Daffodil International University

Department of Computer Science and Engineering
Faculty of Science and Information Technology

Final Examination, Semester: Spring-2017, Course Code: PHY 113
Course Title: Physics I- Mechanics, Heat and Thermodynamics, Waves and Oscillation, and Optics
Level & Term: L1 T1; Sections: All; Teacher's Initial: All;
Time: 2 Hours Marks: 40

Part-A (8×3 = 24)

(Answer any **three (03)** from the following questions.)

01. a) What is wrong with the following statement? "Given any two bodies, the one with the higher temperature contains more heat." Explain your response in a brief. **02**

b) Draw the Carnot cycle diagram and show that efficiency of Carnot engine does not depend on the working substance. **02+04=06**

02. a) Molar specific heat at constant pressure (C_p) is greater than molar specific heat at constant volume (C_v), Explain why? **02**

b) Prove that, PV^{γ} = Constant, where the symbols have their usual meaning. **06**

03. a) "No thermal Engine cannot be 100% efficient"- Explain why? **02**

b) Show that, adiabatic curve is steeper than isothermal curve. **06**

04. a) By using one light source which phenomenon can be observed, interference or diffraction? How? **02**

b) Explain the mathematical treatment of diffraction at circular aperture. **06**

Part-B (4×4 = 16)

(Answer any **four (04)** from the following questions.)

01. A heat engine takes in 360J of energy from a hot reservoir and performs 250J of work in each cycle. Find (a) the efficiency of the engine and (b) the energy expelled to the cold reservoir in each cycle. **02+02=04**

02. Show that the root mean square velocity of a gas molecule is directly proportional to the square root of absolute temperature. **04**

03. A Carnot's engine has the same efficiency between 1500K and 1000K and between x K and 1500K (this being the temperature of this sinks in this case). Calculate x. **04**

04. In Young's double slit experiment the distance between the two slits is 0.8mm and the distance of the screen from the slits is 1m. Calculate the width of the bright band when the slits are illuminated by a monochromatic light of wavelength of 5890×10^{-10}m. **04**

05. Determination of specific rotation of the given sample of the sugar solution if the plane of polarization is turned through 13^0. The length of the tube containing 15% sugar solution is 20 cm. **04**

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Department of Computer Science and Engineering
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Final Examination, Semester: Spring 2017

Course Code: CSE112 Course Title: Computer Fundamentals
Sections: All Course Teachers: All

BOI DTS

Time: 2.00 Hours **Full Marks: 40**

Part A: Answer any five questions

1. a) Write down the functions of commonly used registers. 3
   b) Draw the basic processor and memory architecture of a computer system. 3

2. a) What are the differences between CISC and RISC processor? 3
   b) Describe about fixed word-length memory. 3

3. a) Write the software development steps and draw the waterfall model. 3
   b) What are the differences between application and system software? 3

4. a) What are the advantages and disadvantages of developing customized software? 3
   b) Write down the rules of naming variables. 3

5. a) Describe "printf()" function with example. 3
   b) Draw the OSI model. 3

6. a) Illustrate data transmission media. 3
   b) What are the roles of communication protocol? 3

Part B: True/False Questions (Answer All) 10x1=10

Select the word "True" if the statement is true and "False" if the statement is false. Write only the appropriate word at your answer script.

1. Output device stores instruction or data that the CPU processes.
2. The CPU and memory are located on a special circuit board in the system unit called the motherboard.
3. Cache memory is placed in between the CPU and ROM.
4. Operating system acts as an interface between user and the hardware.
5. A television broadcast is an example of full-duplex transmission.
6. C language was implemented at the bell laboratories.
7. Protocols are not required to govern communication activity on the Internet.
8. A program in execution is called process.
9. Data can be a number, a word, a picture or a sound.
10. An assembly language is a middle level language.

Daffodil International University

Faculty of Science and Information Technology
Department of Computer Science and Engineering
FINAL EXAMINATION
Semester: Spring 2017, Sec: All
Course Title: Basic Functional English and English Spoken
Course Code: ENG 113, Course Teacher Initial: SZL, HM, IZP, BBH, SA, RU

Time: 1 hour 30 mins. **Full Marks: 30**

Read the following story and answer the questions accordingly:

All spiders spin webs. That's because webs help spiders. Webs help spiders do three things. Webs help spiders hold eggs. Webs help spiders hide. And webs help spiders catch food.

Webs help spiders hold eggs. Many spiders like to lay their eggs in their webs. The webs help keep the eggs together. Webs help spiders keep their eggs safe.

Webs help spiders hide. Most spiders are dark. They are brown, grey, or black. But spider webs are light. They are white and cloudy. When spiders hide in their webs, they are harder to see.

