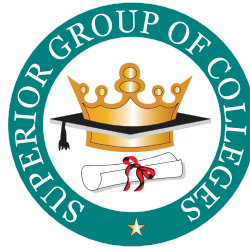


Sample Paper **ECAT**



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Sample Paper **ECAT**

Total number of Sections = 04
Total number of Questions = 100
Time Allowed = 80 minutes

Instructions

The Sample Paper is totally MCQ Based, consisting of Question statements and five Answer choices. You have to select the correct answer choice and fill the corresponding circle/bubble in MCQ response form.

Note: This sample paper does not include quantitatively the same number of questions as there would be in actual paper. This is merely meant to provide conceptual guidance to the candidates. For further practice and guidance, you may consult Preparation guide books of SAT, GRE and Dogor's Publisher book for NAT I, II

CHEMISTRY (Questions 1-30)

Each question has four possible answers. Choose the correct answer and encircle it.

1	The large molecules which are formed by the monomers are called as:
	a) Micro molecules
	b) macro-molecules
	c) both a & b
	d) none
2	Macromolecules are classified into:
	a) organic
	b) inorganic
	c) both a & b
	d) None
3	Organic macro molecules are classified into:
	a) biopolymers
	b) synthetic polymers
	c) both a & b
	d) None
4	Which is not a bio polymer is:
	a) Lipids
	b) Proteins
	c) carbohydrates
	d) None of these
5	The other name for cross linked polymers is:

	a) Linear polymer
	b) Branched polymer
	c) Inter connected polymers
	d) None of these
6	A polymer may be:
	a) Linear
	b) branched
	c) cross linked
	d) All of these
7	In macromolecules DP stands for:
	a) Dissociation parameter
	b) Dissociation polymer
	c) Degree of polymerization
	d) None of these
8	Molecular-mass of polymer = Mol. Mass of monomer x Y the Y is _____
	a) 1000
	b) 1
	c) D.P
	d) All of these
9	A polymer may be:
	a) Homopolymer
	b) Co-polymer
	c) Teropolymer
	d) All of these

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10	The polymers which can be resoften again & again are called resoften:
	a) Thermoplastic
	b) Thermosetting
	c) both a & b
	d) none
11	The polymers which can not be resoften again & again are called:
	a) Thermoplastic Thermosetting
	b) Thermosetting
	c) both a & b
	d) none
12	Which polymerization is free radical mechanism biased
	a) Addition
	b) Condensation
	c) both a & b
	d) None
13	The temp & pressure use for PVC polymerization is:
	a) 10 °C & 10 atm
	b) 20 °C & 20 atm
	c) 52 °C & 9 atm
	d) 100 °C & 10 atm
14	The general formula for carbohydrate is:
	a) $C_x(H_2O)_y$
	b) C_nH_{2n+2}

	c) CH
	d) none of these
15	$(CH_2O)_n$ is general formula for:
	a) monosaccharides
	b) Oligosaccharides
	c) Polysaccharides
	d) None of these
16	Monosaccharides are:
	a) Aldoses
	b) ketoses
	c) Either a & b
	d) None of these
17	Monosaccharides and oligosaccharides are generally called as:
	a) Crystals
	b) Sugars
	c) Liquids
	d) Non-Sugars
18	Polysaccharides are also called:
	a) Crystals
	b) Sugars
	c) Liquids
	d) Non-Sugars
19	Glycogen is stored in:
	a) Animals
	b) Plants

	c) Soil
	d) None of these
20	α -D-glucose is a monomer for
	a) Starch
	b) Cellulose
	c) Glycogen
	d) Proteins
21	β D-glucose is a monomer for:
	a) starch
	b) Cellulose
	c) Glycogen
	d) Protein
22	A high molecular weight organic materials, which upon hydrolysis give amino acid is called:
	a) Fats
	b) Proteins
	c) carbohydrates
	d) None of these
23	Proteins are classified into:
	a) Simple protein
	b) Complex proteins
	c) Derived proteins
	d) All of these
24	The protein which only yield amino acids and their derivatives:
	a) Simple protein

