

**ADVANCED ENGINEERING DRAWING
(Mechanical Engineering)****Time: 3 Hours****Max Marks: 70**

Answer ONE Question from each Unit

All Questions Carry Equal Marks

All parts of the Question must be answered at one place

UNIT-I

1. A hexagonal prism, side of base 20 mm and axis 48 mm long, rests with its base on H.P. such that an edge of the base is parallel to V.P. Draw the projections of the prism on an auxiliary inclined plane which makes an angle of 60^0 with the H.P.

(OR)

2. Draw the projections of a cube of 30 mm side, resting in the H.P. on one of its corners with a solid diagonal perpendicular to the H.P using auxiliary plane method.

UNIT-II

3. A cube of side 25 mm rests on H.P. on one of its faces with a vertical face inclined at 35^0 to V.P. A plane perpendicular to H.P. and inclined at 50^0 to V.P. cuts the cube, 3 mm away from the axis. Draw the top view and sectional front view. Also, find the true shape of the section.

(OR)

4. A square pyramid of base 30 mm and axis 60 mm long is standing on H.P. with its base edges equally inclined to V.P. It is cut by a section plane perpendicular to V.P. and inclined at 30^0 to H.P, bisecting the axis. Draw the sectional top view and the true shape of the section, if the upper portion is removed.

UNIT-III

5. A cone of 45 mm diameter and altitude 60 mm is resting with its base on H.P. A section plane parallel to V.P cuts the cone at a distance of 15 mm from its center. Draw the top and sectional front views.

(OR)

6. A cylinder of 40mm diameter, 60mm height and having its axis vertical, is cut by a section plane, perpendicular to the VP, inclined at 45^0 to the HP and intersecting the axis 35mm above the base draw its front view, sectional top view and true shape of the section.

UNIT-IV

7. A vertical pentagonal pyramid of side of bases 27 mm and altitude 50 mm rests with a base edge parallel to V.P and nearer to it. It is cut by two planes perpendicular to V.P. One is horizontal and cuts the portion of the pyramid on the left of the axis at a height of 18 mm above the base of the pyramid. The other plane inclined at 45^0 to H.P cuts the portion of the pyramid to the right of the axis passing through a point on it 18 mm above the base and leans upwards. Draw the development of the lateral surfaces of the truncated pyramid.

(OR)

8. A cone of the base diameter 60 mm and height 70mm is resting on its base on H.P. It is cut by a plane perpendicular to V.P and inclined at 30^0 to H.P. The plane bisects the axis of the cone. Draw the development of its lateral surface.

UNIT-V

9. A cylinder of 60 mm diameter and axis 80 mm long stands with its base on H.P. It is completely penetrated by a horizontal cylinder of 45 mm diameter and axis 80 mm long such that their axes bisect each other at right angles. The axis of the penetrating cylinder is parallel to V.P. Draw the projections showing curves of intersection.

(OR)

10. A vertical cone, diameter of base 75mm and axis 90mm long is penetrated by a cylinder of 50mm diameter, the axis of which is parallel to and 10mm away from that of the cone. Draw projections showing curves of intersection, when the plane containing the two axes is parallel to the VP.

AR16

CODE: 16EE2006

SET-2

**ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)**

II B.Tech I Semester Regular Examinations, October, 2017

**ELECTRICAL TECHNOLOGY
(Electronics and Communication Engineering)**

Time: 3 Hours

Max Marks: 70

Answer ONE Question from each Unit

All Questions Carry Equal Marks

All parts of the Question must be answered at one place

UNIT-I

1. Derive the expression of generated emf and electromagnetic torque in a dc machine 14
(OR)
2. Explain and plot the torque vs speed and torque vs armature current characteristics of dc series and shunt motors 14

UNIT-II

3. Explain how magnetizing current and core flux remain same both under no-load and loading condition. Draw the phasor diagram of a single phase transformer under no load and leading load conditions. 14
- (OR)
4. Calculate the equivalent circuit parameters of a single phase 4 kVA, 200/400 V, 50 Hz transformer with respect to primary. Following are the test results for the same transformer: open circuit: 200 V, 0.7 A, 70 W on low voltage (primary) side. Short circuit: 15 V, 10 A, 80 W on high voltage (secondary) side. Calculate the regulation of transformer at full load and 0.6 lagging power factor 14

