DATE: 20-11-2014 Momna Shahzard (1st year sec A) 211SICS (Assignment WK-5) from 2 LGS GROUP OF COLLE

**CS** CamScanner

DATE:
Inextia I is 2 mrz and the relationship between 5 the linear.
velocity, the moment of Inextice w
The total energy at the bottom is
$\frac{1}{2} \frac{mv^2}{2} \left( \frac{1}{r} \right)^2$
Symplyfying the ratational kinetic energy
texm: $\frac{1}{2} \frac{2}{5} \frac{mr^2}{r^2} = \frac{1}{5} \frac{mv^2}{5}$
So, the total kinetic energy at the bottom is:  I my2 + I my2 I my2.
Question 2.
low earth oxbit, this velocity can be calculated using the formulation oxbital velocity:
velocity = IGM
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	8					DATE:		
-	<b>D</b>	Where:						
1	7	- C7	1/7/1	the	gravitatio	nal	ansta	nt.
1	>-		0.0 K4 X 10	· My	10 kgr			
1	-	- M	is	the	mass of	eots	b	
1	5	approx	mately	5912	× 1024 kg.	)		
F	<u></u>	· ~	نع	the	distance	Jrom		
	<u> </u>	centre	of	the	easth	0	- 11	he
6		abject	, which	Jos v	oughly	low	eastr	to
		the F		radius	P	lus	the	
		altitud	e of	the	oxbital	/ rang	1 1 1	from
0		- about Easth	200km	8 yace	2000 km Howev		Sim	plify
-6	2	Me	olten	_ w	se the		gath	radius
(e)		(6.3		m) f	10	COLCI	Watio	n. e can
8		using	the	( (	nimate			
-3		Vex	te tical =	16.8	174×1071	5.972×10	324	
0				1	9.311	x108		
9		lalloon		molet	p this,	you J	ind	that
8		Villey	ical = 70	00 m/s	e this,	0		
8								
<b>S</b> _		Since	19000 m/	2	is esser	Maley		PMIZ.
3								
9								
0								
						100000	up or a	OUECES
<b>V</b>						— LGS GRO	OP OF C	OLLEGES

We can use the concept of apparent weight. 1. Understanding Weight in Physics

• The actual weight w of a person
is the gravitational force acting on
them, which is ma, where in is the mass
of a person and ig is the acceleration ane to gravity · When the elevator is at rest or moving at a constant velocity, the apparent weight is equal to actual weight · When the elevator accelerates, the apparent weight is the normal





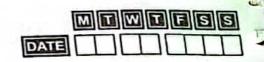
	- 1
Force N exerted by the floor. This changes due	
to the accleration of the elevator.	
Tf the elevator accelerates upward	_
· If the elevator accelerates upward	
with acceleration a the apparent weight	_
can be expressed using Newton's second	— <del>a</del>
law:	4
N = m(g+a)	=
· In this case, a is equal to 9.	
Therefore:	21
$N = m \lfloor g + g \rfloor = 2mg$	_
· hus the amount weight N become	8
2W, since W=mc1	F
Thus, when in the elevators will be 20 when the	
elevator accelerating upward with an	
acceleration equal to g.	
	~
Question no 4	
Given: Speed of the satellite, v = 1.01 km/s	
Speed of the scientific of 200 1100 km	
Radius of the orbit, m= 390,400 km	0
To find the time Tit takes for the satellit	a
to complete one revolution, we use the formul	
for the circumference of the order and up	_
relationship between distance, speed and	
time.	-
C=217	
	. Fig





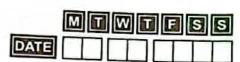
<u></u>	T=C = 211r
-	First let's calculate the circumference:
	$C = 2\pi \times 390,400 \text{km} \approx 2,4,52,629 \text{km}$
	Now, the time to complete one revolution:
	T = 2,452,629  km
-	1. Ol km/s
	T = 2,428,347s
-	To convert seconds into days:
	To convert seconds into days: $T \approx 2,428,3477s \approx 28.11 \text{ days}.$
-	8/
	Therefore, the stitulite will complete one
	revolution approximately every 28.11 days.
	Question.no.5
	Guestori or Wo
	of a geostationary statellite is given by:
	~=/GMT2/1/3
	of a geostationary statellite is given by: $r = (GMT^2)^{V_3}$
-	
-	Where, a ex the amultational constant 16.6
	ich is the gravitational constant 16.6 74 x10-11 m3/kgs2).
	19 X10 m3/Rgs-1.
	-Mis the mass of earth 5,972 x 1024 kg
	·Tis the orbital period (one sidereal day
	in seconds: 861648).
	Given these values, we compute the
	orbital radius r:
1	Opportunity . Comme





Y TC 2
Upon calculating this , we find:  ~ = 42,164 km.
v = 42,164  km
This is the distance from the cerus
of the Earth.
C
Divertise of hearn = length of arc=S=2.50
Diameter at the earth=r=3.8x[08th
O retaince of moor, near
Criven:-  Diameter of beam = length of arc=S=2.50  Distance of moon from the earth=r=3.8x108m  Finds-  Divergence angle = 9=?  Calculation:-  As S=10
Divergence to g
Calculation
Calculation.
9 = 5 W
Putting values, we get
Q = 2.50
3.8×108
Putting values, we get: $0 = 2.50$ $3.8 \times 10^{8}$ $9 = 6.6 \times 10^{-4} \text{ rad}$





Givens- Question. 110.	
Distance between Earth and the Moon = ro =	
courter carth and the Moon = ro =	
Radius of the mass 3.85×108m	
Radius of the moon = vs = 1.74x 106m	
Ratio of soin and los	
Calculation:	-?
Ratio of spin and orbital angular = Ls = Lo	
The spin angular momentum of the Moon about its own axis is	
La T	
LS= JEW	
$Ls = 2 mr_s^2 w (1)$	
The orbital angular momentum is given by	
$\omega = 100$	
$Lo = mro^2 \omega - (2)$	
Dividing equation (1) by equation (2) we get	
LS = 25 mr. 2 W	
Lo mrow	
$\frac{Ls}{Lo} = \frac{2}{5} \frac{r_s^2}{r_o^2}$	
putting values, we get	
$1s - 2 (1.74 \times 10^{6})^{2}$	
Lo 5 (3.85×108)2	
$L_{S} = 8.2 \times 10^{-6}$	
Lo	