

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 Define Geology. Explain its importance in choosing materials of construction for a heavy Civil Engineering Structures. 7M
- b Describe any one case history of the failure of a dam due to the ignorance of geological factors. 7M

(OR)

2. a How do you define a Mineral? How a mineral is different from a rock? 8M
- b How do you differentiate
i) Colour and Streak ii) Cleavage and Fracture iii) Hardness and Specific Gravity. 6M

UNIT-II

3. a Describe the Geological Classification of rocks stating two examples for each class. 7M
- b What are concordant and Discordant bodies? Explain with neat figures. 7M

(OR)

4. a How Igneous Rocks are Classified? Give suitable examples. 8M
- b Describe
i) Gneissose Texture ii) Cataclastic Texture 6M

UNIT-III

5. a With neat figures explain
i) Dip ii) Strike iii) Outcrop
State the relationship between them if any. 6M
- b What is an unconformity? With neat figures describe the different types of unconformities. 8M

(OR)

6. a What are Joints? How are they classified? 7M
- b Describe the causes for folding of beds. 7M

UNIT-IV

7. a With neat sketches describe the different types of Dams – Stating when you prefer a particular type of dam. 8M
- b Describe the impacts of dam construction over
i) Dipping beds ii) Folds iii) Faults 6M

(OR)

8. a When a Tunnel is preferred to Deep cutting? 7M
- b With neat sketches explain the problems encountered in Tunnelling through Dipping beds. 7M

UNIT-V

9. a What are Geophysical Investigations? 6M
- b How do you classify Geophysical Methods? Explain the relative advantage of each type. 8M

(OR)

10. a Explain the Principle of seismic methods of Geophysical investigations. 7M
- b What are the advantages of seismic methods? State its limitations 7M

AR16

CODE: 16EE2009

SET-2

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

II B.Tech I Semester Supplementary Examinations, December-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 With a neat flow diagram, explain the function and location of air pre-heater, economizer, super heater and re-heater in flue gas circuit. 10
- b Mention the need of electro static precipitator? Describe the principle of operation of an electro static precipitator. 4

(OR)

2. a Draw the typical layout of hydro power plant and discuss the operation of following components (i) dam (ii) penstock (iii) surge tank 8
- b Explain the classification of hydro power plants and briefly explain the pumped storage hydro power plants. 6

UNIT-II

3. a Explain the typical pressurized water reactor along with advantages and disadvantages. 7
- b Describes the boiling water reactor with the help of neat sketch and explain its characteristics. 7

(OR)

4. a “Solar thermal collector system will be the future source of energy” - Justify 7
- b Explain in detail the constructional aspects of gas power plants. 7

UNIT-III

5. a List out the advantages of 3-wire distribution over 2-wire distribution. 6
- b A two conductor DC Street main AB, 500 meters in length is fed from both ends at 250 volts. Loads of 50A, 60 A, 40 A and 30 A are tapped at distances of 100 m, 250 m, 350 m and 400 m from A respectively. If the cross sectional area of the conductors is 1 cm^2 and specific resistance of the material of the conductors is $1.7 \times 10^{-8} \Omega\text{-m}$, determine the minimum consumer voltage. 8

(OR)

6. a A single phase ac distributor 500m long has a total impedance of $(0.02+j0.04)\Omega$ and is fed from one end at 250V. It is loaded as under: 8
- (i) 50A at unity power factor 200m feeding point.
 - (ii) 100A at 0.8 pf lagging 300m from the feeding point
 - (iii) 50A at 0.6 pf lagging at the far end.
- Calculate the voltage drop and voltage at the far end.
- b Draw the 33/11kv outdoor substation layout and explain the function of each equipment. 6