UNIT-III

5. Explain the principle of operation of a three phase induction motor. Explain speed torque characteristics of 3phase induction motor 14
- (OR)
6. A 3 phase, 4 pole, 1440 rpm, 50 Hz induction motor has star connected rotor winding, having a resistance of 0.2Ω per phase and a stand still leakage reactance of 1Ω per phase. When the stator is energised at rated voltage and frequency, the rotor induced emf at standstill is 120 V per phase. 14
 - (a) Calculate the rotor current, rotor power factor and torque both at starting and full load.
 - (b) If an external resistance of 1Ω per phase is inserted in rotor circuit, calculate the rotor current, rotor power factor and torque at the time of starting
 - (c) Find maximum torque in both case (a) and (b)

UNIT-IV

7. Explain principle of operation of cylindrical rotor synchronous machine. Derive the e.m.f equation of An alternator in terms of pitch and distribution factor 14

(OR)

8. A 1500 kVA, 6600 V, star connected alternator with a resistance of 0.4Ω and reactance of 6Ω per phase delivers full load current at power factor 0.8 lagging and the normal rated voltage. Estimate the terminal voltage for the same excitation and load current at (a) 0.8 power factor leading, (b) 0.71 lagging 14

UNIT-V

9. What are the different types of indicating instruments? How the range of permanent magnet moving coil instruments can be extended? 14

(OR)

10. Explain the construction and the working principle of Moving Iron instrument. Write advantages and disadvantages 14

2 of 2

AR16

CODE: 16CS2005

SET-2

**ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)**

II B.Tech I Semester Regular Examinations, October, 2017

**FREE OPEN SOURCE SOFTWARE
(Common to CSE & IT Branches)**

Time: 3 Hours

Max Marks: 70

Answer ONE Question from each Unit

All Questions Carry Equal Marks

All parts of the Question must be answered at one place

UNIT-I

- | | | | |
|----|---|---|----|
| 1. | a | What is FOSS. How it different form Open Source System. | 8M |
| | b | Describe the features of python. | 6M |

(OR)

- | | | | |
|----|---|--|----|
| 2. | a | Explain in-detail about identifiers in python with example. | 6M |
| | b | Explain about variables and operators in python with examples. | 8M |

UNIT-II

- | | | | |
|----|---|---|----|
| 3. | a | Explain in-detail about the conditional statements in Python with examples. | 7M |
| | b | Explain in-detail about the loops in Python with examples. | 7M |

(OR)

- | | | | |
|----|---|--|----|
| 4. | a | Explain in-detail about the break and continue statements in Python with examples. | 9M |
| | b | Explain about the numbers and strings in Python. | 5M |

UNIT-III

- | | | | |
|----|---|---|----|
| 5. | a | Discuss the String built-in methods in Python? | 6M |
| | b | What are the built-in methods available for Lists? Explain with suitable example. | 8M |

(OR)

- | | | | |
|----|---|---|----|
| 6. | a | Explain in-detail tuples in Python with example. | 6M |
| | b | Prompt for a number N and file F, and display the first N lines of F. | 8M |

UNIT-IV

- | | | | |
|----|---|---|----|
| 7. | a | Explain each of the Loop constructs in Perl with an example | 8M |
| | b | Explain the variable types in Perl with a suitable example | 6M |

(OR)

- | | | | |
|----|---|--|----|
| 8. | a | Explain about numeric literals and string literals in Perl. | 5M |
| | b | Differentiate between the following control statements of Perl.
i) If and unless ii) While and until iii) Next and last | 9M |

UNIT-V

- | | | | |
|----|---|---|----|
| 9. | a | Explain how subroutines can be created, called and how arguments can be passed with a suitable example. | 6M |
| | b | What is a package? Explain the packages with an example . | 8M |

(OR)

- | | | | |
|-----|---|---|----|
| 10. | a | Difference between use and require statements in Perl. | 6M |
| | b | Explain in-detail about how to opening and closing a files in Perl. | 8M |

AR13

CODE: 13CE2003

SET-1

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)

II B.Tech I Semester Supplementary Examinations, October-2017

ENGINEERING GEOLOGY

(Civil Engineering)

Time: 3 Hours

Max Marks: 70

PART-A

ANSWER ALL QUESTIONS

[1 x 10 = 10 M]

- 1
 - a) Define the term Structural Geology.
 - b) What is meant by Cleavage?
 - c) Define the term Polymorphism.
 - d) What is meant by Geological agent?
 - e) What is the difference between “Strike and Dip”?
 - f) Define the term Angular Unconformity.
 - g) What is the difference between Joint and Fault?
 - h) Define the term Unconformity.
 - i) What is meant by rock cycle?
 - j) Name the different Electrical methods?

