Class 9 - 10

Physics

Test 1

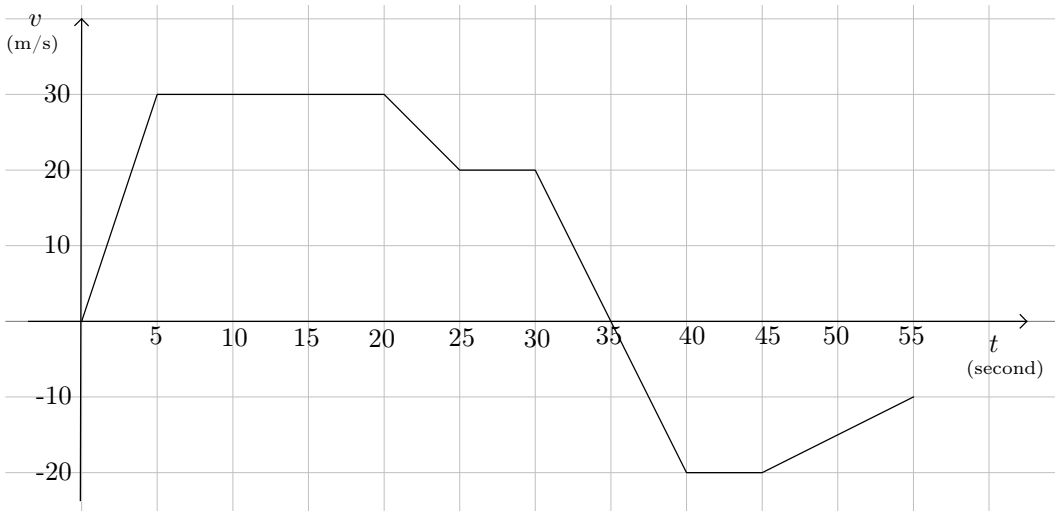
Total: / 35 marks

Friday 26 Sept. 20235

ANSWERS

Question 1 *[20 marks]*

The following graphics shows the ***velocity*** of a bicycle walking on a road for t between 0 and 55s



1) What is the *velocity* of the bike at $t = 27\,\text{sec}$? 20 m/s

2) When, for the second time the velocity of the bike reaches 90 km/h ? at 22.5s

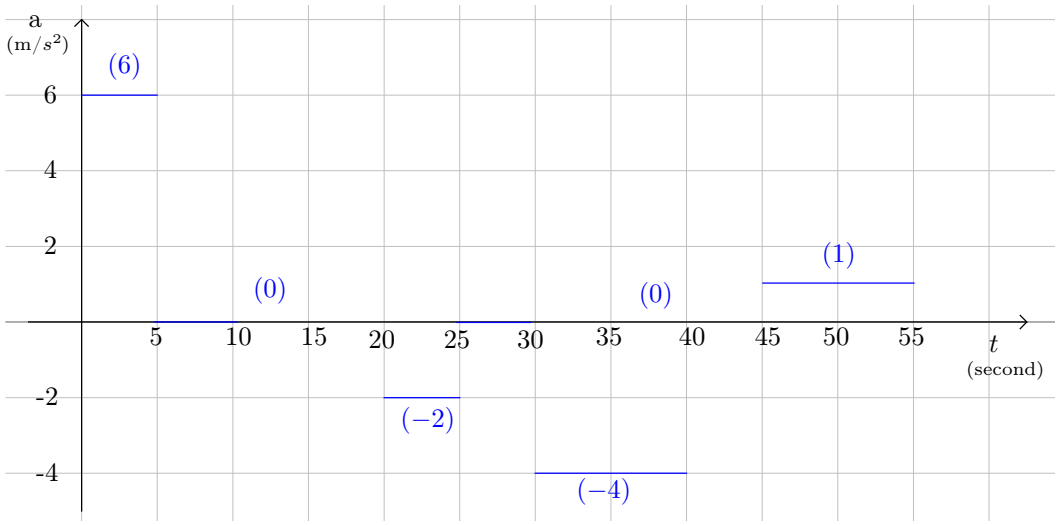
3) What is the *displacement* of the bicycle for $0 \leqslant t \leqslant 25\,s$? 75+450+125=650m

5) The *average velocity* of the bike for $0 \leqslant 1 \leqslant 45\,s$ is $V_A = \frac{650 + 100 + 50 - 50 - 100}{45} = 16.67\text{m/s}$

6) Complete the table on the right by finding all the *accelerations* (with correct unit)

time	acceleration
$0 \leqslant t \leqslant 5s$	$6m/s^2$
5⩽t⩽20 s	$0m/s^2$
$20 \leqslant t \leqslant 25s$	$-2m/s^2$
$25 \leqslant t \leqslant 30s$	$0m/s^2$
$30 \leqslant t \leqslant 40s$	$-4m/s^2$
$40 \leqslant t \leqslant 45s$	$0m/s^2$
$45 \leqslant t \leqslant 55s$	$1m/s^2$

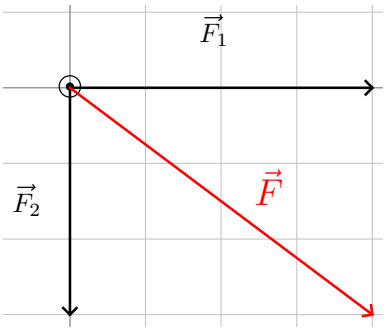
7) Based on your precedent answers, complete the following graphics



Question 2 *[10 marks]*

#	quantity	symbol	**s**: *scalar* or **v**:*vector*	unit
1	time	t	**s**	N
2	acceleration	a	**v**	m/s^2
3	Power	P	**s**	Watt
4	velocity	$\vec{v}$	V	m/s
5	speed	v	S	m/s
6	Pressure	P	**s**	Pa
7	Temperature	T	**s**	K
8	displacement	$\Delta\vec{s}$	**v**	m

Question 3 *[5 marks]*



1) The net force $\vec{F}$ is shown (in red) on the same picture.

2) Assuming that the *amplitude* of $\vec{F_1}$ is 4N and the *amplitude* of $\vec{F_2}$ is 3N, the *amplitude* F of the *net force* will be given by Pythagoras theorem :

$$F^2 = 4^2 + 3^2 = 25 \qquad \text{then } F = 5N$$