UGEE 2020 MEMORY BASED PAPER

IIITPREP PUBLICATION

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

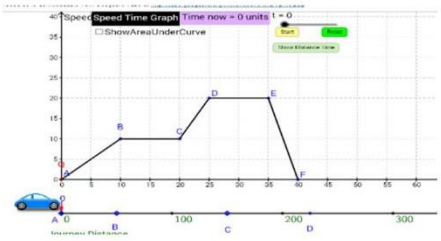
TIME : 3 HRS *TOTAL MARKS : 150*

1. 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?
A. 5 M
B. 10 M
C. 15 M
D. 20 M

2. Approximately how much portion of Bohr's Atomic Model is vacant?
A. 99.99 %
B. 99.9 %
C. 99.9999 %
D. 99 %

3. If 2p orbital has n =2 and has capacity of 6 electrons then the shell having slightly higher energy than 3p is?
A. 2p
B. 3d
C. 3s
D. 4s

4. If displacement Vs Time Graph is as follows. Predict other nature of the same motion.



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

5. 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?
A. 60
B. 18
C. 50
D. 36

6. 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.
A. 1:4
B. 1:2
C. 1:8
D. 1:12

7. As per Einstein's energy equation $E=mc^2$, find the statement which is incorrect.
A. Mass disappears to reappear as energy
B. Energy disappears to reappear as mass
C. Mass and energy are two different forms of the same entity
D. Mass and energy cannot be related to each other

8. A packed vessel has monatomic gas which was later converted to diatomic gas by a special instrument. What would be its degree of freedom?
A. 1.5R, 3
B. 2.5R, 5
C. 3.5R, 7
D. 7R, 7

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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

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

$$M = \frac{500\ X\ 1000}{100\ X\ 500} = 10\ M$$

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 "$2n^2$".

∴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

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

9) Correct Answer → (A) 8

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

For Cs^+=> Cl^- ions

And,

For Cl^- => 8 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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