Hall Ticket Number :										

R-11/R-13

Code : 1GC34

II B.Tech. I Semester Supplementary Examinations May/June 2016

Environmental Science

(Common to ECE & IT)

Max. Marks: 70 **Time: 03 Hours**

Answer *any five* questions

All Questions carry equal marks (14 Marks each)

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1. Define environment. Explain the components and scope of environmental studies. 14M

2. a) Write notes on effect of mining on forest and tribal people. 7M
   b) Justify the necessity of developing non-conventional sources of energy. 7M

3. a) What are the various ways by which land is degraded? 7M
   b) Discuss role of an individual in conservation of natural resources. 7M

4. a) Write about solid waste management of urban waste. 8M
   b) Discuss the effects and control measures of thermal pollution. 6M

5. a) What is ecosystem? Classify ecosystems. 5M
   b) Discuss in brief about producers, consumers and decomposers. 9M

6. a) Differentiate between genetic diversity and species diversity. 6M
   b) Write about biodiversity at local, global and national levels. 8M

7. a) What is rainwater harvesting? Classify the rainwater harvesting methods. 8M
   b) What is sustainable development? What are the important? 6M

8. Discuss in brief.
   a) Family welfare programme in India. 7M
   b) Environment and human health. 7M

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Hall Ticket Number :										

R-11/R-13

Code : 1G235

II B.Tech. I Semester Supplementary Examinations May/June 2016

Basic Electrical Engineering

(Common to CSE & IT)

Max. Marks: 70 **Time: 03 Hours**

Answer *any five* questions

All Questions carry equal marks (14 Marks each)

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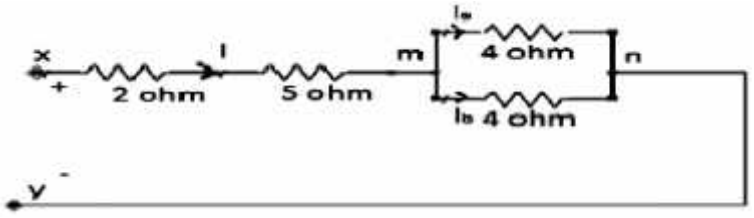
1. a) State and explain Ohm's law? 6M

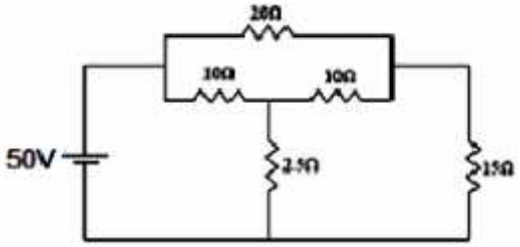
   b) Calculate the voltage that is to be connected across terminal x-y in figure such that the voltage across the 2 ohms resistor is 5V. Also find I_a and I_b. what is the total-power loss in the circuit?



8M

2. a) State and explain Thevenin's Theorem 7M

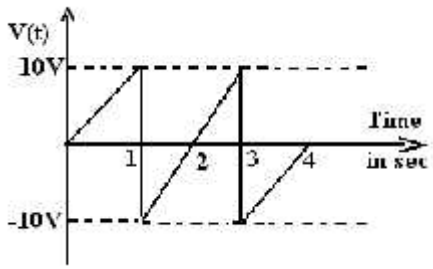
   b) Find Current through 15Ω resistor using Thevenin's Theorem.



7M

3. a) Derive expression for r.m.s. and average value of a sinusoidal alternating quantity. 7M

   b) Find RMS and average value of voltage waveform shown in figrure.Also find form factor and peak factor.



7M

4. a) Derive the relation between phase and line values of a 3-phase balanced star connected system. 7M

   b) Three impedances each of (5+j12) ohm are connected in star to a 220V, 3-phase, and 50 Hz supply. Calculate the line currents 7M

5. a) Explain constructional features of a DC generator? 8M

   b) The Armature of a 6 pole D.C generator has a wave winding containing 664 conductors. Calculate Generated E.M.F When Flex per Pole Is 0.06 wb and speed Is 250 R.P.M. at what Speed must the Armature be Driven to generate an emf of 250 If the flex per pole is reduced to 0.58 wb? 6M

6. a) Explain the tests to be conducted to determine copper and iron losses with neat circuit Diagram. 7M

   b) A 200 / 400V, 50Hz 1 phase transformer on test gave following readings:
   O.C (l.v): 200V, 0.7A, 70W, S.C (h.v): 15V, 10A, 80W. Find efficiency at 0.8 p.f lagging at full load. 7M

7. a) How is a rotating magnetic field produced in a three phase induction motor? Explain in detail with relevant phasors. 7M

   b) Give the difference between an induction motor and a transformer. 7M

8. a) Explain with neat sketch the air friction damping 6M

   b) Explain with neat sketch the construction and working of a MI type Voltmeter. 8M

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Hall Ticket Number :										

R-11/R-13

Code : 1G131

II B.Tech. I Semester Supplementary Examinations May/June 2016

Advanced Data Structures Through C++

(Common to CSE & IT)

Max. Marks: 70 **Time: 03 Hours**

Answer *any five* questions

All Questions carry equal marks (14 Marks each)

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1. a) Define class? Explain various object oriented programming features. 7M
   b) What are constructors and destructors? Explain how they differ from normal functions? Illustrate with an example 7M