Webs help spiders catch food. Spider webs are sticky. When a bug flies into the web, it gets stuck. It moves around. It tries to get out. But it can't. It is trapped! Spiders can tell that the bug is trapped. That's because spiders feel the web move. And the spider is hungry. The spider goes to get the bug.

As you can see, webs help spiders hold eggs. Webs help spiders hide. And webs help spiders catch food. Without webs, spiders would not be able to live like they do. Spiders need their webs to survive!

1. This passage is mostly about **4x1= 4**

A. spider colors
B. spider webs
C. spider eggs

2. Spider webs help spiders

A. hold eggs
B. digest food
C. find water

3. How can spiders tell when something is trapped in their web?

A. They hear it.
B. They smell it.

C. They feel it.

4. As used in the last sentence of the passage, the word **survive** means to stay

A. alive
B. hidden
C. caught

5. Why does a spider spin webs? **02**
6. How does a web helps spider to catch food? **02**
7. Are you scared of spiders? Why or why not? **02**

8. Fill in the gaps with the right form of the verbs given to make either the first or the second conditional. 0.5x6=3

a. If Mita wore smarter clothes, she_____more attractive. (look)
b. If you_____Tarin, please tell him to call me. (see)
c. We may go to the beach, if the weather _____good.(be)
d. If Zaman _____harder, he will pass his driving test. (try)
e. If I_____you, I would go to the doctor. (be)
f. If I win the lottery, I _____ a big house. (buy)

9. Change the sentences to passive voice. **0.5x6=3**

a. Many people begin new projects in January
b. We have produced cricket bats here since 1964.
c. The spider scared her.
d. The storm destroyed the house.
e. Our neighbors have invited us to dinner.
f. Someone has taken my wallet.

10. Choose the correct form of verbs in the gaps below. **½ x 8= 4**

a. I had known my husband for three years when we_____(get) married.
b. Last year Sadaf_____(pass) all his exams.
c. She_____(work) in the institution for five years and she still enjoys it.
d. Oh no! I_____(lose)my handbag!
e. My great grandmother_____(have) eight brothers.
f. Last night I _____ (lose) my keys – I had to call my flat mate to let me in.
g. She_____(work) hard for eight hours.
h. When I_____(be) a child, I loved ice skating!

11. Write a paragraph on one of the following topic. **10**

Compare your childhood friend with your university friend

Or

Is competition good? Why or why not?

Daffodil International University

Department of Computer Science & Engineering
Faculty of Science and Information Technology
Final Examination, Semester: Spring 2017

Course Code: MAT 111 | **Course Title: Mathematics-I**
Section: All | **Course Teacher: All**

Time: 2 hours | **Full Marks: 40**

Answer any Five (05) from the following questions

1. (a) Write down the formula of $\frac{d}{dx}(uv)$ and $\frac{d}{dx}\left(\frac{u}{v}\right)$. [1]

   (b) Find $\frac{dy}{dx}$ where $y = x^{(\ln x)^{\ln \ln x}}$. [3]

   (c) Differentiate $\tan^{-1}\left(\frac{x-\sqrt{a^2-x^2}}{x+\sqrt{a^2-x^2}}\right)$ with respect to x. [4]

2. (a) Define Homogeneous Function. [1]

   (b) If $u = \ln(x^3 + y^3 + z^3 - 3xyz)$ then show that $\frac{\partial u}{\partial x} + \frac{\partial u}{\partial y} + \frac{\partial u}{\partial z} = \frac{3}{x+y+z}$. [3]

   (c) State Euler's theorem. Using Euler's theorem prove that $x\frac{\partial u}{\partial x} + y\frac{\partial u}{\partial y} + \frac{1}{2}\cot u = 0$, where $u = \cos^{-1}\left(\frac{x+y}{\sqrt{x}+\sqrt{y}}\right)$. [4]

3. Evaluate the following integrals:

   (a) $\int \frac{(1+x)e^x}{\cos^2(xe^x)}dx$ [2]

   (b) $\int \cos^4 x\, dx$ [3]

   (c) $\int \frac{dx}{5+4\cos x}$ [3]

4. (a) Write down the four properties of definite integral. [2]

   (b) Find the value of $\int_0^{\frac{\pi}{2}} \cos 4x \cos 5x\, dx$. [3]

   (c) Evaluate the integral $\int_0^a \sqrt{\frac{a+x}{a-x}}dx$. [3]

5. Evaluates following multiple integrals:

(a) $\int_1^4 \int_{-1}^3 \int_0^2 3xy^3z^2 dzdxdy$ [4]

(b) $\int_1^2 \int_0^{z^2} \int_{x+z}^{x-z} zdydxdz$ [4]

6. (a) Define Gamma function and Beta function. [2]

(b) Prove that $\left|\frac{1}{2} = \sqrt{\pi}\right.$ [3]

(c) Find the value of $\int_0^1 x^2(1-x)^{\frac{3}{2}}dx$. [3]