

UGEE 2020 MEMORY BASED PAPER

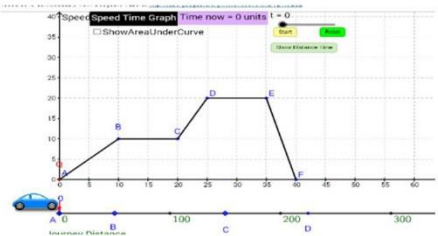
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UGEE 2020 Paper Pattern

PAPER	No. of Que	Time	Marking	Total Marks	Negative Marking
UGEE 2020	100	3 hr		150	
SUPR	50	1 hr	+1	50	0
REAP	50	2 hr	+2	100	-0.5

TIME : 3 HRS

TOTAL MARKS : 150

- A Sample taken by a chemist has 500 gm of CaCO_3 dissolved in an aqueous solution of 500 ml, what will be the molarity of the solution which will be prepared?
 - 5 M
 - 10 M
 - 15 M
 - 20 M
- Approximately how much portion of Bohr's Atomic Model is vacant?
 - 99.99 %
 - 99.9 %
 - 99.9999 %
 - 99 %
- If 2p orbital has $n=2$ and has capacity of 6 electrons then the shell having slightly higher energy than 3p is?
 - 2p
 - 3d
 - 3s
 - 4s
- If displacement Vs Time Graph is as follows. Predict other nature of the same motion.
 
- A question on K, L, M, N shells. If K, L, M, N shells of an atom are full then the total number of electrons in that atom are?
 - 60
 - 18
 - 50
 - 36
- Ratio of masses of 2 bodies are 1:1 and the ratio of time period is 1:8 then calculate the ratio of the length of their semi major axes respectively.
 - 1:4
 - 1:2
 - 1:8
 - 1:12
- As per Einstein's energy equation $E=mc^2$, find the statement which is incorrect.
 - Mass disappears to reappear as energy
 - Energy disappears to reappear as mass
 - Mass and energy are two different forms of the same entity
 - Mass and energy cannot be related to each other
- A packed vessel has monatomic gas which was later converted to diatomic gas by a special instrument. What would be its degree of freedom?
 - 1.5R, 3
 - 2.5R, 5
 - 3.5R, 7
 - 7R, 7

Few graphs of v-t were provided in the options.



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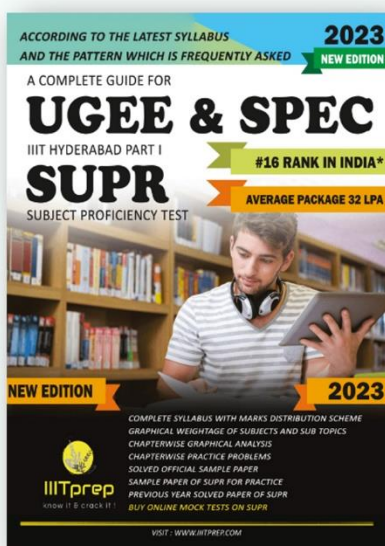
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IIITPREP UGEE 2020 PAPER ANSWER KEY

Answers of UGEE 2020 SUPR

1	B	11	C	21	B	31	D	41	Error
2	C	12	A	22	A	32	A	42	C
3	D	13	B	23	B	33	B	43	C
4	A	14	A	24	A	34	D	44	D
5	A	15	B	25	B, D	35	C	45	A
6	A	16	B	26	A	36	A	46	D
7	D	17	B	27	C	37	B	47	B
8	B	18	C	28	B	38	D	48	A
9	A	19	C	29	A	39	C	49	A
10	B	20	B	30	C	40	D	50	B

Answers of UGEE 2020 REAP

51	C	61	-	71	D	80	Kolmveerand uheksa
52	A	62	D	72	B	81	Veerand viis
53	Try on own	63	A	73	B	82	Pool kaksteist
54	u cto fi	64	C	74		83	Viis minutit seitse labi
55	Dew ece fo	65	B	75	A	84	Pool uks
56	2,1,4,3,6,5,7	66	B	76	A		
57	D	67	C	77	B		
58	D	68	C	78	C		
59	B	69	D	79	D		
60	C	70	C				

6.2

CHAPTER

UGEE 2020 SOLUTIONS

- 1) Correct Answer → (B) 10 M

$$\text{Molarity} = \frac{\text{Number of moles}}{\text{Volume of solution (in litre)}}$$

$$M = \frac{500 \times 1000}{100 \times 500} = 10 \text{ M}$$

- 2) Correct Answer → (C) 99.9999%
NCERT Statement.

- 3) Correct Answer → (D) 4s
Order of energy is given by:
 $4p > 3d > 4s > 3p > 3s > 2p > 2s > 1s$

- 4) Correct Answer → (A)
Slope of x, t Graph gives velocity V

$$V = \frac{dx}{dt}$$

- 5) Correct Answer → (A) 60
Total number of electrons in a shell having principal quantum number "n" is given as " $2n^2$ ".
 \therefore Total number of electrons = $2(1^2 + 2^2 + 3^2 + 4^2) = 60$

- 6) Correct Answer → (A) 1: 4
According to Kepler's third law of planetary motion,

$$T \propto a^{3/2}$$

Where "T" is the time period and "a" is the length of the semi-major axis.

$$\therefore \frac{a_1}{a_2} = \left(\frac{T_1}{T_2}\right)^{2/3} = \left(\frac{1}{8}\right)^{2/3} = 1:4$$

- 7) Correct Answer → (D)

Mass and energy are interrelated using Einstein's equation, $E = mc^2$

- 8) Correct Answer → (B) 2.5R, 5
For a Diatomic Gas, δ (degree of freedom) = 5

$$C_V = \frac{\delta R}{2} = \frac{5R}{2} = 2.5R$$

- 9) Correct Answer → (A) 8

This is the representation of CsCl structure where the co-ordination number is 8.

For $\text{Cs}^+ \Rightarrow \text{Cl}^-$ ions

And,

For $\text{Cl}^- \Rightarrow 8 \text{ Cs}^+$ ions form the nearest neighbor.

- 10) Correct Answer → (B) 1/4

Required probability = 1 – probability of getting an odd number on the cube.

$$P = 1 - \left\{ \frac{3}{10} + \frac{1}{10} + \frac{1}{10} + \frac{1}{10} + \frac{2}{10} \right\}$$

$$P = 1 - \frac{15}{20} = \frac{5}{20} = \frac{1}{4}$$

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