PART-B

ANSWER ALL THE QUESTIONS

[5X12=60]

UNIT-I

2.
 - (a) Explain briefly about the scope of Geology and its importance in the field of Civil Engineering? [12M]
 - (b) Discuss the reasons for the failure of St.Francis Dam.
- (OR)
3. Write the importance of the following. [12M]
 - (a). Structural Geology. (b). Mining Geology.

UNIT-II

4.
 - (a) Discuss the methods adopted in the identification of minerals in the Laboratories. [12M]
 - (b) Write down any six physical properties of the following minerals
 - i) Feldspar
 - ii) Calcite
 - iii) Galena
 - iv) Magnesite
- (OR)
5.
 - (a) Write a short note upon the formation of secondary minerals and its importance. [12M]
 - (b) Discuss the terms cleavage, Fracture, Hardness and Lustre.

UNIT-III

6. (a) Discuss the Engineering properties of Igneous and Sedimentary rocks [12M]
(b) Discuss the composition, texture, characteristic occurrence and uses of Sandstone and Laterite .
- (OR)**
7. (a) Discuss the common structures and textures of Sedimentary rocks. [12M]
(b) Discuss the forms of extrusive Igneous rocks.

UNIT-IV

8. (a) Discuss the various types of Faults and its Engineering applications. [12M]
(b) Explain the various types of joints found in common rocks.
- (OR)**
9. (a) Explain briefly about the different types of Unconformities with neat Sketches? [12M]
(b) Discuss about the bedding joints and oblique joints.

UNIT-V

10. (a) Discuss the importance of Geophysical studies. [12M]
(b) Explain the principle behind Seismic refraction method and also Mention its uses.
- (OR)**
11. Discuss in brief about the Electric and Seismic methods in Geophysical investigation. [12M]

Time: 3 Hours**Max Marks: 70****PART-A****ANSWER ALL QUESTIONS****[1 x 10 = 10 M]**

1. a) Define the electric potential.
- b) What is relation between electric field intensity and electric potential?
- c) The current inside the conductor is zero. Why?
- d) What is the direction of electric dipole moment?
- e) What is the Law of conservation of charge?
- f) What is advantage Biot-Savart's Law?
- g) What is the force on a closed current loop in a uniform magnetic field?
- h) When the magnetic torque is maximum?
- i) A device which is the example for dynamically induced EMF.
- j) How do you say electric field is conservative field?

PART-B**Answer one question from each unit****[5x12=60M]****UNIT-I**

2. a) Derive an expression for the Electric field intensity due to uniform volume charge density ρ_v C/m³ that occupies the volume of a sphere of radius 'a' metre. **6M**
 - b) Derive the expression for the electric field intensity for long linear charge element using Gauss's law. **6M**
- (OR)**
3. A straight line of charge of length 12 cm carries a uniformly distributed charge of 0.3×10^{-6} coulombs per cm length. Determine the magnitude and direction of the electric field intensity at a point **12M**
 - (i) Located at a distance of a 3 cm above the wire displaced 3 cm to the right of and beyond one end.
 - (ii) Located at the distance of 3 cm from one end, in alignment with, but beyond the wire.
 - (iii) Located at a distance of 3 cm from one end, on the wire itself.

UNIT-II

4. a) Show that the torque on a physical dipole P in a uniform electric field E is given by $\mathbf{P} \times \mathbf{E}$. **6M**
- b) A parallel plate capacitor with air as dielectric has a plate area of 36π cm² and separation of 1mm. It is charged to 100V by connecting it across a battery. If the battery is disconnected and distance is increased to 2mm. Calculate change in pd and energy stored. Assuming no leakage of charge. **6M**

(OR)