UNIT-IV

7. a Describe the desirable characteristics of a tariff. 6
- b From the load duration curve the following data are available. The maximum demand on the system is 30 MW. The load is supplied by two units, one of 20 MW and the other of 15 MW. Unit 1 acts as base load unit and Unit 2 as peak load unit. The base load unit works for 100 % of the time and peak load unit for only 45% of the time. The energy generated by unit 1 is 1.2×10^8 units and that by unit 2 is 1.1×10^7 units. Determine the load factor, plant capacity factor and plant use factor of each plant. 8
- (OR)**
8. a Discuss the effect of load and diversity factors, and show that the load factor and diversity factors are inter related. 4
- b Summarize various costs involved in the generation of electricity 3
- c A consumer has the following connected loads: 10 lamps of 60 W each and two heaters of 1,000 W each. His maximum demand is 1500 W. On an average he uses 8 lamps for 5 hours in a day and each heater for 3 hours in a day. Find his average load, monthly energy consumption and load factor. 7

UNIT-V

9. a Calculate the insulation resistance for 5km length of a 1-core cable. Resistance of insulation (impregnated paper) is $5 \times 10^{14} \Omega\text{-cm}$, insulation thickness is 1cm and radius of conductor is 1.25cm. 6
- b Draw single line diagram of gas insulated substation indicating different equipment. Explain the working of each equipment. 8
- (OR)**
10. a The capacitances of a 3-phase belted cable are $12.6\mu\text{F}$ between the three cores bunched together and lead sheath and $7.4\mu\text{F}$ between one core and the other two connected to sheath. Determine the charging current drawn by the cable when connected to 66kv, 50Hz supply. 6
- b List out the Merits and Demerits of SF₆ gas insulated Substation. 8

AR16

CODE: 16ME2009

SET-2

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

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

**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 pentagonal pyramid, side of the base 25 mm and axis 55 mm long, lies with one of its slant edges on H.P such that its axis is parallel to V.P. Draw its projections using auxiliary plane method.

(OR)

2. A hexagonal prism, side of base 25 mm and axis 60 mm long, lies with one of its rectangular faces on H.P., such that the axis is inclined at an angle of 45^0 to V.P. Draw its projections using auxiliary plane method.

UNIT-II

3. A square prism, side of base 30 mm and axis 60 mm long, rests with its base on H.P and one of its rectangular faces is inclined at 30^0 to V.P. A section plane perpendicular to V.P and inclined at 60^0 to H.P cuts the axis of the prism at a point 20 mm from top end. Draw the sectional top view and true shape of the section.

(OR)

4. A pentagonal pyramid, side of base 30 mm and axis 60 mm long, rests with its base on H.P and an edge of its base is parallel to V.P. A section plane perpendicular to V.P and inclined at 45^0 to H.P passes through the axis at a point 35 mm above the base. Draw the sectional top view and true shape.

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 45 mm diameter and 60 mm long resting on its base on H.P. A section plane perpendicular to V.P and inclined at 30° to H.P passes through a point on the axis 25 mm from the top end. Draw the front view and sectional top view.

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° 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° 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-1

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

II B.Tech I Semester Supplementary Examinations, December-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. Explain the construction and working of DC generator with neat sketch 14

(OR)

2. Explain and plot the magnetization and external (load characteristics) of dc series and shunt generators 14

UNIT-II

3. Explain and derive the term 'voltage regulation' in single phase transformer operation. State and derive the conditions for maximum voltage regulation and zero voltage regulation 14

(OR)

4. The efficiency at unity power factor of a 6600/384 V, 200 kVA, single phase transformer is 98% both at full load and half load. The power factor on no load is 0.2. Find the iron loss and copper loss and the loading condition for which efficiency is maximum? Calculate the magnetizing current and no load current 14

UNIT-III

5. Explain the principle and operation of single phase 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 two reaction theory of salient pole synchronous generator. Draw the phasor diagram of salient pole synchronous generator under lagging load. 14

(OR)

8. Determine the voltage regulation of a 2000V, 1 phase alternator giving a current of 100A at (a) unity power factor ; (b) power factor at 0.8 leading (c) power factor 0.71 lagging. From the test results : full load current of 100A is produced on short circuit by a field excitation of 2.5 A; an electromotive force of 500 V is produced on open circuit by the same excitation. The armature resistance is 0.8Ω 14

UNIT-V

9. What are the different types of indicating instruments? Explain the working of permanent magnet type instruments. 14

(OR)

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

AR16

CODE: 16CS2005

SET-1

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

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

FREE OPEN SOURCE SOFTWARE

(Common to CSE & IT)

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 are the features of Python? Explain? [6M]
b) Create a script that displays your name, age, favourite colour, [8M]
and a bit about you (background, interests, hobbies, etc.) to
the screen using the print statement

(OR)

2. a) Mention with example variables used in python. [7M]
b) The type () built-in function takes any Python object and [7M]
returns its type. Try running it on dir by entering type (dir)
into the interpreter. What do you get?