2. a) Define Exception handling? Explain the concept of operator overloading with example. 7M
   b) What is need for Virtual Base Classes? Explain with suitable example. 7M

3. a) Explain about time complexity and space complexity ?how we can measure the performance of an algorithm 7M
   b) Convert infix to prefix ((A*B) *((C/D)-(E * (F*G)))) 7M

4. Define Hash Table? Discuss in detail about collision resolution technique? 14M

5. a) Define and explain in detail about Priority Queue ADT. 4M
   b) Define Heap Sort and its Algorithm. Consider the array 25,19,15,13,12,4,6,7,1,3,9. How the array can be sorted using heap sort. 10M

6. a) What is Binary Search Tree? Explain insertion deletion with example and program. 7M
   b) Define Binary Tree? Explain about Binary Tree Traversal Technique With suitable Example. 7M

7. a) Explain about Red black Tree With Example. 7M
   b) Explain about Splay Tree With Example. 7M

8. a) Write and explain the Boyer-Moore algorithm. 7M
   b) What are the properties of Compressed and Suffix tries. 7M

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Hall Ticket Number :										

Code: 1G334 **R-11 / R-13**

II B. Tech. I-Semester Supplementary Examinations May/June 2016

Electronic Devices and Circuits

(Common to CSE & IT)

Max. Marks: 70 **Time: 03 Hours**

Answer *any five* questions
All Questions carry equal marks (14 Marks each)
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1. a) Distinguish between Zener and avalanche breakdown mechanisms 7M
   b) The voltage across a silicon diode at room temperature of 300^0K is 0.71V when 205mA current flows through it. If the voltage increases to 0.8V, calculate the new diode current. 7M
2. a) With neat diagram explain the working principle of a zener voltage regulator. 7M
   b) For a zener shunt regulator if V_s=10V,R_s=1KΩ,R_L=10KΩ, and input voltage varies from 25V to 40V. Find the maximum and minimum values of zener current. 7M
3. a) Define amplifier? Explain how a transistor acts as an amplifier with the help of circuit diagram. 7M
   b) Compare CB, CE, CC configurations with respect to current gain, voltage gain, input resistance and output resistance. 7M
4. a) Draw the collector to base bias circuit with BJT and derive the equations/ expressions for stability factor. 7M
   b) Design a fixed bias circuit using a Si transistor having β value of 100. V_{CC} is 10V and dc bias conditions are to be V_{CE} = 5V and I_C = 5mA. 7M
5. a) Explain the construction and operation of N-channel depletion type MOSFET with neat sketch. 8M
   b) Explain how FET acts as Voltage Variable Resistor.(VVR) 6M
6. a) Define class-B amplifier? Derive the expression for efficiency of push-pull class-B amplifier. 7M
   b) Prove that the maximum efficiency of a series fed, directly coupled class-A amplifier is 25%. 7M
7. a) Explain the general characteristics of negative feedback amplifier? 7M
   b) Classify the amplifiers based on the magnitudes of the input impedance and output impedance of an amplifier relative to the source and load impedance and explain. 7M
8. a) Derive an expression for frequency of oscillations of colpitts oscillator using BJT. 8M
   b) In a transistorized Hartely oscillator the two inductances are 2mH and 20μH, while the frequency is to be changed from 950KHz to 2050KHz.Calculate the range over which the capacitor is to be varied. 6M

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Hall Ticket Number :										

R-11/R-13

Code : 1G133

II B.Tech. I Semester Supplementary Examinations May/June 2016

Mathematical Foundations of Computer Science

(Common to CSE & IT)

Max. Marks: 70 **Time: 03 Hours**

Answer *any five* questions
All Questions carry equal marks (14 Marks each)

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1. a) Show That (~P Λ (~Q Λ R)) V (Q Λ R) V (P Λ R) ⇔ R. 7M
   b) Show that { Λ , V}, {V}, and { ~ } are not functionally complete 7M

2. a) Show that R V S follows logically from the premises C V D, (C V D)→ ~H, ~H → (A Λ ~ B) and (A Λ ~ B) → (R V S) 7M
   b) Show that (x)(P(x) V Q(x)) ==> (x)P(x) V (∃x) Q(x)) 7M

3. a) Let A={1,2,3,4}, and R={(1,1),(1,2),(2,2),(2,4),(1,3),(3,3),(3,4),(1,4),(4,4)}. Verify that R is a partial order on A. Also, write down the Hasse diagram for R. 7M
   b) Show that the functions $f(x)=x^3$ and $g(x)= x^{1/3}$ are inverses of one another. 7M

4. State and prove Lagrange's theorem 14M

5. a) State and prove Binomial theorem 10M
   b) Find the coefficient of x^9y^3 in the expansion of $(2x-3y)^{12}$ 4M

6. a) Solve the recurrence relation $a_n-6a_{n-1}+9a_{n-2}=0$ for n>=2 7M
   b) Solve the recurrence relation $a_{n+2}-10a_{n+1}+21a_n=3n^2-2$, n>=2 7M

7. a) Define Minimal Spanning tree. Write Kruskal's algorithm to construct minimal spanning tree 7M
   b) Write an application of stack in graphs 7M

8. a) Prove that the complete bipartite graph $K_{3,3}$ is Hamiltonian but not Eulerian 7M
   b) Prove that every connected simple planar graph G is 6-colorable 7M

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