

FACULTY OF ENGINEERING
B.E. 2/4 (Civil) II - Semester (Main) Examination, May / June 2017

Subject : Environmental Studies

Time : 3 Hours

Max. Marks: 75

Note: Answer all questions from Part-A and answer any five questions from Part-B.

PART – A (25 Marks)

- 1 Distinguish between species and genetic diversity. (3)
- 2 Discuss the ill effects of mining operations on the environment. (2)
- 3 Write a brief note on the values of biodiversity. (2)
- 4 What are the functions of pollution control board? (3)
- 5 Define noise pollution. Name any two controlling aspects of noise pollution. (3)
- 6 Write a brief note on population explosion. (2)
- 7 Define and give examples for primary and secondary air pollutants. (3)
- 8 Write briefly how human activities can introduce thermal pollution into streams. (3)
- 9 Illustrate geo thermal energy. (2)
- 10 What is biomagnifications? (2)

PART – B (50 Marks)

- 11 (a) Explain the importance and scope of environmental studies. (5)
 (b) Discuss the role of an individual in the conservation of natural resources. (5)
- 12 (a) Define an ecosystem. Explain the energy flow in an ecosystem with the help of a diagram. (6)
 (b) Explain the concept of ecological succession. (4)
- 13 (a) Explain in-situ and ex-situ conservation of biodiversity. (7)
 (b) Select the major causes of Human wild conflict? Discuss the remedial steps that can curb the conflict. (3)
- 14 (a) Define air pollution. Discuss various approaches to control air pollution. (5)
 (b) Explain various causes and implications of green house effect. (5)
- 15 (a) Define disaster management and explain disaster management cycle. (5)
 (b) Discuss the basic principles of disaster mitigation. (5)
- 16 Explain the following: (5)
 (a) Nitrogen cycle with the help of a neat diagram (5)
 (b) Sustainable development (5)
- 17 (a) Explain the hierarchy of solid waste management. (5)
 (b) What are hotspots of biodiversity? Discuss silent features of hotspots found in India. (5)

FACULTY OF ENGINEERING**B.E. 2/4 (EEE) II - Semester (Main) Examination, May / June 2017****Subject : Power System - I****Time : 3 Hours****Max. Marks: 75****Note: Answer all questions from Part-A and answer any five questions from Part-B.****PART – A (25 Marks)**

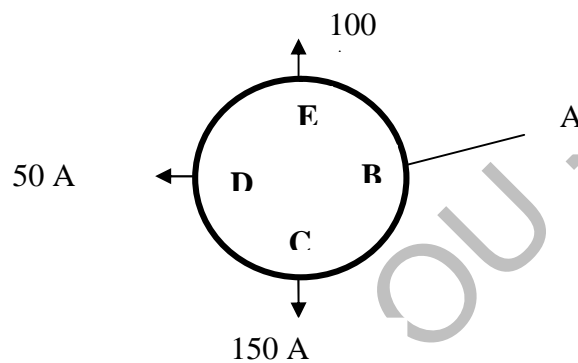
1. Define the Coincidence factor and contribution factor. 3
2. Classify the dams. 2
3. Compare single base and two base systems. 3
4. Explain the basic working principle of Wind generator. 2
5. What are load curves and load duration curves? 3
6. Define the terms: connected load and maximum demand. 2
7. Brief about the effect of wind and ice on the Transmission line. 2
8. What are ACSR conductors? Why are they preferred over copper conductors? 3
9. What is meant by GMR of a conductor? 2
10. Brief about the effect of earth on capacitance of a transmission line. 3

PART – B (50 Marks)

11. a) With the help of neat sketch describe the working of a pressurized water reactor used in nuclear power plants. 6
- b) What are the factors to be considered in selecting the site of a thermal power plant? 4
12. a) Explain with neat sketches, the principle of operation of a geothermal power plant with reference to direct non-condensing cycle. 4
- b) Describe, with a neat diagram, the construction and principle of operation of a flat plate solar energy collector. 6
13. a) The monthly reading of a consumer 's meter are as follows: Maximum demand is 100 KW, energy consumed is 1×10^6 units and reactive energy is 80 MVAR. Hr. If the tariff is Rs. 40 per KW per month of maximum demand plus 10 paise per unit plus Rs. W per KW for each 0.1 of power factor below 0.86. Calculate the monthly bill of the consumer. 6
- b) Define the term diversity factor and show that the load factor and diversity factors are interrelated. 4
14. a) A 33 kV, three phase OH line is supported on a string of 3 similar insulators, the mutual capacitance of which is 10 times the shunt capacitance between the unit and earthed frame work. Calculate the voltage across each insulator and string efficiency. 5
- b) Discuss in detail about Vibration dampers, Arcing horns in details. 5
15. Derive the expression for inductance of a three phase line with conductors un-transposed. 10