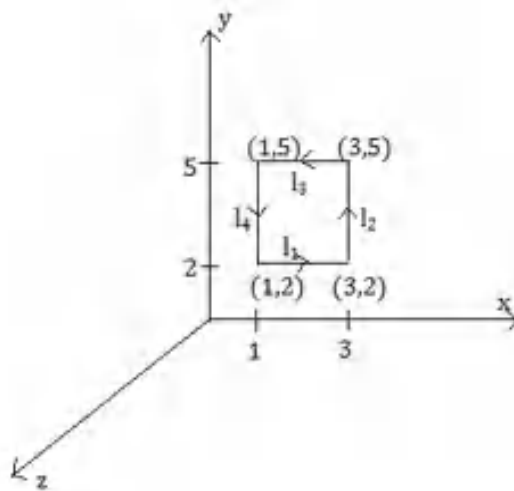
5. a) Derive the boundary conditions between dielectric and dielectric., **9M**
- b) Explain the properties of conductors. **3M**

UNIT-III

6. a Derive the expression for the magnetic field at a point due to an infinitely long conductor carrying current I. **8M**
 b State and explain Biot-Savart's law **4M**
 (OR)
 7. A conductor in the form of rectangular polygon of n sides inscribed in a circle of radius R. Show that the expression for magnetic flux density is $B = \frac{\mu_0 n I}{2\pi R} \tan\left(\frac{\pi}{n}\right)$ wb/m² at the centre where I = current Show also n is indefinitely increased then the expression is reduces to $B = \frac{\mu_0 I}{2\pi R}$ wb/m². **12M**

UNIT-IV

8. a A point charge of value -40 nC is moving with a velocity of 6000 km/sec in a direction specified by the unit vector $\mathbf{a}_v = -0.48\mathbf{i} - 0.6\mathbf{j} + 0.64\mathbf{k}$. Using Lorentz's force equation, find the force F if $\mathbf{B} = 2\mathbf{i} - 3\mathbf{j} + 5\mathbf{k}$ mT and $\mathbf{E} = 2\mathbf{i} + 4\mathbf{j} + 2\mathbf{k}$ N/C **6M**
 b Derive the expression for magnetic torque for rectangular coil with N turns carrying current I placed in a magnetic field B. **6M**
 (OR)
 9. In a certain of space \mathbf{B} is given by $0.1x \mathbf{a}_x + 0.2y \mathbf{a}_y - 0.3z \mathbf{a}_z$ T. Find the total force on the rectangular loop shown in the figure. If it lies in the Z=0 plane and it is bounded by x=1, x=3, y=2, y=5. I = 20A. **12M**



Figure

UNIT-V

10. a Derive the expression for the mutual inductance between two current coils using Neumann's equation. **6M**
 b A rectangular wire has a long side b and short side a. The long side b is parallel to a very long conductor which carries current I and the distance d from it and the conductor lies in plane containing rectangular frame. what is the mutual inductance of the frame with respect to the conductor? **6 M**
 (OR)
 11. a In a material for which $\sigma = 5.0$ s/m and $\epsilon_r = 1$, the electric field $\mathbf{E} = 250\sin 10^{10}t$ V/m. find the conduction and displacement current densities and the frequency at which they have equal magnitude. **6M**
 b From the Faraday's laws of electromagnetic induction, Derive $\nabla \times \mathbf{E} = -\partial \mathbf{B} / \partial t$ **6M**

AR13

CODE: 13ME2006

SET-1

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)

II B.Tech I Semester Supplementary Examinations, October-2017

ENGINEERING METALLURGY & MATERIAL SCIENCE
(Mechanical Engineering)

Time: 3 Hours

Max Marks: 70

PART-A

ANSWER ALL QUESTIONS

[1 x 10 = 10 M]

1. a) What are the types of crystal imperfections?
b) Define “Solid Solution”?
c) Define “Eutectic Reaction”?
d) Write down the “Gibbs Phase Rule”
e) What is meant by “TTT” diagram?
f) What are the types of heat treatment process?
g) Write down the relation between true stress and engineering stress
h) What are the types of fracture?
i) What is meant by infiltration process in powder metallurgy?
j) What is the major difference between compaction and sintering?

