Code No. 2891/AICTE/S

FACULTY OF ENGINEERING

B. E. (Civil) (AICTE) III – Semester (Suppl.) Examination,
December 2020

Subject: Engineering Geology

Time: 2 hours **Max. Marks: 70**

Note: (Missing data if, any can be assumed suitable).

PART – A

Answer any five questions. **(5 x 2 = 10 Marks)**

1. Define mineral and write its classification.
2. Draw a neat sketch of fold and label it.
3. List out clay minerals.
4. Write the causes of land slides.
5. What is reservoir? List out problems of reservoir.
6. Explain payline and over break of tunnel.
7. Illustrate the geology of any Indian tunnel that you know.
8. What is Geological hazard?
9. Draw a neat sketch of stress-strain behavior of quartzite.
10. Explain about aerial photographs.

PART – B

Answer any four questions. **(4 x 15 = 60 Marks)**

11. Describe the identification characteristics and constructional use following:
    (a) Basalt (b) Limestone (c) Gneiss (d) Marble.
12. What is fault? Explain classification of faults and add a note on mechanism of faulting.
13. (a) Define weathering write its types and importance in civil engineering.
    (b) Describe the most dominant soil types of India.
14. (a) What are aquifers and describe type with neat sketch?
    (b) Evaluate the abundance of groundwater availability in different lithological formations.
15. (a) Describe the field procedures for seismic refraction survey.
    (b) Describe engineering properties of rocks.
16. Discuss the various problems in tunneling. Suggest the necessary solutions accordingly.
17. Identify the elements at risk, causes, typical effects and main mitigation measures of earthquakes.

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Code No.2907/AICTE/S

FACULTY OF ENGINEERING

B.E. (AICTE) (M/P) III–Semester (Supplementary) Examination, December 2020

Subject: Thermodynamics

Time : 2 hours **Max. Marks : 70**

Note: (Missing data if, any can be assumed suitable).

PART – A

Answer any five questions. **(5 x 2 = 10 Marks)**

1. Differentiate macroscopic and microscopic approach of thermodynamics.
2. What is quasi static process.
3. Define mass fraction and mole fraction with reference to mixtures of gases.
4. What is first law of thermodynamics.
5. Define heat engine, heat pump and a refrigerator.
6. Define available energy and unavailable energy.
7. Define triple point and critical point of a pure substance.
8. What is the importance of Mollier diagram?
9. Draw the P-V and T-S diagram of a Brayton cycle.
10. What are the components of a Vapour compression Refrigeration cycle?

PART – B

Answer any four questions. **(4 x 15 = 60 Marks)**

11. (a) Define and explain the different types of thermodynamics systems with examples.
    (b) Sketch and explain with a neat sketch the working principle of a constant volume ideal gas thermometer.

12. (a) The temperature t on a thermometric scale of a certain thermometer is given by the relation $t = a \log_e p + b$, where a and b are constants and p is a thermometric property of the fluid in the thermometer. If at the ice point and steam point, the values of p are found to be 1.83 and 6.78 respectively, what will be temperature corresponding to a reading of p = 2.42 on the thermometer.
    (b) Obtain the Steady Flow Energy Equations (SFEE) for a (i) Boiler; (ii) Nozzle and (iii) Turbine.

13. (a) Define Heat and Work. Explain the various forms of heat and work.
    (b) A certain gas of mass 4 kg is contained within a piston cylinder assembly. The gas undergoes a process for which $pV^{1.5}$ = constant. The initial state is given by 3 bar, 0.1 m^3 and final volume is 0.2 m^3. The specific internal energy of the gas decreases by 4.6 kJ/kg. Neglecting the changes in KE and PE, find (i) Final Pressure; (ii) Work done during the process; (iii) Heat transfer during the process and (iv) Sketch the process on P-v diagram.

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14. (a) Explain the second law of thermodynamics with reference to heat engine and refrigerator.
    (b) Define entropy. Derive an expression for change in entropy during **(i)** Constant Volume process; **(ii)** Constant Pressure process; **(iii)** Isothermal Process and **(iv)** Polytropic Process.

15. (a) Derive the four Maxwell's relations.
    (b) Explain the process of formation of steam with suitable graphs.

16. (a) Explain the Air standard Otto cycle.
    (b) Explain the Bell Coleman cycle.

17. Write short notes on the following:
    (a) Thermodynamic Equillibrium
    (b) Path function and point function with examples .
    (c) Carnot Heat engine Cycle.

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Code No.2909/AICTE /S

FACULTY OF ENGINEERING

B.E. (A.E) III-Semester (AICTE) (Suppl.) Examination, December 2020

Subject : Thermal Engineering

Time : 2 hours **Max. Marks : 70**

Note: (Missing data if, any can be assumed suitable).

PART – A

Answer any five questions. **(5 x 2 = 10 Marks)**

1 Differentiate between Open, Closed and Isolated Systems.
2 What do you understand by Intensive property and Extensive Property?
3 Define Heat pump and Heat Engine.
4 Define Carnot Theorem.
5 What is meant by Intercooling &Reheating?
6 Mention the advantages and disadvantages of gas turbine.
7 Define C.O.P. of a Refrigerator?
8 Sketch the schematic diagram of a Vapour Absorption refrigeration cycle.
9 Mention the desirable properties of an Ideal refrigerant.
10 What is a fuel cell? Write the working principle of a fuel cell?

