Name of Student	Class	Subject	Board	Chapter
	9th	Physics	FB	04
Date :_____	Objective			Teacher Remarks

Section - A

Q. No.1:- Circle the correct option. Each part carries one mark.

01	Two equal but unlike parallel forces having different line of action produce:						
a	A torque	b	A couple	c	Equilibrium	d	Neutral equilibrium
02	The number of forces that can be added by head to tail rule are:						
a	2	b	3	c	4	d	Any number
03	The number of perpendicular components of a force are:						
a	1	b	2	c	3	d	4
04	A force of 10 N is making an angle of 30^0 with horizontal. Its horizontal component will be:						
a	4 N	b	5 N	c	7 N	d	8.7 N
05	A couple is formed by:						
a	Two forces perpendicular to each other	b	Two like parallel forces	c	Two equal and opposite forces in the same line	d	Two equal and opposite forces not in the same line
06	A body is in equilibrium when its:						
a	Acceleration is uniform	b	Speed is uniform	c	Speed and acceleration are uniform	d	Acceleration is zero
07	A body is in neutral equilibrium when its centre of gravity:						
a	Is at its highest position	b	Is at the lowest position	c	Keeps its height if displaced	d	Is situated at its bottom
08	Racing cars are made stable by:						
a	Increasing their speed	b	Decreasing their mass	c	Lowering their centre of gravity	d	Decreasing their width
09	A force of 150 N can loosen a nut when applied at the end of a spanner 10 cm long:						
a	15 Nm	b	8 Nm	c	12 Nm	d	7 Nm
10	What should be the length of the spanner to loosen the same nut with a 60 N force?						
a	0.4 N	b	0.25 N	c	0.1 m	d	8.7 m
11	How much force would be sufficient to loosen it with a 6 cm long spanner?						
a	12 N	b	22N	c	250 N	d	30 N
12	A force of 10 N acting on a body making an angle of 300 with the horizontal. The horizontal component of the force is_____						
a	86.6N	b	87N	c	89.6N	d	8.66N

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Section - B

Q. No.1:- Attempt any eleven parts. The answer of each part should not exceed 3 to 4 lines. (11×3=33).

01	**Why a vehicle is made heavy at its bottom?**	**02**	**How head to tail rule helps to find the resultant of forces?**
03	**Find the magnitude and direction of a force, if its x-component is 12 N and y- component is 5N.**	**04**	**Does the fan satisfy second condition for equilibrium when rotating with uniform speed?**
05	**Why the height of vehicles is kept as low as possible?**	**06**	**Can a small child play with a fat child on the seesaw? Explain how?**
07	**Define terminal velocity?**	**08**	**How does a paratrooper come down?**
09	**Define Moment arm?**	**10**	**What do you mean by axis of rotation?**
11	**Why it is easy to tighten a nut using a spanner of longer arm than a spanner of shorter arm?**	**12**	**The steering of a car has a radius 16 cm. find the torque produced by a couple of 50 N.**
13	**What do you mean by a rigid body?**	**14**	**Why the handle of a door is fixed near the outer edge of a door?**

Q. No.4:- Attempt any TWO questions. All questions carry equal marks: (2×10=20)

Q. No.1:- (a).Define couple. Describe its role in steering wheel double arm spanner?

(b).A nut has been tightened by a force of 200 N using 10 cm long spanner. What length of a spanner is required to loosen the same nut with 150 N force?

Q. No2:- (a).Explain what is meant by stable, unstable and neutral equilibrium. Give one example in each case.

(b).A block of mass 10 kg is suspended at a distance of 20 cm from the centre of a uniform bar 1 m long. What force is required to balance it at its centre of gravity by applying the force at the other end of the bar?

Q. No.3:- (a).How can a force be resolved into its rectangular components?

(b).Find the perpendicular component of a force of 50 N making an angle of 30^0 with x axis.