PART-B

Answer one question from each unit

[5x12=60M]

UNIT-I

2. a) Explain and show atomic packing factor for FCC and HCP crystal structure with neat sketch? 8M
b) Explain in details about area and volume based crystal imperfections with neat diagram? 4M

(OR)

3. a) Explain about different types of bonding and its characteristics in solid material? 8M
b) Describe about solid solution and types of solid solution with neat diagram? 4M

UNIT-II

4. a) Draw a neat sketch of Iron-carbon phase diagram and mark on it all salient temperatures, compositions and phases and discuss briefly? 8M
b) Discuss the transformation of eutectoid steel (0.8% C) with slow cooling? 4M

(OR)

5. a) Explain the homogeneous nucleation and significance of critical radius of the nuclei in solidification process? 8M
b) Explain the mechanism of solidification of metals with microstructure? 4M

AR13

CODE: 13ME2006

SET-1

UNIT-III

6. a) Draw a neat TTT diagram and indicate all the phases with an example? 8M
b) Write short notes on martensitic transformation and bainitic transformation? 4M

(OR)

7. a) Describe about structure, composition, properties and applications of all types of cast iron? 8M
b) Compare low alloy steel with high alloy steel with respect to their structure, composition, properties and applications? 4M

UNIT-IV

8. a) Explain the step by step procedure to conduct tensile test for a given material in universal testing machine and discuss all other properties possible to measure? 8M
b) Compare the true strain with engineering strain and derive the relation between them? 4M

(OR)

9. a) Explain the step by step procedure to conduct fatigue test for a given material. Draw the SN curves for any material with fatigue limit? 8M
b) Differentiate between :i) Toughness and resilience ; ii) Ductility and brittleness 4M

UNIT-V

10. a) Explain the step by step procedure to fabricate connecting rod by powder metallurgy process with neat diagram? 8M
b) Compare the advantages of various powder generation processes? 4M

(OR)

11. a) Explain the hot compaction, cold compaction and iso static compaction process with diagram? 8M
b) Design a material for a given application by considering powder metallurgy process? 4M

CODE: 13EE2008**ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)****II B.Tech I Semester Supplementary Examinations, October-2017****ELECTRICAL TECHNOLOGY****(Electronics and Communication Engineering)****Time: 3 Hours****Max Marks: 70****PART – A****Answer all questions****[1X10=10M]**

1. Answer the following questions

- What are the essential components of a generator?
- What is the function of commutator in DC generator?
- Draw the circuit diagram for the separately excited DC Generator?
- Why DC series motor is not started under No-load condition?
- What are the different characteristics of DC motor?
- List out the different types of losses in a Dc motor?
- Define the function of a transformer?
- Define Distribution factor?
- Write the expression for the speed of Induction motor?
- Define the deflecting torque?

PART-B**Answer one question from each unit****[5 X12 = 60M]****UNIT-I**

- a) Derive the condition for maximum efficiency of a D.C generator? [6M]
b) Draw and explain different characteristics of cumulative compound motors? [6M]

(OR)

- a) Explain the concept of armature torque of DC motor with suitable expressions? [6M]
b) An armature of a 6-pole machine 75cm in diameter has 664 conductors each having an effective length of 30cm and carrying a current of 100A. If 70% of total conductors lie, simultaneously in the field of average flux density 0.85 wb/m^2 , calculate (i) armature torque (ii) horse power output at 250 r.p.m. [6M]

UNIT-II

- Draw and explain the approximate equivalent circuit of a loaded transformer refer to primary and refer to secondary? [12M]

(OR)

- Define the voltage regulation of a transformer and develop the approximate voltage drop expression in a transformer with the help of phasor diagram? [12M]

UNIT- III

- Explain how the rotating magnetic field is produced in a three phase induction motor with neat sketch? [12M]

(OR)

- Explain the different starting methods used in starting of squirrel cage induction motors? [12M]

UNIT- IV

- Draw and explain the phasor diagram of a loaded alternator? [12M]

(OR)

- A 1500KVA, 6.6kv, 3 phase, star connected alternator has a resistance of 0.5ohm per phase and a synchronous reactance of 5ohm per phase. Find its voltage regulation for (i) Unity p.f (ii) 0.8 lagging p.f (iii) 0.8 leading p.f [12M]

UNIT – V

- Explain the different types of controlling torques with neat sketch? [12M]

(OR)

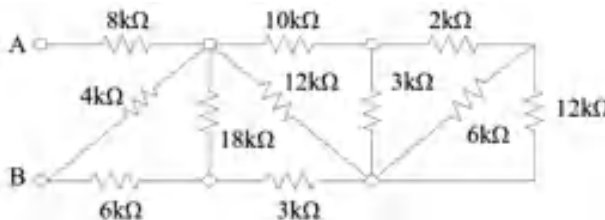
- Explain the construction and working of permanent magnet moving coil instruments? [12M]

