Code No: RT32016A | R13 | SET - 1

III B. Tech II Semester Supplementary Examinations, November/December - 2016
ENVIRONMENTAL POLLUTION AND CONTROL
(Civil Engineering)

Time: 3 hours | Maximum Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)
2. Answering the question in **Part-A** is compulsory
3. Answer any **THREE** Questions from **Part-B**

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PART –A

1	a)	What is ISO 14000? What are the series of standards in ISO 14000 family?	[3M]
	b)	Explain the concept of CETP. Give the advantages.	[4M]
	c)	Describe the characteristics of municipal solid waste.	[4M]
	d)	What is environmental sanitation? What are the targets of sanitation?	[3M]
	e)	Define hazardous wastes. Which characteristic of wastes makes them hazardous? Give examples.	[4M]
	f)	Define sustainable development. Briefly explain the elements of sustainable development.	[4M]

PART –B

2	a)	Explain the working principle of Electrostatic Precipitator with a neat sketch. What are its advantages and disadvantages?	[8M]
	b)	How do you control residential and industrial noise	[8M]
3	a)	What are the purposes served by neutralization? Explain any three methods for neutralizing acid and alkaline wastes.	[8M]
	b)	Define equalization. What are the purposes served by equalization? Explain various methods of mixing wastes to affect equalization.	[8M]
4	a)	Explain sanitary land filling method of solid waste disposal. What are the advantages and disadvantages of land filling?	[8M]
	b)	What is the purpose of incineration of solid wastes? With a neat diagram explain incineration process. What are the advantages and disadvantages of incineration?	[8M]
5	a)	What steps you take to maintain sanitary and hygienic conditions in Hospitals and Institutions?	[8M]
	b)	Explain various methods for safe disposal of solid and liquid wastes of a village.	[8M]
6	a)	Describe the classification of biomedical wastes. Discuss procedures adopted for the safe disposal of biomedical wastes.	[8M]
	b)	Define E-wastes. Explain various methods adopted for the management of E-wastes.	[8M]
7	a)	Describe various strategies to be adopted for sustainable development.	[8M]
	b)	Write a detailed note on barriers to sustainability.	[8M]

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Code No: RT32037A **R13** SET - 1

III B. Tech II Semester Supplementary Examinations, November/December - 2016

REFRIGERATION & AIR CONDITIONING

(Mechanical Engineering)

Time: 3 hours Maximum Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B)**
2. Answering the question in **Part-A** is compulsory
3. Answer any **THREE** Questions from **Part-B**

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PART-A

1. a) What is refrigeration? Define one ton of refrigeration. [3M]
   b) Represent ideal vapour compression refrigeration system on T-S and P-h diagrams. [4M]
   c) Discuss the operation of capillary tube in a refrigeration system. [3M]
   d) State the function of absorber and rectifier in vapour absorption system. [4M]
   e) Explain in brief, an adiabatic saturation process. Represent the same on a psychrometric chart. [4M]
   f) Explain selection of the fan using fan characteristic curve. [4M]

PART-B

2. a) Explain Boot strap evaporative cooling air refrigeration system. Draw its schematic and represent the processes on T-S diagram. Write down the equations for calculating mass flow rate, power and COP of the system. [7M]
   b) An air craft moving with speed of 1000 km/h uses simple gas refrigeration cycle for air conditioning. The ambient pressure and temperature are 0.35 bar and -10^0C respectively. The pressure ratio of compressor is 4.5. The heat exchanger effectiveness is 0.95. The isentropic efficiencies of compressor and expander are 0.8 each. The cabin pressure and temperature are 1.06 bar and 25^0C. Determine temperature and pressures at all points of the cycle. Also find the volume flow rate through compressor inlet and expander outlet for 100 TR. Take C_P=1.005 kJ/kg K; R=0.287 kJ/kg K and C_P/C_V=1.4 for air. [9M]

3. a) Explain the effect of evaporator pressure and condenser pressure on the performance of vapour compression refrigeration system using P-h diagram. [7M]
   b) A four cylinder, single acting R-12 compressor 30 cm x 40 cm runs at 960 rpm. The compressor clearance factor is 0.03 and the law of compression $pV^{1.1}$=C. the operating pressures for the vapour compression refrigeration system are: 8.47 bar (35^0C) and 1.004 bar (-30^0C). The refrigerant temperatures are: entering the compressor -20^0C, leaving the compressor 50^0C; entering the condenser 45^0C, leaving the condenser 25^0C, entering the expansion valve 30^0C and leaving the evaporator dry saturated. Assuming that heat removed in the compressor is 25 kJ/sec. calculate: [9M]
   i)The refrigerating capacity ii)The compressor power iii)COP
   iv)Mass of condensing cooling water assuming the rise in temperature to be 10^0C
   v)Also tabulate energy balance for 1 kg of refrigerant.

