Note:Long answer type questions. Attempt any three questions. $3 \times 10=30$
Q. 3 State and prove law of conservation of energy.
Q. 4 Derive expression for total resistance in series and parallel grouping.
Q. 5 What is resolution of force. Derive expression. for resolved parts.
Q. 6 Define electrolysis. Describe any two industrial applications of electrolysis .
Q. 7 a) Explain the manufacture and properties of water gas.
b) Write short note on grease.

No. of Printed Pages : 4 Roll No.

60047

## 4th Sem. / DET-L <br> Subject : ARP. Science

Time : 3 Hrs. M.M. : 100

## SECTION-A

Note:Very Short Answer type questions. Attempt any 15 parts.
Q. 1 a) Write dimensional formula of momentum.
b) Define scalar quantity.
c) Define circular motion.
d) Write unit of power.
e) Define kinetic energy. Give formula.
f) Define Gauge pressure.
g) What is surface tension.
h) Define moment of inertia.
i) Define viscosity.
j) Define manometers
(1)

60047
k) Define symbol.
I) What is the valency of cuprous ion?
m) What is a chemical equation?
n) Define degree Clark.
o) Define soft water.
p) Define calorific value of fuels.
q) Define fuels.
r) Flash point of a lubricant is $\qquad$ than fire point (low / high)

## SECTION-B

Note:Short answer type questions. Attempt any ten parts
$10 \times 4=40$
Q. 2 i) Check correctness of relation $v^{2}-u^{2}=2 a s$
ii) Write note on vector product.
iii) Derive relation $n=r w$
iv) Define work power with units and formula.
v) Derive expression for K.E.
vi) State and prove law of conservation of angular momentum.
vii) Explain Ohm's law.
viii) Derive the molecular formula of
a) calcium Sulphate b) lead chloride
ix) Find the percentages composition of $\mathrm{NH}_{2}$ $\mathrm{CONH}_{2}[\mathrm{~N}=14, \mathrm{C}=12, \mathrm{O}=16, \mathrm{H}=1]$
x) State 4 disadvantages of hard water in industries.
xi) Define temporary and permanent hardness of water. What are the causes of these hardness.
xii) What are the qualities of a good fuel?
xiii) Explain the classification of fuels.
xiv) Write short notes on viscosity, viscosity index.
xv) Define lubricant. Explain the term emulsification

## SECTION-C

(3)

60047