PART – A**Answer all the questions**

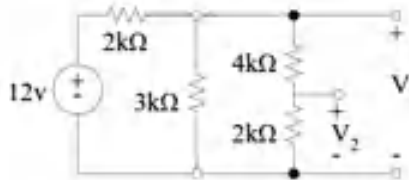
1. a) Define potential difference
- b) What are basic circuit elements?
- c) State KVL
- d) Write the equation for voltage across a capacitor
- e) Write the types of DC Motors
- f) What is back EMF in DC Motor?
- g) What are various losses in DC machine?
- h) What are the advantages of Induction machines over DC machines?
- i) Why are the types of instruments?
- j) What is an SCR?

PART – B**Answer any one question from each unit****Unit – I**

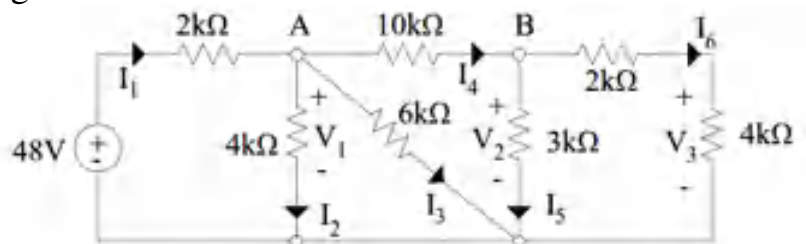
2. a) Find the equivalent resistance across the terminals AB

[6M]

- b) Use voltage division rule to determine the voltages V_1 & V_2

[6M]**(OR)**

3. Find all the voltages and currents in the circuit

[12M]

UNIT – II

4. a) Explain the procedure for Swinburne's test on a DC machine [6M]
b) Classify the DC motors depending on the type of excitation [6M]
(OR)
5. a) Derive the equation for generated EMF of a DC generator [6M]
b) A 4 pole lap wound long shunt DC compound generator has useful flux of 0.07Wb. The armature winding consists of 220 turns and has resistance 0.02Ohm, series field resistance is 0.055ohm, shunt field resistance is 100Ohm. Calculate its terminal voltage if the armature current is 50A and the machine is running at 900rpm? [6M]

UNIT – III

6. Explain the principle of operation and derive the EMF equation of Transformer [12M]
(OR)
7. a) Explain the principle of operation of Induction motor. [6M]
b) Explain the method of synchronous impedance method to determine the regulation of an alternator [6M]

UNIT – IV

8. a) What are the advantages & disadvantages of PMMC instruments [6M]
b) Explain the principle of operation of PMMC instruments [6M]
(OR)
9. a) What is control torque? Explain gravity control? [6M]
b) Explain the principle of operation of PMMI Instruments [6M]

UNIT – V

10. a) Explain the V-I Characteristics of PN junction diode [6M]
b) Explain how the operation of full wave rectifier with a circuit diagram [6M]
(OR)
11. a) Explain the V-I characteristics of SCR [6M]
b) Explain the operation of PNP transistor as a switch [6M]

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)

II B.Tech I Semester Regular Examinations, October, 2017

ENGINEERING GEOLOGY
(CIVIL ENGINEERING)

Time: 3 Hours

Max Marks: 70

Answer ONE Question from each Unit

All Questions Carry Equal Marks

All parts of the Question must be answered at one place

UNIT-I

1. a Justify the importance of geology from civil engineering point of view? 7
 b What is the importance of physical geology and structural geology in solving civil engineering problems? 7

(OR)

2. a Define mineral? Explain different methods of study of minerals? 8
 b Describe the Physical properties and chemical composition of i) Quartz ii) Dolomite iii) Orthoclase 6

UNIT-II

3. a Write a note on the geological classification of rocks? 7
 b With neat sketches explain the structures and textures in igneous rocks? 7

(OR)

4. a Define i) Rock ii) Petrology iii) Metamorphism 6
 b Write the megascopic description, composition and uses of i) Granite ii) Sand stone iii) Quartzite iv) Marble 8

UNIT-III

5. a What are the structures associated with rocks? Draw the neat sketches and label them? 8
 b Explain the following with neat diagrams i) Drag fold ii) Overturned fold iii) Anticline 6