	b) Complex proteins
	c) Derived proteins
	d) All of these
25	When a protein is attached with a non-proteins group that non-proteinic group is called:
	a) activator
	b) Macroproteins
	c) Prosthetic
	d) None
26	The protein which is derived by conjugate proteins are called as:
	a) Simple proteins
	b) Complex proteins
	c) derived proteins
	d) None
27	Proteins may have:
	a) Primary structure
	b) Secondary structure
	c) Tertiary structure
	d) All of these
28	The three dimensional folding and twisting of a polypeptide chain give rise to:
	a) Primary structure
	b) Secondary structure
	c) Tertiary structure
	d) All of these

29	Ester of fatty acids with glycerol are:
	a) Simple lipids
	b) Complex lipids
	c) derived lipids
	d) None
30	Sterols, vitamin D and terpenes belong to:
	a) Simple lipids
	b) Complex lipids
	c) derived lipids
	d) None

PHYSICS (Questions 31-60)

Each question has four possible answers. Choose the correct answer and encircle it.

31	To and fro motion of a body about its mean position is known as:
	a) Linear motion
	b) Rotatory motion
	c) Angular motion
	d) Vibratory motion
32	In SHM, the acceleration of a body is directly proportional to:
	a) Applied force
	b) Displacement
	c) Restoring force
	d) Amplitude

33	The maximum distance of vibrating body from mean position is called:
	a) Displacement
	b) Time Period
	c) Frequency
	d) Amplitude
34	The time taken to complete one revolution is called:
	a) Frequency
	b) Time Period
	c) Time
	d) Displacement
35	A force of 20 N is applied on an elastic spring. If the extension produced in the spring is 10 cm, the spring constant k is:
	a) 20 N/m
	b) 40 N/m
	c) 10 N/m
	d) 200 N/m
36	The main cause of an oscillatory motion of an elastic spring is:
	a) Mass of the spring
	b) Weight of spring
	c) K.E of the spring
	d) Restoring of the spring
37	A particle performing SHM has displacement equal to:

	a) $x_o \sin \omega t$
	b) $x_o \cos \omega t$
	c) Both a & b
	d) $x_o \sin^2 \omega t$
38	The angular speed of mass attached with spring is:
	a) $\omega = \frac{1}{2\pi} \sqrt{\frac{m}{n}}$
	b) $\omega = \sqrt{\frac{k}{m}}$
	c) $\omega = \frac{2\pi}{T}$
	d) $\omega = 2\pi \sqrt{\frac{m}{k}}$
39	The velocity of a body in SHM is maximum at the:
	a) Extreme position
	b) Between mean & extreme position
	c) Mean position
	d) Between extreme & mean
40	The acceleration of projection of a point P on the diameter moving on a circle is:

	a) $-\omega^2 x$
	b) ωx^2
	c) $-\omega x^2$
	d) $\omega^2 x$
41	The time period of second pendulum is:
	a) 1 sec
	b) 1.5 sec
	c) 2 sec
	d) None of these
42	A body performing SHM has a displacement x given by the equation $x = 30 \sin 50t$, what is the frequency of oscillation:
	a) 0.020 Hz
	b) 0.13 Hz
	c) 8.0 Hz
	d) 50 Hz
43	When a particle is moving along circular path, its projection along the diameter execute:
	a) SHM
	b) Angular motion
	c) Linear motion
	d) Rotatory motion
44	The total energy of a body executing SHM is directly proportional to:
	a) The Amplitude
	b) Square of Amplitude
	c) Square root of Amplitude