PART – B

Answer any four questions. **(4 x 15 = 60 Marks)**

11 a) Derive the Steady flow Energy Equation.
b) Explain any two applications of Steady Flow Energy Equation.

12 a) Obtain the expressions for work transfer for following processes in a closed system: **i)** Constant volume **ii)** Constant Pressure **iii)** Adiabatic process.

b) Explain how the Wet steam, Dry steam and superheated steam is produced.

13 a) Explain Carnot cycle.
b) State and Explain the Clausius Inequality

14 Explain the concept of reheating and regeneration employed in gas turbine with the help of neat sketches. Draw T-S diagrams for the same.

15 a) What is meant by staturation temperature and saturation pressure?
b) Explain the working of a Rankine cycle with the help of P-V & T-S diagrams.

16 a) Derive the expression for minimum work required for multistage compressor.
b) A single stage reciprocating air compressor is required to compress 60 m^3 of air at a temperature of 22^0C from pressure of 1 bar to 8 bar. Find the work done by the compressor if the compression is isentropic.

17 a) Explain the working principle of vapour compression refrigeration system with a neat schematic sketch.
b) Write short notes on Hybrid Electric Vehicles.

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Code No: 2913/AICTE/S

FACULTY OF ENGINEERING

BE III Semester (AICTE) (CSE) (Supple.) Examination, December 2020

Subject: Programming Languages

Time: 2 Hours **Max. Marks: 70**

Note: (Missing data if, any can be assumed suitable).

PART – A

Answer any five questions. **(5 x 2 = 10 Marks)**

1) What are the criteria when a language is evaluated for reliability?
2) Write about the features of EBNF.
3) What is strong typing in programming languages?
4) What are guarded commands? Give example
5) Mention the design issues of functions.
6) Explain with an example the difference between static scope and dynamic scope.
7) What are the applications of logic programming?
8) Define semaphore
9) What is referential transparency in functional languages?
10) Mention the key concepts of scripting languages

PART – B

Answer any four questions. **(4 x 15 = 60 Marks)**

11. a) Explain the compilation process with a neat flowchart.
    b) Write BNF statement for "assign" and using left most derivation, derive the expression A = B * (A + C). Draw the parse tree for the expression.
12. a) Write in detail about the different types of Selection Statements
    b) Write about short circuit evaluation with examples
13. Explain the different parameter passing mechanisms with examples
14. a) Discuss the design issues of Object oriented languages.
    b) How is exception handling implemented in C++?
15. a) Write function to find the factorial of a number in ML and Haskel.
    b) What are the different values and types in Python?
16. a) List out the differences between function programming languages and imperative programming languages
    b) Explain user-defined data types and what its advantages are?
17. a) Explain the concept of co-routines and how they differ from sub-programs?
    b) Write about any 3 basic elements of Prolog with examples.

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Code No: 2895/AICTE/S

FACULTY OF ENGINEERING

BE III – Semester (AICTE)(EEE/Inst) (Suppl.) Examination, December 2020

Subject: Analog Electronics

Time: 2 Hours **Max.Marks:70**

Note: (Missing data if, any can be assumed suitable).

PART – A

Note: Answer any five questions. **(5 x 2 = 10 Marks)**

1. Distinguish between Zener & Avalanche break down mechanisms
2. Define ripple factor and Transformer Utilization factor (TUF) of a Rectifier
3. In CE configuration the drop across load resistance 1KΩ is 1.2 V. Determine the base current Ib if β = 100.
4. Discuss the advantages of FET over BJT?
5. Explain the feedback concept with neat block diagram.
6. State the advantages of negative feedback amplifiers.
7. Classify the different types of power amplifiers based on biasing conditions.
8. Find the operating frequency of Colpitts Oscillator if C1 = 50pf, C2 = 30pf and L = 50mH.
9. What is peak detector and draw its relevant Op-Amp circuit?
10. Mention the Ideal Op-Amp characteristics.

PART – B

Note: Answer any four questions. **(4 x15 = 60 Marks)**

11. a) Explain the working of Half Wave and Full Wave rectifiers with neat circuit diagrams.
    b) A diode with forward voltage 0.7 V is connected as half wave rectifier. The load resistance is 500Ω, and RMS ac input is 22 V. Determine the peak output voltage, peak load current and diode peak inverse voltage.
12. a) What is operating point? Derive stability factor for collector to base bias.
    b) Explain JFET operation with neat diagram along with V-I characteristics. Define pinch off voltage and mark it on the characteristics.
13. a) Explain the effect of Negative feedback on input impedance of Voltage Shunt feedback amplifier.
    b) An amplifier has an input impedance of 1KΩ and output impedance of 10KΩ and voltage gain 10000. If negative feedback of β is 0.02 is applied to it. Determine the input and output impedance.
14. a) Draw a neat diagram of a RC Phase shift oscillator. Derive an expression for frequency of oscillations?
    b) In a Class A power amplifier V_{CE} max = 20V V_{CE} min = 1V. Find the overall efficiency?

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15. a) With simple schematic of differential amplifier explain the function of operational amplifier?
    b) Compare RC & LC Oscillators?

16. a) Explain with suitable diagrams, operation of CE, CB & CC configurations.
    b) Describe the working of a Full Wave rectifier with L section filter?

17. Write short notes on
    a) Crystal Oscillator
    b) Light Emitting Diode (LED)
    c) Thermal Stability

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