University Institute of Engineering and Technology

Minor II, Sem I, November 2016, Environmental Studies(For CSE- Sec- II)

Time:90 min **M.M.:30**

(Attempt any three)

Q1.(a) What are the sources and effects of soil pollution. (5)

(b) What are the effects of thermal pollution and how can it be controlled. (5)

Q2.(a) What are the sources of urban and industrial waste? How can solid waste be managed? (5)

(b) What is noise pollution? What are its sources and how it effects human health? (5)

Q3.(a) What are radioactive substances? What are the effects of radiations produced by them? (5)

(b) What is environmental impact assessment? What are its principles and purpose? (5)

Q4. Explain the various effects, prevention and control methods of water pollution. (10)

University Institute of Engineering and Technology
MINOR-II –November 2016

Sub. : Engineering Mathematics-I
Max. Time: 90 min.

Branch: BE-CSE (Sec-I & II)
Max. Marks: 30

(All the questions are compulsory, each carry 6 marks)

Q1) Find the area of the cap cut from the hemisphere $x^2 + y^2 + z^2 = 2,\ z \geq 0,$ by the cylinder $x^2 + y^2 = 1$.

Q2) Find the net outward flux of the field $\vec{F}(x,y,z) = \frac{x\hat{\imath}+y\hat{\jmath}+z\hat{k}}{\rho^3}, \rho = \sqrt{x^2+y^2+z^2}$ across the boundary of the region D: $0 < a^2 \leq x^2 + y^2 + z^2 \leq b^2$.

Q3) Use Stoke's theorem to evaluate $\int_C \vec{F}.d\vec{r}$, if $\vec{F}(x,y,z) = (x+y)\hat{\imath} + (2x-z)\hat{\jmath} + (y+z)\hat{k}$ and C is the boundary of the triangle with vertices $(2,0,0), (0,3,0) and\ (0,0,6)$.

Q4) Show that the p-series convergences if p > 1 and diverges if $p \leq 1$.

Q5) Discuss the convergence of the series: $\frac{1}{1.2} + \frac{1}{2.3} + \frac{1}{3.4} + \cdots \infty$.

$4\sqrt{2}\,\pi\,(\sqrt{2}-1)$

$\iint \nabla \times F.n\, ds$

$= 0$

University Institute of Engineering and Technology, Panjab University.

Minor-II, First Semester, 2016-2017

Programming Fundamentals CSE First year(Section-1 & 2)

CS101/201

Time Alloted :1.5 hrs

M.M.:30

Ques1.a)How is a pointer variable initialized? (2)

b)What are Structures in C? (2)

c)Briefly explain how error handling is done in C? (2)

d)What are Unions in C? (2)

e)What is pointer arithmetic?Explain briefly. (2)

Ques2.a)Write a C program to multiply two 3*3 matrices. (5)

b)Write a C program to sort n names alphabetically. (5)

Ques3.a)Explain different input and output functions in C. (5)

b)Write a C program to copy the contents of one file into another. (5)

UE163095

Ethics & Self-awareness/HSS-101

Time: 1hr.30min. 2nd Sessional Exam Max.Marks:30

Q1) What is Emotional Intelligence? Explain the role of emotional intelligence in Self-development. (10)

Q2) Explain the concept of Transactional Analysis. How does it helps in predicting the behaviour of people? (10)

Q3) Write about Johari Window model . (10)

INTRODUCTION TO COMPUTER SCIENCE AND ENGINEERING
B.E. (CSE) 1ST SEM, Section – I & II

[Time Allowed: 1.5 hrs] **[Max Marks: 30]**

Part-A (All Questions are compulsory)

Q1. (a) Convert $(35E.E1)_{16}$ to decimal. $(21.11)_8$ to decimal
(b). Define Virtual memory. Briefly explain how it can be realized. (2+3=5)
Q2. (a) What is the difference between a compiler and an interpreter?
(b) Draw a flowchart to find factorial of a number. (2+3=5)
Q3. (a) Discuss and Compare Virus, Worms, and Trozen.
(b) Discuss Memory layout for Array. (3+2=5)
Q4. (a) Draw Transition State Diagram for incrementing X by 2 when X = 4.
(b) Write the statement to delete the middle or the last node of the linked list. (4+1=5)

Part-B (Attempt any two questions)

Q5. Define 5 operations on databases. a) select, b) project, c) Join, d) union, e) intersection (5)
Q6. Discuss all the five operators used in propositional logic. Draw the truth tables. (5)
Q7. Why memory is arranged in Hierarchy? What are the functions of RAM, ROM, PROM, EPROM, and EEPROM? (5)

University Institute of Engineering and Technology
Minor II, Sem I, Nov 2016, Quantum and Statistical Physics(For CSE- Sec-II)

Time:90 min **M.M.:30**

Q1.(a) Show that energy of a particle trapped in a rigid box is quantised. (3)

(b) Evaluate the expectation value of p^2 for the following wave function ψ= A $cos^2 x$ for -$\pi/2 < x < \pi/2$.(2)

(c) Evaluate the normalization constant for the wave function given by ϕ = A cos kx, $0 < x < L$.(2)

Q2.(a) Derive Schrodinger's time independent equation using the method of seperation of variables. (2)

(b) Graphically compare the variation of energy levels in a rigid box, harmonic oscillator and hydrogen atom. (2)

(c) Using the radial part of the Schrodinger's equation for hydrogen atom, show that the magnitude of total angular momentum is quantised. (3)

Q3.(a) The Zeeman conponents of a 500 nm spectral line are 0.0116 nm apart when the magnetic field is 1.00 T. Find the e/m rato. (2)

(b) Show that non-interacting particles having symmetric wave function cannot exist in the same state. (2)

(c) Obtain the conditions for radiative transitions in quantum systems and hence list the selection rules for allowed transitions. (3)

(Attempt any six)(Each part carries 1.5 marks each)

Q4.(a) Find the probability that a particle in a box L wide can be found between x = 0 and x = L/n when it is in nth state.

(b) Find the possible angles between the z axis and the direction of spin angular momentum vector S.

(c) Find the percentage difference between L and maximum value of L_z for an atom in s, p and d state.

(d) An eigenfunction of operator d^2/dx^2 is sin(ax). Find the corresponding eigenvalue.

(e) For a particle in a box, show that fractional difference in energy between adjacent eigenvalues is $\Delta E_n/E_n = (2n+1)/n^2$.

(f) Calculate the location at which the radial probability density is a maximum for the ground state of the hydrogen atom.

(g) An electron is incident upon a rectangular barrier of height $V_o = 10eV$ and thickness $a = 1.8X10^{-10}$m. Discuss how transmission coefficient varies with the energy of incident electron relative to potential barrier.

(h) Evaluate probability current for a free particle.

(i) Enumerate the possible values of the quantum numbers j and m_j, for the states in which l = 2 and s = 1/2.