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	d) None of these
45	The maximum K.E of the mass attached to spring is given by:
	a) $(K.E)_{\max} = \frac{1}{2} kx_0^2$
	b) $(K.E)_{\max} = \frac{1}{2} kx_0$
	c) $(K.E)_{\max} = \frac{1}{2} kx^2$
	d) $(K.E)_{\max} = \frac{1}{2} kx$
46	The maximum velocity of the mass attached to the end of an elastic spring:
	a) $V_0 = x_0 \sqrt{\frac{m}{K}}$
	b) $V_0 = x \sqrt{\frac{K}{m}}$
	c) $V_0 = x \sqrt{\frac{m}{K}}$

	d) $V_0 = x_0 \sqrt{\frac{K}{m}}$
47	If the mass of a bob of a simple pendulum is doubled, its time period is:
	a) One half
	b) Double
	c) Remains constant
	d) One fourth
48	When the bob of a simple pendulum is at mean position then it has:
	a) Potential energy
	b) Kinetic energy
	c) Both a and b
	d) None of these
49	Total energy of a particle executing SHM at any displacement x is given by:
	a) T.E = kx^0
	b) T.E = $\frac{1}{2} kx_0^2$
	c) T.E = $\frac{1}{2} kx_0$

	d) T.E = $\frac{1}{2} kx$
50	At the centre of the earth, the simple pendulum will:
	a) Vibrate with double time period
	b) Vibrate with half time period
	c) Move with infinite time period
	d) None of these
51	The direction of both acceleration and restoring force in SHM is:
	a) In same direction
	b) In opposite direction
	c) Perpendicular to each other
	d) None of these
52	If a oscillating body is subjected to an external force then it is said to be executing:
	a) Free oscillation
	b) Forced oscillation
	c) Mixed oscillation
	d) Damping
53	If the position of oscillating object is given by the equation $x = \sqrt{2} \cos \frac{p}{8} t$ then its displacement after two seconds is:
	a) 3 m
	b) 2 m

	c) 1 m
	d) 0 m
54	The amplitude of the lead ball is much greater than that of the:
	a) Pitch ball
	b) Rubber ball
	c) Plastic ball
	d) None of these
55	Damping effect applied on an aeroplane wing is:
	a) For more speed
	b) To push upward
	c) To overcome resonance
	d) To overcome gravity
56	In oscillating motion:
	a) P.E remains constant
	b) K.E remains constant
	c) Total energy remains constant
	d) None of these
57	The body oscillates due to:
	a) Gravitational force
	b) Frictional force
	c) Restoring force
	d) Deforming force
58	The oscillatory motion which does not repeat after regular interval of time is called:
	a) Periodic motion

	b) Circular motion
	c) Non-periodic motion
	d) Orbital motion
59	Acceleration of spring mass system is:
	a) Uniform
	b) Variable due to both change in magnitude and direction
	c) Variation due to change in direction
	d) Variation due to change in magnitude
60	In an isolated spring mass system, total energy is:
	a) Variable
	b) Constant
	c) Low
	d) High

MATH (Questions 61-90)

Each question has four possible answers. Choose the correct answer and encircle it.

61	A sequence is a special type of function from subset of N to
	a) Q
	b) R
	c) C
	d) Both b & c
62	If all the members of a sequence are real numbers then it is called

	a) Sequence
	b) Series
	c) Real sequence
	d) None of these
63	Generally, we use the symbol to represent the sequence
	a) a
	b) a_n
	c) $\{a_n\}$
	d) a_1
64	If the domain of the sequence is finite then the sequence is
	a) Finite
	b) Infinite
	c) Unique
	d) None of these
65	An infinite sequence has no
	a) 1st term
	b) Middle term
	c) Last term
	d) Zero term
66	If $a_{n-3} = 2n - 5$ then $a_n =$
	a) $2n + 1$
	b) $2n + 3$
	c) $2n - 2$

	d) $2n - 8$
67	Write the next two terms of the sequence 7, 9, 12, 16, ...
	a) 20, 23
	b) 21, 25
	c) 20, 26
	d) 21, 27
68	What is the sequence, if $a_n - a_{n-1} = n + 1$ and $a_4 = 14$?
	a) 2, 3, 5, ...
	b) 2, 4, 8, 12, ...
	c) 2, 5, 9, 14, ...
	d) 3, 5, 9, 14, ...
69	If $a_{n-2} = 3n - 1$, what is the nth term of the sequence?
	a) $2n + 5$
	b) $3n - 5$
	c) $3n + 5$
	d) $4n - 5$
70	Which term of the A.P. 5, 2, -1, ... is -85?
	a) 15th term
	b) 30th term
	c) 35th term
	d) 31st term

