested courses of action logically follow(s) for pursuing.
Statement: A large number of people got ill due to eating cut fruits from road side shops.
Courses of Action A. Municipal corporation should penalize the road side vendors if they sell cut fruits.
B. People should be made aware about the dangers of eating cut fruits sold in open.
(a) Only A follows.
(b) Only B follows.
(c) Neither A nor B follows.
(d) Both A and B follow.

25. The following pie chart show the distribution of students appearing in the Board examination (Chart l) and the students who have passed the Board examination (Chart II) from the different schools A, B, C, D and E:



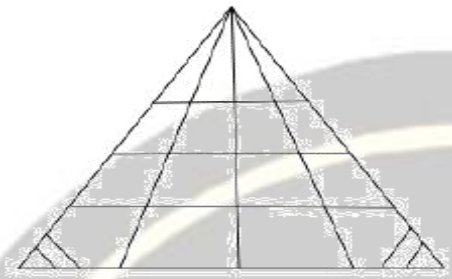
Total number of students appeared = 1800
Which school has the lowest percentage of students passed with respect to those appeared?
(a) A
(b) B
(c) C
(d) D

26. How many rectangles are there in the given figure?



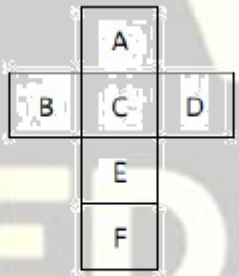
(a) 65
(b) 70
(c) 75
(d) 80

27. How many triangles are there in the given figure?



(a) 26
(b) 34
(c) 44
(d) 46

28. Select the box that **CANNOT** be formed by folding the given unfolded box:

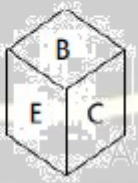


(A)

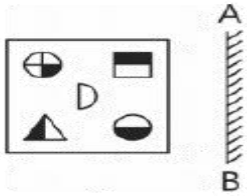
(B)

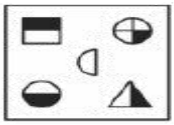
(C)

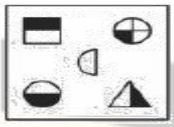
(D)



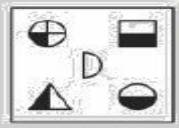
29. Choose the CORRECT mirror image of the given figure when the mirror is placed at line AB:



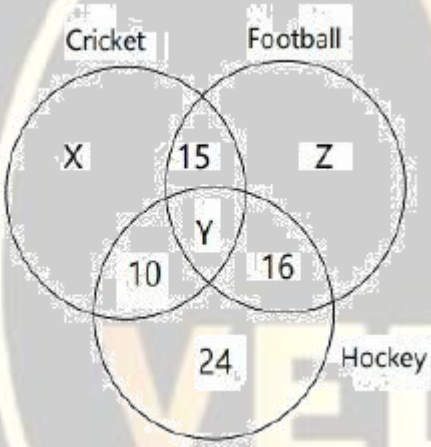
(A) 

(B) 

(C) 

(D) 

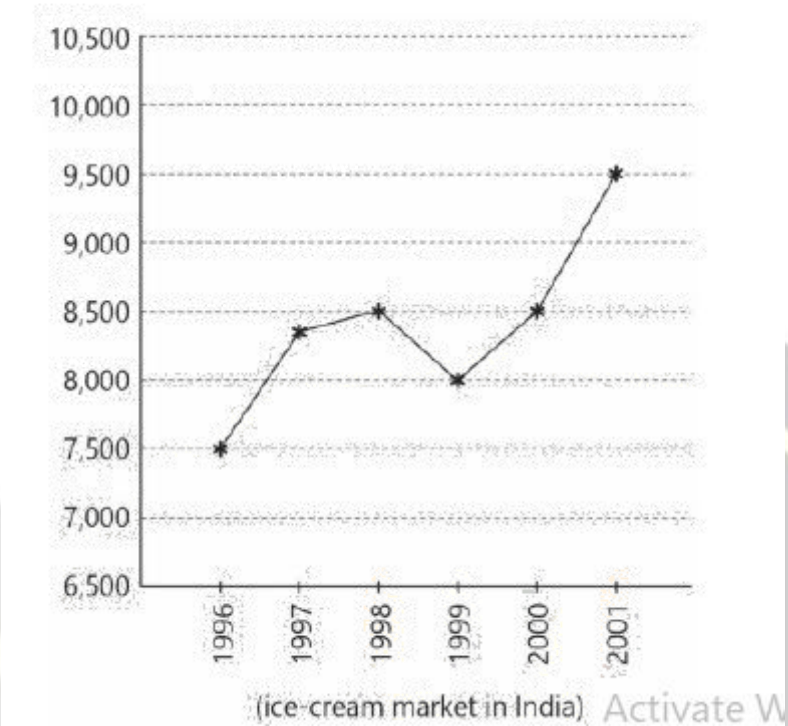
30. Study the Venn diagram and answer the question. The alphabets and numbers in different sections indicate the number of persons who play different games in a school:



If the total number of persons who play games in the school is 108 and the number of persons who play at least two games is 54. find the number of persons who play all the three games?
(a) 11
(b) 13
(c) 19
(d) 21

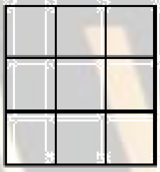
31. If 'AMAN' is written as 'CLCM' in a certain code then in the same code 'ARUN' is written as:
(a) CQWO
(b) CQVM
(c) CPWM
(d) CQWM

32. Direction: Refer the chart below and answer the question. What is annual average rate of increase in the ice-cream market from 1996 to 2001?



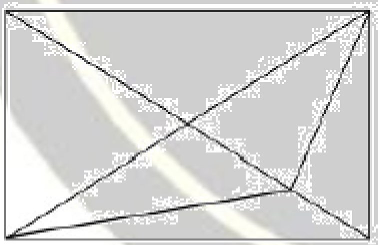
(a) 5.33%
(b) 26.67%
(c) 6.67%
(d) 10%

33. Statement A: The number of squares in the figure:



is 14.

Statement B: The number of triangles in the figure.



is 15.

In the light of the above statements, choose the CORRECT answer from the options given below:
(a) Both Statement A and Statement B are true.
(b) Both Statement A and Statement B are false.
(c) Statement A is true but statement B is false.
(d) Statement A is false but statement B is true.

