TEST PLAN

Tools used: Unity framework

Process:

1. Import unity utilities
2. Add unity functions
3. Add unity methods pass function

```
66      int main()
67      {
68              UNITY_BEGIN();
69              RUN_TEST(check);
70              RUN_TEST(check2);
71              RUN_TEST(check3);
72              RUN_TEST(check4);
73              RUN_TEST(check5);
74              RUN_TEST(check6);
75              RUN_TEST(check7);
76              RUN_TEST(check8);
77              RUN_TEST(check9);
78              RUN_TEST(check10);
79              return UNITY_END();
80
81      }
82
```

4. Test case statement for separate functions
   a. Synchronous frequency

```
void check(void)
{
    TEST_ASSERT_EQUAL_INT(50,synfrequency(2,0.04));
}
```

   b. Synchronous speed

```
void check2(void)
{
    TEST_ASSERT_EQUAL_INT(1500,synspeed(50,4));
}
```

C. Power developed

```
void check3(void)
{
    TEST_ASSERT_EQUAL_FLOAT(171.84,powerdeveloped(179,0.04));
}
```

d. Output power

```
void check4(void)
{
    TEST_ASSERT_EQUAL_FLOAT(151.84, outputpower(171.84,20));

}
```

e. Shaft torque

```
void check5(void)
    TEST_ASSERT_EQUAL_FLOAT(1.007431,shafttorque(151.84,1440));
```

f. Efficiency

```
void check6(void)
{
    TEST_ASSERT_EQUAL_FLOAT(60.59,efficiency(250.6,151.84));

}
```

g. Total losses

```c
void check7(void)
{
    TEST_ASSERT_EQUAL_FLOAT(98.76,totallosses(250.6,151.84));
}
```

h. Rotor power

```c
void check8(void)
{
    TEST_ASSERT_EQUAL_FLOAT(206.84,rotorpower(171.84,35));
}
```

i. Torque developed in forward direction

```c
void check9(void)
{
    TEST_ASSERT_EQUAL_FLOAT(192.92,torqueforward(206.84,179));
}
```

j. Torque developed in backward direction

```c
void check10(void)
{
    TEST_ASSERT_EQUAL_FLOAT(13.92,torquebackward(206.84,179));
}
```

5. TEST RESULTS:

```
G:\USER FILES DONT DELETE\Desktop\Implementation\miniproject\3_Implementation>make test
gcc Test/test.c -I -c  SRC/synfrequency.c  SRC/synspeed.c SRC/powerdeveloped.c SRC/outputpower.
RC/torquebackward.c SRC/torqueforward.c unity/unity.c -o Test/TEST_IM_Specifications.exe
./Test/TEST_IM_Specifications.exe
Test/test.c:69:check:PASS
Test/test.c:70:check2:PASS
Test/test.c:71:check3:PASS
Test/test.c:72:check4:PASS
Test/test.c:73:check5:PASS
Test/test.c:74:check6:PASS
Test/test.c:75:check7:PASS
Test/test.c:76:check8:PASS
Test/test.c:77:check9:PASS
Test/test.c:78:check10:PASS

-----------------------
10 Tests 0 Failures 0 Ignored
OK
```