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16. a) A string has a few insulator units and its self capacitance is equal to 10 times the pin to earth capacitance. One unit is rated for 11 kV (rms). Find the minimum number of insulator units for supply of 66 kV. 5
- b) Explain about intersheath grading. 5
17. A 2 – wire dc ring main, having the loading at points C, D and E, is fed at point B from a feeder AB. If the cross section area of the feeder is $a \text{ cm}^2$ and that of the distributor is $b \text{ cm}^2$, find the values of a and b for minimum volume of copper in the system. Given that the maximum drop from A does not to exceed 10 volts. The length of the feeder AB is 500 m and the length of distributors BC, CD, DC and EB are 200, 150, 120 and 70 m respectively. Take resistivity of copper as 1.72 micro ohm-cm. 10



FACULTY OF ENGINEERING
B.E. 2/4 (EIE) II - Semester (Main) Examination, May / June 2017

Subject : Thermodynamics and Fluid Mechanics

Time : 3 Hours

Max. Marks: 75

Note: Answer all questions from Part-A and answer any five questions from Part-B.

PART – A (25 Marks)

- 1 Write down steady flow energy equation applied to an insulated horizontal nozzle.
- 2 Plot P-v diagram of an Otto Cycle.
- 3 Why Isothermal work is taken as the basis for defining the efficiency of reciprocating air compressor.
- 4 State the advantages of closed cycle gas turbine cycle.
- 5 Define Dynamic viscosity of a fluid stating the SI and CGS units.
- 6 What is a streak line of a fluid?
- 7 Write down the relation for mass flow rate past on orificemeter.
- 8 State the utility of Euler's equation.
- 9 What is the significance of dimensional analysis?
- 10 State Hagen Poiseulle equation for flow through pipes.

PART – B (50 Marks)

- 11 A Carnot heat engine draws heat from a reservoir at temperature T_A and rejects heat to another reservoir at temperature T_B . The Carnot forward cycle engine drives a Carnot refrigerator which absorbs heat from reservoir at temperature T_C and rejects heat to reservoir at temperature T_B . If $T_A = 500^\circ\text{C}$ and $T_C = 250^\circ\text{C}$, determine T_B such that Heat supplied to engine is equal to Heat absorbed by refrigerator. Also Carnot efficiency of the engine and COP of refrigerator. (10)
- 12 (a) Obtain an expression for isothermal efficiency of a reciprocating air compressor. (4)
 (b) In a 50 percent reaction steam turbine stage running at 3000 r.p.m. the exit angles are 30° and the inlet angles are 50° . The mean diameter is 1 m. The steam flow rate is 10000 kg/min and the stage efficiency is 85%. Determine.
 (i) Power output of the stage
 (ii) The percentage increase in the relative velocity of steam when it flows over the moving blades. (6)
- 13 (a) Define steady, unsteady, uniform and non-uniform flows. (5)
 (b) Find the Stream and Velocity potential functions for a flow field given by : (5)

$$u = 3x^3 + 4xy - 3x \text{ and } v = 3y - 2y^2 - 9x^2y$$
- 14 (a) Derive Bernoulli's equation from Euler's equation. State assumptions made in the derivation. (5)
 (b) 15 cm by 5 cm venturimeter is provided in a vertical pipe carrying crude oil (sp gravity 0.8). The flow is in upward direction. The difference in elevation between the entrance and throat section of the venturimeter is 25 cm. The difference in level between the two limbs of U tube manometer recorded is 20 cm. Calculate the (i) flow rate of oil and (ii) pressure difference between the entrance and the throat section. Take coefficient of discharge of 0.95. (5)

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- 15 A pipe of 400 mm diameter and 2 km long is connected to a reservoir at one end the other end of the pipe is connected to junction from which two pipes each of length 1 km and diameter 300 mm run in parallel. These parallel pipes are connected to another reservoir, which is having level of water 10 m below the water level of the above reservoir. Determine the total discharge if the function factor = 0.06 Neglect minor losses. (10)
- 16 (a) State and prove Clausius Inequality. (5)
(b) Obtain expression for thermal efficiency of a Closed Gas turbine cycle. (5)
- 17 Write short notes on the following:
(a) Critical Reynolds number (5)
(b) Impulse and reaction steam turbine (5)

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FACULTY OF ENGINEERING
B.E. 2/4 (M/P) II - Semester (Main) Examination, May / June 2017

Subject : Thermodynamics

Time : 3 Hours

Max. Marks: 75

Note: Answer all questions from Part-A and answer any five questions from Part-B.