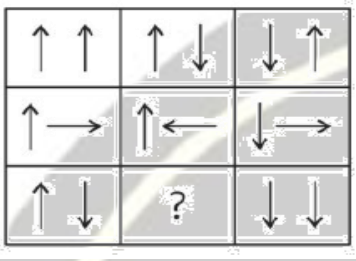
34. Statement A: The mirror-image of 

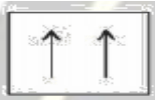
Statement B: The water-image of 

In the light of above statements, choose the CORRECT answer from the options given below:
(a) Both Statement A and Statement B are true.
(b) Both Statement A and Statement B are false.
(c) Statement A is true but statement B is false.
(d) Statement A is false but statement B is true.

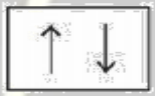
35. If '—' means '÷' means '+' means ' ×' , '÷ ’means '—' , 'x' means '+’ then which of the following equations is CORRECT?
    (a) 52÷4 + 5 × 8 – 2= 36
    (b) 43 ×7 ÷ 5 + 4-8=25
    (c) 36 x 4- 12+5 ÷ 3 =420
    (d) 36-12 × 6÷ 3+ 4= 60

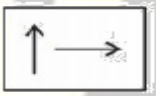
36. Complete the figure matrix:



(A) 

(B) 

(C) 

(D) 

37. A cube whose two adjacent faces are coloured is cut into 64 identical small cubes. How many of these small cubes are **NOT** coloured at all?
    (a) 60
    (b) 48
    (c) 36
    (d) 32

38. A dealer marks his goods at 20% above the cost price and allows a discount of 16% on the marked price. What is his gain percentage?
    (a) 1%
    (b) 2%
    (c) 0.8%
    (d) 0.08%

39. If 2a = 3b = 4c = 6d, then value of $\frac{a2+b2}{c2+d2}$, is:
    (a) 2/3
    (b) 4
    (c) $\frac{1}{6}$
    (d) 7/3

40. In trapezium ABCD, in which AB//DC:

$\angle A = 130^0$ and $\angle B = 110^0$ What is the value of $\angle C - \angle D$?

(a) 10^0
(b) 20^0
(c) -20^0
(d) 40^0

41. In a town, 65% people watched the news on television. 40% read a newspaper and 25% read a newspaper and watched the news on television also. What percent of the people neither watched the news on television nor read a newspaper?
(a) 10
(b) 14
(c) 16
(d) 20

42.
A. The missing term of the series.
4, 8, 28, 80, 244, ? , is 728.
B. The missing term of the alphabet series.
UPI, SHJ, ODP, MBQ ? is IAV.
C. The missing term of the letter — number series.
Q1F, S2E U6D, W21C, ? is Y88B.
D. The missing term of the letter — number series.
D-4, F-6, H-8, J-10, ? is L-22

Choose the CORRECT answer from the options given below:
(a) A and C only.
(b) A, B and C only.
(c) B, C and D only.
(d) B and D only.

43. The ratio of the ages of man and his wife is 4 : 3, After 4 years, this ratio will be 9 : 7. If at the time of their marriage, the ratio of their ages was 5 : 3, then how many years ago were they married?
(a) 8
(b) 10
(c) 12
(d) 15

44. Read the following information and answer the question:
Alka is older than Mala. Gopal is older than Mala but younger than Alka. Kapil is younger than Ram and Mala. Mala is older than Ram.
A. Mala's age is between Gopal and Ram.

B. Gopal age is between Mala and Kapil.
C. Mala lies in the middle.
D. Alka is the youngest.
E. Kapil is the eldest.
Choose the CORRECT answer from the options given below:
(a) C and E only.
(b) B, D and E only.
(c) A, C and D only.
(d) A and C only.

45. Direction: Study the table carefully and answer the question:
Number of washing machines and refrigerators manufactured by a company.

	2005	2006	2007	2008	2009
Washing machine	14400	20500	12800	16400	18600
Refrigerator	12800	24700	19200	20200	14900

Find, what was the difference in the total number of washing machines and refrigerators manufactured in 2006 to the total number of washing machines and refrigerators manufactured in 2008?
(a) 6800
(b) 5600
(c) 8600
(d) 8200

46. Given below are two statements:
Statement A: A compound interest on a certain sum for 2 years at 10% per annum is 525. The simple interest on the same sum for double the time at half the rate percent per annum is 500.
Statement B: The respective ratio of milk and water in the mixture is 4 3. If 6 litres of water is added to this mixture, the respective ratio of milk and water becomes 8 : 7, then the quantity of milk in the original mixture is 24 litres.
In the light of the above statements, choose the most appropriate answer from the options:
(a) Both Statement A and Statement B are correct.
(b) Both Statement A and Statement B are incorrect.
(c) Statement A is correct but statement B is incorrect.
(d) Statement A is incorrect but statement B is correct.

47. If $x + \frac{1}{x} = 10$, then what is the value of $(x^2 - \frac{1}{x^2})^2$:
(a) 9,600
(b) 9,604
(c) 9,608
(d) 9,610

48. A sector of a circle of radius 6 cm is formed with central angle 60^0. What will be its area (in cm^2)? (Here ' π' refers to $\frac{22}{7}$)
(a) $\frac{3}{4}\pi$
(b) $\frac{5}{4}\pi$
(c) 6π
(d) 12π

49. How many four-digit numbers can be formed by using the digits 0, 1, 3, 7 if repetition of digits are allowed?
(a) 160

(b) 500
(c) 2400
(d) 2500

50. What is the difference between simple interest and compound interest on sum 10,000 at the rate of 10% per annum for the period of two years?
(a) 110
(b) 100
(c) 150
(d) 160

Section B Cross Disciplinary

51. A short microtubular organelle projecting into extra cellular medium used for locomotion:
(a) Cisternae
(b) Cilium
(c) Pseudopodium
(d) Basal Body

52. Organelle that is involved in carbohydrate digestion, autophagy, hydrolysis etc:
(a) Golgi body
(b) Nucleus
(c) Lysosome
(d) Mitochondria

53. Microtubular protein having ATPase activity and required for movement:
(a) Ecdysone
(b) Fibronectin
(c) Dynein
(d) Sarcopin

54. Which of the following principle of bioethics emphasizes the importance of minimizing harm and maximizing benefits in health care decisions?
(a) Justice
(b) Autonomy
(c) Beneficence
(d) Non-maleficence

55. Which of the following ethical principle supports the idea that health care resources should be distributed fairly among individuals and communities?
(a) Confidentiality
(b) Informed consent
(c) Justice
(d) Beneficence

56. Match List I with List II.

	List I		List II
A	Released by anterior pituitary and affects the adrenal gland.	i	FSH
B	Influences extracellular fluid volume.	ii	Oxytocin
C	Stimulates estrogen secretion and egg maturation in females.	iii	ADH
D	Causes uterine contractions during child birth.	iv	ACTH

Choose the CORRECT options given below:

(a) A-ii, B-iv, C-iii, D-i
(b) A-iv, B-i, C-ii, D-iii
(c) A-iii, B-iv, C-ii, D-i
(d) A-iv, B-iii, C-i, D-ii

57. Given below are two statements:
Statement A: An endocrine gland releases substance through tubes or ducts.
Statement B: An exocrine gland releases substance it makes directly into the fluid bathing the glands.
In the light of the above statements, choose the CORRECT answer from the options given below:
(a) Both Statement A and Statement B are true.
(b) Both Statement A and Statement B are false.
(c) Statement A is true but statement B is false.
(d) Statement A is false but statement B is true.