4. a) Give the comparison between air cooled and water cooled condenser. Explain in detail an evaporative condenser. [8M]
   b) What is an azeotrope? Give some examples to indicate its importance. [8M]

5. a) Explain with a neat sketch, the working of a vortex tube? [8M]
   b) State the advantages and disadvantages of Electrolux refrigerator over conventional refrigerators. [8M]

6. a) What is an effective temperature? State and explain the factors which govern optimum effective temperature? [7M]
   b) The following data apply to an air conditioning system: [9M]
   Room sensible heat =41868 kJ/hr(11.63 kW); room latent heat=41868 kJ/hr(11.63kW); inside design condition= 25^0C, 50% RH, outside design condition=35^0C,DBT, 27.8 WBT. Return air from the room is mixed with the outside air before entering the cooling coil in the ratio of 4:1. Return air from the room is mixed with the cooling air, i.e. after the cooling coil in the ratio of 1:4. Cooling coil by pass factor is 0.1. The air may be reheated if necessary before supplying to the conditioned space. Assume ADP as 10^0C and determine,
   i) Supply air conditions into the room
   ii) Refrigeration load due to the reheat
   iii) Total refrigeration capacity
   iv) The quantity of fresh air supplied.

7. a) Explain in detail, the filters used in air conditioning systems? [8M]
   b) Explain the use of heat pump for heating and cooling cycle with a neat diagram? [8M]

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Code No: RT32045A | R13 | SET - 1

III B. Tech II Semester Supplementary Examinations, November/December - 2016

BIO-MEDICAL ENGINEERING

(Electronics and Communication Engineering)

Time: 3 hours | Maximum Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)
2. Answering the question in **Part-A** is compulsory
3. Answer any **THREE** Questions from **Part-B**

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PART –A

1	a)	What is action potential? What is resting potential?	[4M]
	b)	Write the nearest equation for membrane resting potential.	[3M]
	c)	What is spirometer? Explain the principle of operation of it.	[4M]
	d)	Write short notes on catheterization lab.	[4M]
	e)	List and discuss various types of ultrasonic imaging display modes.	[3M]
	f)	Differentiate between micro shock and macro shock.	[4M]

PART –B

2	a)	What are the various problems encountered in measuring a living system?	[6M]
	b)	Explain briefly various physiological systems of the body.	[6M]
	c)	With neat waveform explain briefly about ECG.	[4M]
3	a)	Explain different types of electrodes for measuring bioelectric potentials.	[9M]
	b)	List and discuss briefly various types of transducers for biomedical applications.	[7M]
4	a)	What is the importance of blood flow? Discus any two methods used to measure blood flow.	[10M]
	b)	Explain the physiology of respiratory system.	[6M]
5	a)	What is fibrillation? How you correct it? Draw and explain d.c defibrillator.	[8M]
	b)	Explain the following i) electroretinogram ii) electrooculogram	[8M]
6	a)	Explain how telemetry can be done for ECG measurement during exercise. List the advantages of telemetry.	[8M]
	b)	Explain the working principle of CT scan with block diagram.	[8M]
7	a)	Discuss strip chart recorders and galvanometric recorders with suitable diagrams.	[8M]
	b)	Explain various methods of accident prevention with diagrams.	[8M]

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Code No: RT32056 **R13** SET - 1

III B. Tech II Semester Supplementary Examinations, November/December -2016

INTELLECTUAL PROPERTY RIGHTS AND PATENTS

(Common to CSE, IT, Chem E and PE)

Time: 3 hours Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B)**
2. Answering the question in **Part-A** is compulsory
3. Answer any **THREE** Questions from **Part-B**

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PART –A

1	a)	Define Intellectual Property	[3M]
	b)	Explain ownership of Copyright.	[4M]
	c)	Write a note on Patent Search.	[4M]
	d)	What is Dilution of Trademarks?	[3M]
	e)	What is a Trade Secret? Illustrate.	[4M]
	f)	Define E-Commerce.	[4M]

PART -B

2	a)	Explain the historical evolution of Intellectual Property.	[4M]
	b)	Discuss the classification of Intellectual Property.	[8M]
	c)	Critically examine the misuse of Intellectual Property Rights.	[4M]
3	a)	Define Copyright. What does it protect?	[3M]
	b)	What are the rights of Authors?	[8M]
	c)	What amounts to infringement of Copyright?	[5M]
4	a)	Distinguish between Product and Process Patents.	[8M]
	b)	Explain the Patentable Subject matter.	[8M]
5	a)	Explain different kinds of Trademarks.	[8M]
	b)	What is infringement of Trademarks? Illustrate.	[8M]
6	a)	Explain the concept of Unfair Competition.	[8M]
	b)	Write a note on the Employee Confidentiality Agreement.	[8M]
7	a)	Explain the salient features of the Information Technology Act, 2000.	[8M]
	b)	Define a Cyber Crime. Discuss different kinds of Cyber Crimes.	[8M]

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