R STUDIO – EXERCISE 5

AIM: (a) To develop a model regression model and interpret data from a given set of data.

(b) To investigate events and compute the probability of an event's occurrence, using Binomial Distribution.

QUESTION 1

Developing a multiple regression model of BMR on the variables age, height, weight, and BMI and interpret the data for Health.csv

```
> health = read.csv(file.choose())
> age = health$AGE
> weight = health$WEIGHT
> bmi = health$BMI
> height = health$HEIGHT
> bmr = health$BMR
> df <- data.frame(age, weight, height, bmi, bmr)
> model <- lm(bmr~(age+height+weight+bmi), data=df)
> model

Call:
lm(formula = bmr ~ (age + height + weight + bmi), data = df)

Coefficients:
(Intercept)          age       height       weight          bmi
  6.600e+01   -6.760e+00    1.270e+01    6.230e+00   -1.915e-14
```

QUESTION 2

A survey indicates that 41% of American women consider reading as their favourite leisure time activity. You randomly select four women and ask them if reading is their favourite leisure-time activity. Find the probability that

(A) exactly two of them respond yes,

```
> prob1=dbinom(2,size=4,prob=0.41)
> prob1
 [1] 0.3510937
```

(B) at least of them respond yes

```
> prob2=dbinom(c(2,3,4),size=4,prob=0.41)
> sum(prob2)
  [1] 0.5420048
```

(C) fewer than two of them respond yes.

```
> prob3=dbinom(c(0,1), size=4, prob=0.41)
> sum(prob3)
  [1] 0.4579952
```

QUESTION 3

A gun is fixed at a target from a certain distance. The probability of hitting the target is 0.2. Totally two bombs are enough to destroy the target. If six shells are aimed at the target, find the probability of the target destroyed. Plot the probability distribution.

```
> prob=dbinom(x=c(2,3,4,5,6),size=6,prob=0.2)
> sum(prob)
  [1] 0.34464
```

```
> prob=dbinom(x=c(0,1,2,3,4,5,6),size=6,prob=0.2)
> plot(prob, type='o', xlab = "Successes", ylab = "Probability")
```