58. Match List I with List II.

	List I		List II
A	Mechanoreceptor	i	Detects Change in water volume of a solution.
B	Nociceptor	ii	Responds to heat or cold.
C	Osmoreceptor	iii	Detects tissue damage.
D	Thermoreceptor	iv	Detects changes in pressure position or acceleration.

Choose the CORRECT answer from the options given below:
(a) A-iv, B-i, C-ii, D-iii
(b) A-iii, B-iv, C-ii, D-i
(c) A-ii, B-i, C-iv, D-iii
(d) A-iv, B-iii, C-i, D-ii

59. Which of the following connective tissues has a matrix of collagen and elastin fibres in a rubbery ground substance?
(a) Adipose
(b) Bone
(c) Cartilage
(d) Blood

60. All of the following acts as anaphylotoxins **EXCEPT:**
(a) C3a
(b) C4a
(c) C5a
(d) C6a

61. The mechanism by which B cells ensure that only one heavy and one light chain allele is translated is referred to as:
(a) Co-dominance
(b) Allelic exclusion
(c) Isotypic selection
(d) Idiotypic selection

62. Given below are two statements regarding Major Histocompatibility Complex (MHC).
Statement A: MHC I contain two different polypeptide chains — α chain and βchain.
Statement B: MHC I is present on all nucleated cells.
In the light of the above two statements, select the most appropriate answer from the options given below:
(a) Both Statement A and Statement B are correct.
(b) Statement A is correct but Statement B is incorrect.

(c) Statement A is not correct but Statement B is correct.
(d) Both Statement A and Statement B are not correct.

63. The function of the 3' to 5' exonuclease activity of a DNA polymerase is to:
(a) Remove the 5' end of the polynucleotide strand that is attached to the template strand that is being copied.
(b) Remove incorrect nucleotides from the newly synthesized strand of DNA.
(c) Remove damaged nucleotide from the template strand during DNA synthesis.
(d) Remove nucleotides from the ends of DNA molecules to ensure the generation of blunt ends.

64. Identify which of the following tests in the most convincing to identify a gene as oncogene or tumor suppressor gene:
(a) Transgenic mice overexpressing the candidate oncogene and knock-out mice lacking the candidate tumor suppressor gene.
(b) Transgenic mice overexpressing the candidate tumor suppressor gene and knock-out mice lacking the candidate oncogene.
(c) Transgenic mice that overexpresses the candidate oncogene and tumor suppressor gene.
(d) Knockout mice that lacks the candidate oncogene and tumor suppressor Gene.

65. A study is done on a mammalian cell line that has a doubling time of 24 hours. These cells are synchronized in G1 and then labeled for 2 days with BrdU (an analog of thymidine), At the end of labeling period, chromosomal DNA is isolated from the cells and its density analyzed by equilibrium centrifugation in cesium chloride gradients. Which of the following patterns would be expected to be seen? (H = heavy, L = light):
(a) 100% H/H
(b) 100% H/L
(c) 50% H/H, 50% H/L
(d) 50% H/H 50% L/L

66. Identify the CORRECT order in which extra-cellular signals are transmitted:
A. Adenylate cyclase
B. cAMP
C. Protein kinase A
Choose the CORRECT answer from the options given below:
(a) A, B and C
(b) C, B and A
(c) A, C and B
(d) B, C and A

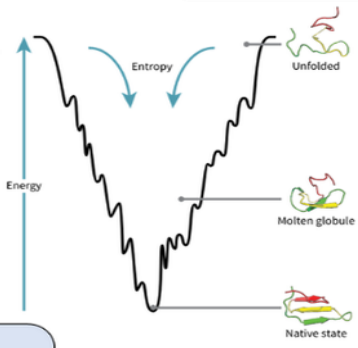
67. Which of the following is **NOT** a function of the lysosomes?
(a) Engulf worn out components of the cells.
(b) Engulf exogeneous substances.
(c) Suicidal bags.
(d) Power generating units.

VEDEMY'S CAPSULE (VEDEMY'S SPECIAL NOTES)

Amino acid Classes

Essential	**M**y **V**ery **T**alented **F**riend **I**s **W**aiting **F**or **K**ajo**L**
Semi-essential	**R**ahu**L**
Non-Polar	**GAV** के लोग **PILW** लेकर **FM** सुन रहे थे
Polar Uncharged	**CN**(कार्टून नेटवर्क) pe **STY**(सत्य) **Q**ues पूछते है
Negative charged	Ye **DE**kh
Positive charged	**R**a**H**u**L** bola
Gluco-ketogenic	**I**tni **T**alented **WYF** (wife)
Ketogenic	**K**ajo**L**

Protein Folding Curve



Energy profile-
High
- **U**- Unstructured
- **M**- molten globule
- **D**- discrete structure
- **N**- native
- **A**- amorphous
- **A**- amyloid

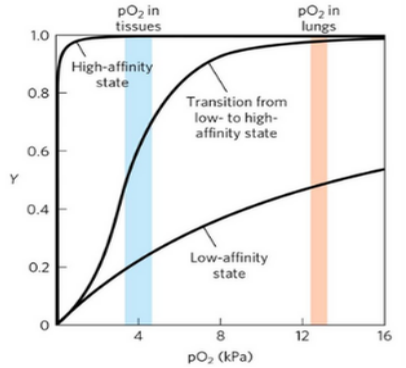
Low

Urmila Matoldkar ka DNA Achha hai

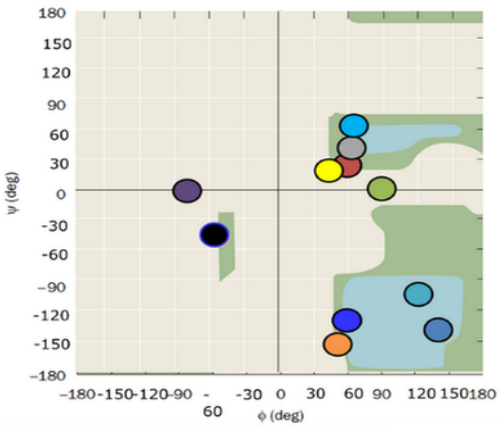
Hemoglobin

State of Hb – MOLD
- **O**xy Hb
- **L**ess acidic (Tensed state)
- **M**ore acidic (Relaxed state)
- **D**eoxy Hb