(OR)

6. a With suitable figures explain the different types of faults? 9
 b What is an unconformity? Explain the different types of unconformities 5

UNIT-IV

7. a Explain briefly i) Life of reservoir ii) Purpose of tunnelling? 6
 b Write a note on the geological consideration in the selection of a Dam site? 8
- (OR)
8. a Explain the following i) Lining of tunnels ii) Purpose of tunnelling 6
 b Write a note on the influence of geology for successful tunnelling? 8

UNIT-V

9. a Explain about importance of geophysical studies 6
 b Write a note on gravity method of geophysical investigation? 8
- (OR)
10. a Explain the radiometric methods and its applications? 7
 b Write a note on electrical resistivity method and its uses? 7

ADELTA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)

II B.Tech I Semester Regular Examinations, October, 2017

POWER SYSTEMS-I

(ELECTRICAL AND ELECTRONICS ENGINEERING)

Time: 3 Hours

Max Marks: 70

Answer ONE Question from each Unit

All Questions Carry Equal Marks

All parts of the Question must be answered at one place

UNIT-I

1. a Explain briefly about Present Power Scenario in India. 6
b Explain various factors which affect the selection of site for Thermal Power plant. 8

(OR)

2. a Draw the water circuit in a thermal power plant. Explain the state of water in each stage. 7
b Describe the significance of condenser in a thermal power station? 7
How it is responsible for poor efficiency in the plant?

UNIT-II

3. a Explain the principle operation of Gas power station 7
b Explain the operation of PWR with neat diagram 7

(OR)

4. a List out the advantages and disadvantages of nuclear power plant? 8
b Briefly explain the solar power generation? 6

UNIT-III

5. a Explain the differences between AC and DC distribution. 6
b A DC ring main ABCDA is fed at point A from a 230 V supply and the loop resistances of various sections are: AB is 0.04Ω ; BC is 0.35Ω ; CD is 0.5Ω and DA is 0.05Ω . The main supplies 100 A at B, 150 A at C and 200 A at D. Determine the voltages at each load point. If the points A and C are interconnected through a link of 0.05Ω , determine the voltages at the load points 8

(OR)

6. a A single phase distributor one km long has resistance and reactance per conductor of $0.1\Omega/\text{km}$ and $0.15\Omega/\text{km}$ respectively. At the far end, the voltage $V_B = 200\text{V}$ and the current is 100A at a p.f of 0.8 lagging. At the mid-point M of the distributor, a current of 100A is tapped at a p.f. of 0.6 lagging with reference to the voltage V_M at the mid-point. Calculate:

- (i) Voltage at mid-point
(ii) Sending end voltage V_A

Phase angle between V_A and V_B

- b Explain an outdoor substation layout by drawing key diagram showing all equipment and explain them briefly.

UNIT-IV

- 7 a A generating station has the following daily load cycle.

Time (Hours)	0 - 6	6 - 10	10 - 12	12 - 16	16 - 20	20 - 24
Load (MW)	20	25	30	25	35	20

Draw the load curve, load duration curve, integrated load duration curve and mass curve.

Find (i) Maximum demand (ii) Units generated per day (iii) Average load and (iv) Load factor

- b Comment on the statement: The difference between the load factor and capacity factor is an indication of the reserve capacity installed in a generating station.

(OR)

- 8 a A generating station has the following daily loads:

0 - 6 AM	6 - 8 AM	8 - 12 Noon	12 - 14 PM	14 - 18 PM	18 - 20 PM	20-24 PM
4000 kW	3000 kW	8000 kW	2000 kW	7500 kW	3000 kW	4500 kW

Sketch load duration curve, integrated load duration curve and mass curve with the given data and determine the load factor, demand factor if connected load is 12000 kW , and plant use factor and plant capacity factor assuming capacity of plant as 11000 kW .

- b Distinguish the flat rate and block rate tariffs.

UNIT-V

9. a State the classification of cables (according to voltage) and discuss their general construction.
b Calculate the capacitance of the cable of 100km long with internal and external radii 0.5 and 1.0cm . Given relative permittivity of the material is 3 .

(OR)

10. a Define capacitance grading of a cable? Derive expression for capacitance and maximum potential gradients in two dielectrics of a graded cable in terms of dielectric constants and radius of core and overall radius etc.
b Compare gas insulated substation and air insulated substation.