71	What is the nth term of the sequence $\left(\frac{4}{3}\right)^2, \left(\frac{7}{3}\right)^2, \left(\frac{10}{3}\right)^2, \dots$
	a) $\left(\frac{3n-1}{3}\right)^2$
	b) $(3n+1)^2$
	c) $\left(\frac{3n+1}{2}\right)^2$
	d) $\left(\frac{3n+1}{3}\right)^2$
72	If $\frac{1}{a}$, $\frac{1}{b}$ and $\frac{1}{c}$ are in A.P. then $b =$
	a) $\frac{ac}{a+c}$
	b) $\frac{a-c}{a+c}$
	c) $\frac{2ac}{a+c}$

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	d) $\frac{a-c}{2ac}$
73	Middle term of three consecutive terms in A.P. is the A.M. between the
	a) 1st and 2nd term
	b) 2nd and 3rd term
	c) Extreme terms
	d) None of these
74	If A_1, A_2, \dots, A_n are $n - 1$ A.M's between a and b then what is the common ratio?
	a) $b + c$
	b) $b - a$
	c) $\frac{b+a}{n-1}$
	d) $\frac{b-a}{n+1}$
75	If A_1, A_2, \dots, A_n are $n - 1$ A.M's between a and b then A_n is
	a) $a - nb$
	b) $\frac{a+nb}{n+1}$

	c) $\frac{b+na}{n+1}$
	d) $b - na$
76	If 5, 8 are two A.M's between a and b , what is a & b ?
	a) 2, 9
	b) 3, 11
	c) 2, 11
	d) 3, 9
77	If A_1, A_2, \dots, A_n are $n - 1$ A.M's between a and b then $A_1 + A_2 + \dots + A_n$
	a) nA_n
	b) $(n - 1)A_n$
	c) $(n + 1)A.M$
	d) $(n)A.M.$
78	The sum of in indicated number of terms in a sequence is called
	a) A.P
	b) G.P.
	c) H.P.
	d) Series
79	The sum of first n -terms of an A.P. is

	a) $S_n = \frac{n}{2}(a_1 + a_n)$
	b) $S_n = a_1 + a_n$
	c) $S_n = n(a_1 - a_n)$
	d) $S_n = \frac{n+1}{2}(a_1 + a_n)$
80	If the partial sum of 19-terms of arithmetic series $2 + \frac{7}{2} + 5 + \frac{13}{2} + \dots$ is $\frac{559}{2}$, what is 19th term?
	a) 21
	b) 23
	c) 26
	d) 29
81	How many terms of $-7 + (-4) + (-1) + \dots$ amount to 114?
	a) 8
	b) 12
	c) 20
	d) 40

82	If $S_n = n(2n - 1)$ then what is the series?
	a) $2 + 3 + 5 + 7 + \dots$
	b) $1 + 3 + 5 + 7 + \dots$
	c) $2 + 4 + 6 + 8 + \dots$
	d) $1 + 5 + 9 + 13 + \dots$
83	If a and r are the first term and common ratio respectively, (n + 1)th term of G.P. is
	a) ar^n
	b) ar^{n+1}
	c) ar^{n-1}
	d) 0
84	If $\frac{1}{a}$, $\frac{1}{b}$ and $\frac{1}{c}$ are in G.P. then the common ratio is
	a) $\pm\sqrt{\frac{a}{b}}$
	b) $\pm\sqrt{\frac{b}{c}}$
	c) $\pm\sqrt{\frac{a}{c}}$