Affinity of Curve – DRIL
- H+, Temp. BPG, CO_2
- **I**ncrease
- **L**eft shift
- **D**ecrease
- **R**ight shift

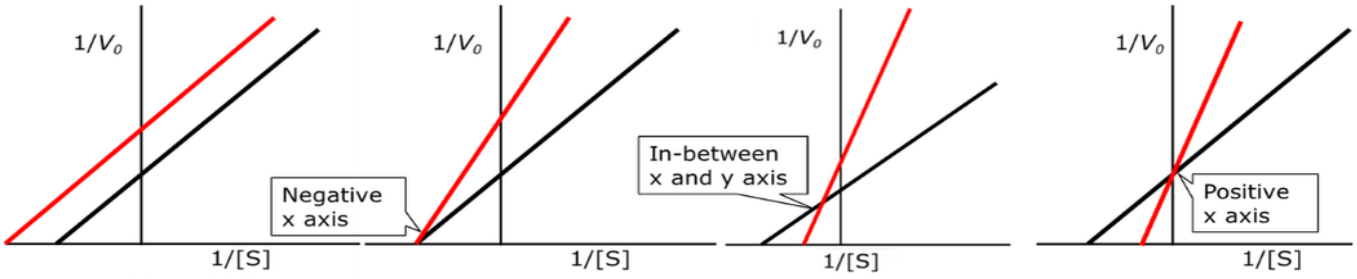


Ramachandran plot



Secondary Structure	Phi	Psi
AP β Sheet	+140⁰	-135⁰
P β Sheet	+120⁰	-115⁰
CTH	+50⁰	-150⁰
L-α-H	-60⁰	-50⁰
R-α-H	+60⁰	+50⁰
Type-I i+1	+60⁰	+30⁰
Type-I i+2	+90⁰	0⁰
Type-II i+1	+60⁰	-120⁰
Type-II i+2	-80⁰	0⁰

Enzyme Inhibition Curve



Uncompetitive Inhibition
Decrease K_m = increased $1/K_m$
Decreased V_{max}= increased $1/V_{max}$

Noncompetitive Inhibition
Decreased V_{max}= increased $1/V_{max}$

Mixed Inhibition
K_m increase
V_{max} decrease

Competitive Inhibition
Increase K_m = decreased $1/K_m$

UP ke **NaNa** patekar **MI** ka **PC** lekar aaye
- Parallel
- Uncompetitive
- Negative x axis
- Non-competitive
- In-between x and y axis
- Mixed
- Positive x axis
- Competitive

68. Given below are two statements:
Statement A: In Anaphase I, homologous chromosomes separate which sister chromatids remain together.
Statement B: In Anaphase II. chromosomes line up along the metaphase plate.
In the light of the above statements, choose the most appropriate answer from the options given below:
(a) Both Statement A and Statement B are correct.
(b) Both Statement A and Statement B are incorrect.
(c) Statement A is correct but Statement B is incorrect.
(d) Statement A is incorrect but Statement B is correct.

69. The function of the hepatic portal circulation is to:
(a) Carry toxins to the venous system for disposal through the urinary tract.
(b) Hormone distribution.
(c) Collect absorbed nutrients for metabolic processing or storage.
(d) Transfer bile to the liver from the pancreas.

70. Which of the following statements is **INCORRECT**?
(a) Aldosterone stimulates the reabsorption of Na^+.
(b) Aldosterone affects water resorption.
(c) Aldosterone is made in the hypothalamus and released from the anterior pituitary.
(d) Aldosterone stimulates the secretion of K^+.

71. Regarding BLAST (Basic Local Alignment Search Tool) all the following statements are CORRECT **EXCEPT:**
(a) The tool is used to compare newly sequenced genomic DNA to known sequences stored in various databases.
(b) Once aligned the result is showed as Output Of three lines: Query, Sbject (Subject) and human sequence.
(c) Access to BLAST is provided by NCBI.
(d) BLAST report also provides an 'Expect' value or E value based on number of Matches.

72. Given below are two statements; in which one is Assertion (A) and the other one is:
Reason (R):
Assertion (A): Cri du chat syndrome is a classical example of endopolyploidy in human.
Reasoning (R): In Cri du chat syndrome there is partial monosomy resulting from small terminal deletion involving chromosome 5.
In the light of above statements choose the CORRECT answer:
(a) Both (A) and (R) are true and (R) is the correct explanation of (A).
(b) Both (A) and (R) are true but (R) is not the correct explanation of (A).
(c) (A) is true but (R) is false.
(d) (A) is false but (R) is true.

73. Given below are two statements:
Statement A: The genetic code is written in linear form with three nucleotide letters thus referred as triplet code.
Statement B: The coding system is highly variable, in different organisms one triplet code can specify different amino acids in different organisms.
In the light of the above statements, choose the CORRECT answer from the options:
(a) Both Statement A and Statement B are true.
(b) Both Statement A and Statement B are false.
(c) Statement A is true but statement B is false.
(d) Statement A is false but statement B is true.

74. In a pedigree, the first person identified to be suffering from a genetic disease is called as:
    (a) Consultant
    (b) Proband
    (c) Kindred
    (d) Consultand

75. Two hypothetical SNPs (Single Nucleotide Polymorphism) in humans are 4 map units (m.u.) apart the allele at SNPI can be A or T; the allele at SNP2 can be C or G. A male with genotype AG/TC and a female with genotype AC/AC have a child. What is the probability they have a child with genotype AG/AC?
    (a) 96%
    (b) 4%
    (c) 48%
    (d) 16%

76. The clover leaf structure is a unique feature of which of the following molecules?
    (a) 28S subunit of ribosome.
    (b) Unspliced mRNA molecule.
    (c) Spliced tRNA molecule.
    (d) Pre-processed sno RNA.