PART-A (25 Marks)

1. What is Quassi static process?
2. Define thermodynamic equilibrium.
3. Define Path & Point function.
4. Explain mathematical form of First law of thermodynamics.
5. Define available & unavailable energy.
6. Define Kelvin Plank statement of second law of thermodynamics.
7. Write Maxwells relations.
8. Define pure substance.
9. Sketch P-V & T-S diagram of Diesel cycle.
10. Define Mole fraction & Volume fraction.

PART-B (5X10=50 Marks)

11. (a) Define Thermometry. Explain various temperature scales.
 (b) Two thermometers one centigrade and other Fahrenheit are immersed in a fluid. After they reach equilibrium with fluid, it is noted that both the thermometers indicate the same numerical value. Find the identical numerical value.
12. In an Air Compressor air flows steadily at the rate of 0.5 kg/s through an air compressor. It enters the compressor at 6m/s with a pressure of 1 bar and a specific volume of $0.85\text{m}^3/\text{kg}$ and leaves at 5m/s with a pressure of 7 bar and a specific volume of $0.16\text{m}^3/\text{kg}$. The internal of the air leaving is $90\text{kJ}/\text{kg}$ greater than that of the air entering. Cooling water in a jacket surrounding the cylinder absorbs heat from the air at the rate of $60\text{kJ}/\text{s}$ calculate
 - (i) the power required to drive the compressor.
 - (ii) the inlet and outlet pipe cross-sectional areas.
13. (a) State and prove equivalence of Kelvin-Plank and Clausius statement.
 (b) A reversible heat engine delivers 0.6kW power and rejects heat energy to a reservoir at 300K at the rate of $24\text{kJ}/\text{min}$. Make calculations for the energy efficiency and the temperature of the thermal reservoir supplying heat to the engine.
14. (a) Explain Mollier diagram
 (b) Explain (p-v-t) surface diagram.
15. (a) Sketch Otto cycle on P-V & T-S diagram.
 (b) A simple Rankine Cycle works between pressures 28 bar and 0.06 bar, the initial condition of steam being dry saturated. Calculate the cycle efficiency work ratio and specific steam consumption.
16. (a) Explain differences between Mole fraction & Volume fraction.
 (b) Define Enthalpy, Entropy & Internal energy.
17. (a) What is Gibbs function.
 (b) Derive the expression for work done during isentropic process.
 (c) Define Zeroth law of thermodynamics give five applications.

FACULTY OF INFORMATICS
B.E. 2/4 (I.T.) I - Semester (Main) Examination, May / June 2017

Subject : Web Technologies

Time : 3 Hours

Max. Marks: 75

Note: Answer all questions from Part-A and answer any five questions from Part-B.

PART-A (25 Marks)

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| 1. What are the different types of CSS Selectors? | 2 |
| 2. Mention JSON fundamentals | 2 |
| 3. What is XSLT Style Sheets? | 2 |
| 4. Define JSP directives with example | 3 |
| 5. How to handle exceptions in JSP? | 3 |
| 6. Give the difference between JSP and Servlet. | 3 |
| 7. Define Web Service. | 2 |
| 8. Give the structure of SOAP message. | 3 |
| 9. Write about the UDDI data structure. | 2 |
| 10. How to manage data using ASP.NET | 3 |

PART – B (50 Marks)

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| 11. a) Explain the CSS BOX model in detail. | 5 |
| b) Write a program to implement event handling in JQuery. | 5 |
| 12. Write DTD for the XML document for student details with the following fields (regno, stud_name, branch, email_id). Also assume values of each field. | 10 |
| 13. Write a Java Servlet program to show passing of initialization parameters from web.xml | 10 |
| 14. a) How to access MySQL database using JSP? | 6 |
| b) Explain the processing of SOAP message. | 4 |
| 15. a) Explain the structure of WSDL interface. | 4 |
| b) Describe UDDI goals and UDDI registry. | 6 |
| 16. a) Explain the rich and user controls of ASP.NET | 4 |
| b) Explain with an example how UDDI and WSDL work together. | 6 |
| 17. a) Explain the working of ASP.NET and AJAX, with suitable example. | 6 |
| b) Discuss about the state management in ASP.NET | 4 |