	d) $\pm\sqrt{\frac{c}{a}}$
85	$2^1 + 2^2 + 2^3 + \dots + 2^n =$
	a) $2(2^n - 1)$
	b) $2(2^{n-1} - 1)$
	c) $2(2^{n+1} - 1)$
	d) None of these
86	If G_1, G_2, \dots, G_n are n - G.M's between a and b then what is the value of r ?
	a) $\left(\frac{b}{a}\right)^n$
	b) $\left(\frac{a}{b}\right)^n$
	c) $\left(\frac{b}{a}\right)^{\frac{1}{n+1}}$
	d) $(ab)^{\frac{1}{n}}$

87	The product of n - G.M's between a and b is
	a) $a^n b^{\frac{n}{2}}$
	b) $a^n b^{\frac{n}{3}}$
	c) $b^n a^{\frac{n}{2}}$
	d) $a^n \left(\frac{b}{a}\right)^{\frac{n}{2}}$
88	If G_1, G_2, \dots, G_n are n - G.M's between a and b then $(G_1 \cdot G_2 \cdot \dots \cdot G_n)^{\frac{1}{n}} =$
	a) $a\sqrt{\frac{b}{a}}$
	b) $\sqrt[3]{\frac{b}{a}}$
	c) $\sqrt[3]{ab}$
	d) $a\left(\frac{b}{a}\right)^{\frac{1}{2}}$

89	For what value of n, is $\frac{a^n + b^n}{a^{n-1} + b^{n-1}}$ the G.M. between a and b?
	a) 0
	b) $\frac{1}{2}$
	c) $-\frac{1}{2}$
	d) None of these
90	If $S_n = \frac{a_1(1 - r^n)}{1 - r}$ and if $S_n \rightarrow$ as $n \rightarrow$ then the series is
	a) Convergent
	b) Divergent
	c) Does not exist
	d) None of these

ENGLISH (Questions 91-100)

SPOT THE ERROR: In the following sentences some segments of each sentence are underlined. Your task is to identify that underlined segment of the sentence, which contains the mistake that needs to be corrected. Fill the bubble / circle corresponding to that letter under the segment in the MCQ Response Form

91	<u>Diabetes</u> <u>are</u> an illness caused by <u>too much</u> sugar in <u>the blood.</u> (A) (B) (C) (D)
92	An <u>inflation rate</u> of only <u>2</u> percent <u>make</u> a big <u>difference.</u> (A) (B) (C) (D)
93	<u>The sun,</u> it is one of the million stars, <u>(B)</u> <u>is our only source</u> of <u>heat and light.</u> (A) (B) (C) (D)
94	<u>What have you done</u> with <u>all the money</u> which <u>I gave you last week?</u> (A) (B) (C) (D)
95	The latest film <u>about that</u> there is a lot of controversy <u>has been banned.</u> (A) (B) (C) (D)

In each of the following question, four alternative sentences are given. Choose the CORRECT one and fill the bubble / circle corresponding to that letter in the MCQ Response Form.

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96	a) A fifty rupees he gave me were soon spent.
	b) A fifty rupee he gave me was soon spent.
	c) The fifty rupees he gave me was soon spent.
	d) The fifty rupees he gave me we soon spent.
97	a) Some of our staff in the USA is being asked to move back home.
	b) Some of our staff in USA is being asked to move back home.
	c) Some of our staffs in the USA are being asked to move back home.
	d) Some of our staff in the USA are being asked to move back home.
98	a) The majority of primary school teachers are women.
	b) The majority of primary school teachers is women.
	c) A majority of primary school teacher are women.
	d) A majority of primary school teacher is women.
99	a) The Pakistan of the Quaid is struggling for its survival.
	b) Pakistan of the Quaid is struggling for its survival.
	c) The Pakistan of Quaid is struggling for its survival.
	d) Pakistan of Quaid is struggling for its survival.
100	a) She has several offspring.

	b) She has many offspring.
	c) She has several offspring.
	d) She has several many offspring.