77. An autosomal recessive condition affects 1 new born in 10,000. What is the expected frequency of carriers?
    (a) 198/10,000
    (b) 99/10,000
    (c) 1/100
    (d) 99/100

78. The Hardy Weinberg principle is integral to population genetics. All of the following options can disturb the Hardy Weinberg equilibrium **EXCEPT:**
    (a) Random mating
    (b) Mutation
    (c) Gene Flow
    (d) Small population Size

79. In genetic linkage, the concept of recombination fraction is very important, of the characteristics given here, choose the CORRECT ones:
    A. Recombination fraction is usually designated as θ (theta).
    B. It is the measure of the distance separating two loci on different chromosomes.
    C. It gives an indication of the likelihood that a cross-over will occur between the two loci.
    D. Genes at loci are not linked then θ = 0.5.
    E. Genes at unlinked loci will segregate together during 20% of all meiosis.
    (a) B, C and E
    (b) A, D and E
    (c) A, C and D
    (d) A, B and C

80. The process of genetic counselling involves various steps. These steps have been randomised and listed below. From the options given below, choose the CORRECT sequence in which the counselling steps should be undertaken/performed:
    A. Risk assessment.
    B. Diagnosis based on history and investigation.
    C. Long term contact and support group.

D. Discussion of options.
(a) B, D, C, A
(b) B, A, D, C
(c) A, B, C, D
(d) B, C, A, D

81. In which stage of the cell cycle, the cells double their amount of DNA?
(a) G1 phase
(b) G2 phase
(c) M phase
(d) S phase

82. In Eukaryotes, citric acid cycle takes place in:
(a) Nucleus
(b) Cytoplasm
(c) Mitochondria
(d) Golgi bodies

83. What is the approximate molecular mass of polypeptide containing 100 amino acid residues?
(a) 300 Da
(b) 1 1,000 Da
(c) 30000 Da
(d) 110 Da

84. Human genomic DNA isolated with concentration of 400 μg/ml, needs to be digested with restriction enzyme Bam H1 (2000 U/ml). Investigator needs to set reaction with 10 ug of genomic DNA with 10 units of enzyme. How much volume (in ul - micro litre) needs to be drawn from the two stock solutions respectively to get 10 ug of DNA and 10 U of enzyme?
(a) DNA stock -25μl Enzyme — 5 μl.
(b) DNA stock - 35μl Enzyme- 7.5 μl.
(c) DNA stock — 27.5μl Enzyme — 7.5 μl.
(d) DNA stock — 1OμI Enzyme -10 μl.

85. Match the List I with List II.

	List I		List II
A	Taq DNA polymerase	i	Used to make cDNA.
B	MMLV Reverse Transcriptase	ii	Used to phosphorylate oligos or DNA.
C	RNA polymerase II	iii	Used to amplify DNA.
D	T_4 poly nucleotide kinase	iv	Transcription particularly of mRNA Ln (RNA.

Choose the CORRECT options given below:
(a) A-iv, B-iii, C-ii, D-i
(b) A-iii, B-iv, C-i, D-ii
(c) A-i, B-ii, C-iii, D-iv
(d) A-iii, B-i, C-iv, D-ii

86. Select the CORRECT primer pair of forward and reverse primer sequence that amplify full length of sequence given below:
5' - TAC TAT CGA GTA CTA GAC TAC TAAGT 1 - 100 - 1 ACT, AGA CGT ACG, TAG, TAC, GTT ACT AC - 3'
(a) 5' - ATG ATA GCT CAT GAT CTG AT - 3' Forward.
5' - GTA GTA ACG TAC TAC GTA CG - 3' Reverse.
(b) 5' - TAC TAT CGA GTA CTA GAC TA- 3' Forward.
5 - GTA GTA ACG TAC TAC GTA CG- 3' Reverse.
(c) 5' - ATG ATA GCT CAT GAT CTG AT- 3' Forward.

5' - GCA TGC ATC ATG CAA TGA TG- 3 Reverse.
(d) 5' -TAG TCT AGT ACT CGA TAG TA - 3' Forward.
5' - GCA TGC ATC ATG CAA TGA TG- 3' Reverse.

87. _____variant of BLAST, compares a DNA query sequence to the protein database:
(a) BLASTP
(b) BLASTX
(c) BLAST N
(d) TBLASTN

88. Which one of the following is **NOT** a primary database?
(a) SWISS – PROT
(b) EMBL
(c) DDBJ
(d) Gen Bank

89. The computational approaches to predict the three-dimensional structures of proteins are:
A. Homology modeling
B. X-ray crystallography
C. NMR
D. Threading
E. Ab-initio
Choose the CORRECT answer from the options given below:
(a) A only
(b) B and C only
(c) A, D and E only
(d) C only

90. What happens to transferrin when iron is bound to it and it interacts with its receptor?
(a) It is degraded inside the lysosome.
(b) Undergoes a conformational change allowing binding to its receptor.
(c) It is converted to apotransferriz.
(d) Permanently internalized and degraded.

91. Which non-viral gene delivery method utilizes physical forces to introduce genetic material into cells?
(a) Liposomes
(b) Poly (L-lysine)
(c) Electroporation
(d) Adenoviruses

92. Which protein is responsible for cleaving double stranded RNA into smaller fragments during RNA interference?
(a) Slicer
(b) Helicase
(c) RISC
(d) Dicer

93. What is the main advantage of using Short Tandem Repeats (STRs) over restriction fragment length polymorphism (RFLP) in DNA fingerprinting?
(a) STRs are easier to visualize on a gel.
(b) STRs requires less DNA and are more resistant to degradation.
(c) STRs produce more distinct band pattern.
(d) STRs are less expensive to analyze.

94. Which of the following steps in PCR is responsible for separating double-stranded DNA into single strands?
(a) Annealing
(b) Extension
(c) Melting
(d) Elongation

95. Match the following

	List I		List II
A	Autotroph	i	Macro consumers
B	Phagotrophs	ii	Micro consumers
C	Saprotrophs	iii	Primary producers
D	Heliotropes	iv	Sun loving plants

Choose the CORRECT answer from the options given below:
(a) A-ii, B-iv, C-iii, D-i
(b) A-i, B-ii, C-iii, D-iv
(c) A-iii, B-i, C-ii, D-iv
(d) A-i, B-iii, C-iv, D-ii

96. The reductive pentose phosphate pathway is also known as:
A. Photosynthetic Carbon Oxidation cycle (PCO)
B. Calvin - Benson cycle
C. Photorespiration
D. C4 cycle
Choose the CORRECT answer from the options given below:
(a) Both A and B are correct
(b) Both B and C are correct
(c) B only
(d) C only

97. Cortisones, used in the treatment of rheumatoid arthritis, are produced from fermentation of_____ by Rhizopus migracans:
(a) Amino acids
(b) Lipids
(c) Glycosides
(d) Starch

98. In cell cycle there are 4 stages. M, G1, S and G2. There is another term commonly used; G0 phase. Choose the best described statement for this G0 phase:
(a) Cells are at growing stage.
(b) Cells are at the stage of differentiation.
(c) Cells have ceased to divide.
(d) Cells are about to double.

99. Based on series of events outlined in Central Dogma, there are enzymes that convert from one Stage to the other, However, one conversion is **NOT** possible yet. Identify the stage:
(a) DNA to RNA
(b) Protein to RNA
(c) DNA to DNA
(d) RNA to DNA

100. In lactose operon, the following events happen:
A. The operon is normally in an "off mode when appropriate substrate in absent.

B. Lactose in an inducer substrate.
C. If lactose is added to the cells environment it triggers events that turn the operator "on".
D. The structural genes are transcribed in 3 different transcripts coding for all three different enzymes.
E. As lactose is depleted, operon is repressed.

Which of the answer is CORRECT?
(a) A, B and C
(b) B, C and D
(c) A, D and E
(d) C, D and E

Section C Biochemistry

101. In NMR spectroscopy, the role of chemical shift is to:
(a) Provide information about the environment of specific nuclei.
(b) Determine the molecular weight of the compound.
(c) Measure the rate of reaction.
(d) Measure the concentration of nuclei.

102. Following are few diseases resulting from ion channel defects. Choose the **INCORRECT** pair from the following pairs:

(a)	Cl- ion channel	Cystic fibrosis
(b)	K^+ (neuronal)	Dominant deafness
(c)	Ca^{2+} (polycystin-1)	Polycystic kidney disease
(d)	Na^+ (neuronal)	Familial hemiplegic migraine

103. Classic hemophilia, or hemophilia A, is the best-known clotting defect This disorder is genetically transmitted as a sex-linked recessive characteristic.
Given below are two statement:
Statement A: In classic hemophilia, factor VIII (anti hemophilic factors) of the intrinsic pathway is missing or has markedly reduced activity.
Statement B: Factor VIII inhibits the activation of factor X, the final protease of intrinsic pathway by factor IX a serine protease.
In the light of the above statements, choose CORRECT answer from the options given below:
(a) Both Statement A and Statement B are true.
(b) Both Statement A and Statement B are false.
(c) Statement A is true and Statement B is false.
(d) Statement A is false and Statement B is true.

104. In number of known three-dimensional protein structures is new in the tens of thousands and more than doubles every couple of years One of the most important resources available to biochemists is Protein Data Bank (PDB). Choose CORRECT statements for PDB from following:
(a) PDB is an archive of experimentally determined three-dimensional structures of biological macromolecules including proteins, RNAS DNAs etc.
(b) PDB is an archive of simulated three-dimensional structures of proteins.
(c) PDB is an archive of experimentally determined three-dimensional Activate Windows structures of proteins only.
(d) PDB is an archive of three-dimensional structures of peptide and protein Sequences.

105. Next-generation pyrosequencing uses two enzymes to detect nucleotide addition with flashes of light:
From the following, identify the CORRECT pair of enzymes:
(a) Luciferase and pyrophosphates.
(b) Surfurylase and luciferase.
(c) Surfurylase and pyrokinase.
(d) Luciferase and phosphokinase.

106. Tay-Sachs disease, in which ganglioside GM2 accumulates in the brain and spleen owing to lack of enzyme X. The symptoms of this disease is progressive developmental retardation, paralysis blindness and death by the age of 3 or 4 years. The CORRECT name of the enzyme X is:
(a) Phosphokinase
(b) Hexokinase
(c) Hexosaminidase A
(d) Neurominidase

107. From the following statements choose the **INCORRECT** statement:
(a) Vitamin A and D are hormone precursors.
(b) Vitamin E and K are oxidation-reduction cofactors.
(c) Vitamin A, D, E and K are isoprenoid compounds.
(d) Vitamin D is produced in skin by UV irradiation of dihydroxycholecalciferol.

108. Many cells can precisely control the time of their own death by one process of programmed cell death, or apoptosis Choose the **INCORRECT** roles of apoptosis from following statements:
(a) Eliminating ani-self-antibodies (cause of many autoimmune diseases).
(b) Monthly sloughing of cells of the uterine wall (during menstrual cycle).
(c) Dropping of leaves in the fall.
(d) Remission in patients with early stage chronic myeloid leukemia.

109. Two homologs that are present in different species are called as:
(a) Orthologs
(b) Paralogs
(c) Ubilogs
(d) Analogs

110. In diabetic ketoacidosis (DKA), which electrolyte imbalance is commonly observed?
(a) Hypocalcemia
(b) Hyperkalemia
(c) Hypokalemia
(d) Hypernatremia

111. During protein synthesis which of the following class of RNA molecular are charged with amino acids?
(a) tRNA
(b) rRNA
(c) mRNA
(d) SnRNA

112. From the following statements, match the CORRECT statements about the mechanism of action of antibiotics given below:

	List I		List II
A	Tetracycline	i	Blocks peptidyl transferase of 80 S eukaryotic ribosome but not that of 70 S (bacterial, mitochondrial and chloroplast ribosomes)

B	Chloramphenicol	ii	Inhibits protein synthesis in (bacterial, mitochondrial and chloroplast) ribosomes by blocking peptidyl transfer; it does not affect cytosolic protein synthesis in eukaryotes.
C	Cycloheximide	iii	Inhibits protein synthesis in bacteria by blocking the A site on the ribosome, preventing the binding of aminoacyl tRNAs.
D	Streptomycin	iv	A basic trisaccharide. causes misreading of the genetic code (in bacteria) at relatively Iow concentrations and inhibits initiation at high concentrations.

Choose the CORRECT options given below:
(a) A-iii, B-ii, C-i, D-iv
(b) A-ii, B-iii, C-iv, D-i
(c) A-iv, B-i, C-ii, D-iii
(d) A-i, B-ii, C-iii, D-iv

113. The most sensitive test among thyroid function test for detecting primary hypothyroidism?
(a) Total T4
(b) Thyroid stimulating hormone (TSH)
(c) Free T3
(d) Thyroglobulin

114. The ATP-dependent pathway of protein degradation in eukaryotic cells is quite different, involving the protein ubiquitin. Ubiquitin is covalently linked to proteins determined for destruction via an ATP-dependent pathway involving three separate types of enzymes- Identify CORRECT set of three separate types of enzymes:
(a) U1 activating enzymes, U2 conjugating enzymes and U3 ligases.
(b) P1 activating enzymes, P2 conjugating enzymes and P3 ligases.
(c) E1 activating enzymes, E2 conjugating enzymes and E3 ligases.
(d) K1 activating enzymes, K1 conjugating enzymes and K3 ligases.

115. In chronic kidney disease, hyperkalemia is often a concern due to impaired renal excretion. Which hormone's decreased activity exacerbates this condition?
(a) Vasopressin
(b) Erythropoietin
(c) Renin
(d) Aldosterone

116. Which one of the following is an experimental method for determining three-dimensional structure of a protein?
(a) X-ray crystallography
(b) Threading
(c) Homology Modeling
(d) Ab-initio method

117. Chose a compound with best docking score:
(a) -3.0 Kcal/mol
(b) -4.5 Kcal/mol
(c) +6.2 Kcal/mol
(d) -9.0 Kcal/mol

118. Which algorithm is used for global alignment?
(a) Needleman—Wunsch
(b) Smith and Waterman
(c) Altschul
(d) Dayhoff

119. In the FASTA format the definition line Start with:
(a) #
(b) @
(c) >
(d) <

120. The PDB -ID or PDB code is of_____ character and is represented as_____:
(a) 1, digits only
(b) 2, letters only
(c) 4 alphanumeric
(d) 5, alphabets only

121. When aligning sequences that are highly divergent best results will be obtained with which substitution matrix?
(a) PAM 1
(b) PAM 100
(c) PAM 25
(d) PAM 250

122. Transport proteins associated with facilitated diffusion process include:
A. Uniporters
B. Pump motors
C. Ion channels
D. Transport motors
Chose the CORRECT answer from the options given below:
(a) A and B only.
(b) B and C only.
(c) A and C only.
(d) C and D only.

123. Plants that take up high amounts off metal elements from soil and store them in their aerial tissue are known as:
A. Hyper accumulators
B. Metallophytes
C. Chelators
D. Reducers
Choose the CORRECT answer from the options given below:
(a) B And C
(b) C And D
(c) A And B
(d) A And D

124. C2 oxidative photosynthetic carbon cycle is known as:
A. Photorespiration
B. Calvin-Benson cycle
C. Photo synthetic carbon oxidation cycle (PCO)
D. Reduction pentose phosphate pathway
Choose the CORRECT answer from the options given below:
(a) Both A and C are correct.
(b) Both A and B are correct.
(c) Both B and C are correct.
(d) Both C and D are correct.

125. Leaves maximize light absorption by continuously adjusting the orientation of leaf lamina is called:
(a) Light channeling
(b) Solar tracking
(c) Sun flecks
(d) Fluorescence

126. Secondary macro nutrients include:
(a) Calcium and Magnesium only.
(b) Calcium and Potassium only.
(c) Magnesium and Potassium only.
(d) Phosphorus and Potassium only.

127. Two peptides are subjected to column chromatography. At the pH of mobile phase, Peptide 'A has a net charge of —3 due to more Glu and Asp residue. Peptide 'B' has a net charge of +1.
Statement A: Peptide 'A' will elute first in cation-exchange column.
Statement B: Peptide 'B' will elute second in anion-exchange column,
In the light of the above statements, choose the most appropriate answer from the options given below:
(a) Both Statement A and Statement B are correct.
(b) Both Statement A and Statement B are incorrect.
(c) Statement A is correct but Statement B is incorrect.
(d) Statement A is incorrect but Statement B is correct.

128. Given below are two statements:
Statement A: PCR can be used for in vitro amplification of genes.
Statement B: PCR can be used to introduce site-directed point mutation in a cloned gene.
Choose the most appropriate answer from the options given below:
(a) Both Statement A and Statement B are true.
(b) Both Statement A and Statement B are false.
(c) Both Statement A is true but Statement B is false.
(d) Both Statement A is false but Statement B is true.

129. Match List I with List II

	List I		List II
A	Spectroscopy	i	pH
B	Chromatography	ii	Wavelength
C	Spectrometry	iii	X-ray
D	Crystallography	iv	Ionization

Choose the CORRECT options given below:
(a) A-i, B-ii, C-iii, D-iv
(b) A-ii, B-iv, C-iii, D-i
(c) A-i, B-iii, C-iv, D-ii
(d) A-ii, B-i, C-iv, D-iii

130. Which of the following restriction endonuclease are '4-base cluster' and leads to "blunt ends'?
(a) Alu I and Hae III
(b) Ava I and Hha I
(c) BamH I and Hind III
(d) Kpn I and Hpa I

131. Match List I with List II.

	List I		List II
A	Confocal Microscope	i	Virus Structures

B	Transmission Electron Microscope	ii	Prion Fibrils
C	Phase Contrast Microscope	iii	Actin Fibres
D	Atomic Force Microscope	iv	Unicellular Organism

Choose the CORRECT options given below:
(a) A-iii, B-i, C- iv, D-ii
(b) A-ii, B-i, C- iv, D-iii
(c) A-iii, B-i, C- ii, D-iv
(d) A-iv, B-i, C- iii, D-ii

132. Match List I with List II.

	List I		List II
A	Protein Primary Structure	i	Circular Dichroism
B	Protein Secondary Structure	ii	Gel filtration chromatography
C	Protein Tertiary Structure	iii	Tandem Mass Spectrometry
D	Protein Quaternary Structure	iv	Nuclear Magnetic Resonance

Choose the CORRECT options given below:
(a) A-i, B-ii, C-iv, D-iii
(b) A-iv, B-iii, C-ii, D-i
(c) A-iii, B-i, C-iv, D-ii
(d) A-iv, B-iii, C-i, D-ii

133. Eukaryotic cells in the tissue has multiple adhesive mechanisms. Animal cell adhesion to basal lamina matrix is mediated by_____:
(a) Connexin
(b) Selectins
(c) Cadherins
(d) Integrins

134. Match List I with List II.

	List I		List II
A	Frederick Sanger 1953	i	Amino acid analyzer
B	Edman Degradation method	ii	Protein-Protein interaction
C	protein microarray	iii	Peptide mass finger print
D	MALDI-TOF	iv	Complete sequence of insulin

Choose the CORRECT options given below:
(a) A-i, B-iv, C-ii, D-iii
(b) A-iv, B-i, C-ii, D-iii
(c) A-iii, B-i, C-ii, D-iv
(d) A-iv, B-iii, C-ii, D-i

135. Given below are two statements:
Statement A: Subtractive hybridization for enriching mRNA and subsequent making enriched library requires involvement reverse transcribing resin-bound single stranded mRNA.
Statement B: During subtractive hybridization DNA-RNA hybrid are separated from unbound mRNA by use of a column chromatography.
Choose the most appropriate answer from the options given below:
(a) Both Statement A and Statement B are correct.
(b) Both Statement A and Statement B are incorrect.
(c) Statement A is correct but Statement B is incorrect.
(d) Statement A is incorrect but Statement B is correct.

136. _____is **NOT** used to tag the secondary antibodies for use in ELISA:
(a) Alkaline phosphatase.

(b) Colloidal gold particles.
(c) Alexa flour.
(d) Horse-raddish peroxidase.

137. Which of the following is **NOT** a method of contraception?
(a) Rhythm method
(b) Withdrawal
(c) Intrauterine device
(d) Cholecystectomy

138. Given below are two statements:
Statement A: Progesterone cooperates with estrogens to prepare and maintain the endometrium for implantation of a fertilized ovum.
Statement B: Progesterone is mainly secreted by ovarian follicles.
In the light of the above statements, choose the most appropriate answer from the options given below:
(a) Both Statement A and Statement B are correct.
(b) Both Statement A and Statement B are incorrect.
(c) Statement A is correct but Statement B is incorrect.
(d) Statement A is incorrect but Statement B is correct.

139. Which of the following statements are CORRECT regarding the "surfactant' lining the alveoli of lungs?
A. It helps in preventing alveolar collapse.
B. It is produced by alvedar type II cells.
C. It's excessive secretion can cause infant respiratory distress syndrome.
D. Dipalmitoyl phosphatidylcholine (DPPC) is an important consituent of the Surfactant.
Choose the CORRECT answer from the options given below:
(a) A, B, C and D.
(b) A, B, and C only.
(c) A, B, and D only.
(d) B, C and D only.

140. Given below are two statements:
Statement A: Respiratory acidosis is caused by an abnormally high $PC0_2$ in systemic arterial blood — above 45 mm Hg-
Statement B: Any condition that decreases the movement of $C0_2$ from the blood to the alveoli of the lungs to the atmosphere causes a buildup of CO_2 H_2C0_3 and H^+.
In the light of the above statements, choose the most appropriate answer from the options given below:
(a) Both Statement A and Statement B are correct.
(b) Both Statement A and Statement B are incorrect.
(c) Statement A is correct but Statement B is incorrect.
(d) Statement A is incorrect but Statement B is correct.

141. Which of the following statements are CORRECT?
A. Oxygen and carbon dioxide diffuse into and out of capillaries following their partial presence gradient.
B. Hemoglobin in RBCs greatly increases the oxygen-carrying capacity of the blood.
C. Hemoglobin do not carry carbon dioxide.
D. In plasma, most carbon dioxide is transported in the form of carbolic acid.
E. Buffers help prevent the blood from becoming too acidic.
Choose the CORRECT answer from the options given below:
(a) A, B C and E only.

(b) A, B and E only.
(c) A, B and C only.
(d) B D and E only.

142. Which of the following statements are CORRECT regarding the term 'Steatorrhea'?
A. It is passage of fatty", bully and Clay-colored strolls.
B. It is caused due to destructon exocrine portion of pancreas.
C. It can be caused due to impaired digestion and absorption of fat.
D. It can be caused by lipase deficiency.
Choose the CORRECT answer from the options given below:
(a) A, B, C and D.
(b) A, B and C only.
(c) A and B only.
(d) A and C only.

143. Which of the following factors lead to an increased cardiac output?
A. Increased sympathetic stimulation.
B. Increased catecholamines in the blood.
C. Decreased body temperature.
D. Calcium channel blockers.
E. Increased contractivity of heart.
Choose the CORRECT answer from the options given below:
(a) B, C and D only
(b) A, B and E only
(c) A and B only
(d) B and E only

144. Which of the following statements are CORRECT regarding angiotensin II?
A. It increases the glomerular filtration rate by causing vasoconstriction of the efferent arterioles.
B. It enhances reabsorption of Na and water in the proximal convoluted tubule.
C. It stimulates the adrenal cortex to release aldosterone.
D. Angiotensin converting enzyme (ACE) converts angiotensin I to angiotensin II.
Choose the CORRECT answer from the options given below:
(a) B, C and D only.
(b) A, D and E only.
(c) D and E only.
(d) A, B and D only.

145. Given below are two statements:
Statement A: Conditioned reflex is a classic example of dissociative learning.
Statement B: A conditioned reflex is a reflex response to a stimulus that previously elicited little or no response and, is acquired by repeatedly pairing the stimulus with another stimulus that normally does produce the response.
In the light of the above statements choose the most appropriate answer from the options given below:
(a) Both Statement A and Statement B are true.
(b) Both Statement A and Statement B are false.
(c) Statement A is true but Statement B is false.
(d) Statement A is false but Statement B is true.

146. A 36-year-old women reported muscle weakness in the extraocular eye muscles and muscles of the extremities. Her muscle weakness worsens by physical activity and improves with rest Sensation appears normal. The woman is suffering from?
(a) Muscular dystrophy

(b) Parkinson's disease
(c) Myasthenia gravis
(d) Multiple sclerosis

147. Genetic code refers to the:
(a) Amino acid sequence of protein.
(b) Nucleotide sequence of triplet corresponding to a particular amino acid.
(c) Number of chromosomes in diploid cells.
(d) Inheritance of genome.

148. Telomerase enzyme plays role in:
(a) DNA replication of whole genome.
(b) Extension of chromosome termini.
(c) DNA replication of centromere.
(d) DNA replication of mismatched genome.

149. Klinefelter syndrome is:
(a) Autosomal trisomy chromosome 21.
(b) Sex chromosome aneuploidy.
(c) Autosomal trisomy chromosome 3.
(d) Triploid abnormality.

150. The trisomy condition in Down Syndrome is due to non-disjunction of chromosome during gamete formation This process occurs during:
(a) Mitosis in Somatic cells of parent.
(b) Mutational process during zygote formation.
(c) Meiosis process in gamete formation.
(d) S phase of Mitosis.

ICMR-BRET-JRF 2024 BIOCHEMISTRY ANSWER KEY

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
b	d	d	d	c	d	b	c	b	d	d	c	c	c	c	b	c	b	c	a
21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
d	c	c	d	c	b	c	b	b	b	d	a	a	d	a	a	c	c	b	b
41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
d	a	c	d	c	c	a	c	Drop	b	b	c	c	d	c	d	b	d	c	d
61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
b	c	b	a	c	a	d	c	c	c	b	d	c	b	c	c	a	a	c	b
81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
d	c	b	a	d	b	b	a	c	b	c	d	b	c	c	c	c	c	b	a
101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120
a	d	c	c	b	c	d	d	a	b	a	a	b	c	d	a	d	a	c	c
121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140
d	c	c	a	b	a	c	a	d	a	a	c	d	b	d	b	d	c	c	a
141	142	143	144	145	146	147	148	149	150										
b	a	b	a	d	c	b	b	b	c										