UNIT-II

3. a) Explain proxy for switch/case statement? [8M]
b) Determine whether a given year is a leap year, using the [6M]
following formula: a leap year is one that is divisible by four,
but not by one hundred, unless it is also divisible by four
hundred. For example, 1992, 1996, and 2000 are leap years,
but 1967 and 1900 are not. The next leap year falling on a
century is 2400

(OR)

4. a) Explain the conditional statements with examples [7M]
b) Explain the loop control statements with examples [7M]

UNIT-III

5. a) Are there any string methods or functions in the string module that will help me determine if a string is part of a larger string? [6M]
b) Given an integer value, return a string with the equivalent English text of each digit. For example, an input of 89 results in "eight-nine" being returned. Extra credit: Return English text with proper usage, i.e., "eighty-nine." For this part, restrict values to be between 0 and 1,000. [8M]

(OR)

6. a) Write a program to compare two text files. If they are different, give the line and column numbers in the files where the first difference occurs [7M]
b) With an explain How to Remove Dictionary Elements and Dictionaries [7M]

UNIT-IV

7. a) Create a program that parses a Windows .ini file. POSIX users: Create a program that parses the /etc/services file. All other platforms: Create a program that parses a system file with some kind of structure to it. [7M]
b) Explain the data types in Perl with a suitable example [7M]
- (OR)**
8. a) Explain the control structures with examples [9M]
b) Explain the Perl parsing rules [5M]

UNIT-V

9. a) How are name spaces and variables scopes different from each other? [7M]
b) What are the differences between using "import module" and "from module import *"? [7M]
- (OR)**
10. a) What are the features of modules? [6M]
b) Measure to read random numbers upto 75 and display even and odd numbers with two different files. [8M]

AR13

CODE: 13CE2003

SET-1

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)

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

ENGINEERING GEOLOGY (Civil Engineering)

Time: 3 Hours

Max Marks: 70

PART-A

ANSWER ALL QUESTIONS

[1 x 10 = 10 M]

1. a) What is physical geology?
- b) What is Structural geology
- c) Distinguish between colour and streak?
- d) What is Mho's scale of hardness?
- e) What is rock cycle?
- f) Distinguish between intrusive and extrusive igneous rocks
- g) What do you mean by unconformity?
- h) What are the causes of faults in rocks?
- i) What is Self-potential method?
- j) What is the principle of Radiometric method?

PART-B

Answer one question from each unit

[5x12=60M]

UNIT-I

2. Bring out clearly the importance of geology in the design or stability of Structures
- (OR)**
3. Explain the geological considerations for dams and reservoirs

UNIT-II

4. Enumerate different rock forming minerals and explain the characteristics of silicate group and feldspar group of minerals
(OR)
5. Explain different methods of study of minerals and their relative merits and demerits

UNIT-III

6. Explain the geological classification of rocks
(OR)
7. Give the megascopic description of (i) Granite and (ii) Conglomerate

UNIT-IV

8. Explain various types of faults with the help of neat sketches.
(OR)
9. Explain about the Joints, their classification, types and effects

UNIT-V

10. Explain about the Seismic methods of geophysical exploration.
(OR)
11. Explain about the Magnetic methods of geophysical exploration.

AR13

CODE: 13EE2006

SET-1

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)

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

ELECTRO MAGNETIC FIELDS
(Electrical & Electronics Engineering)

Time: 3 Hours

Max Marks: 70

PART-A

ANSWER ALL QUESTIONS

[1 x 10 = 10 M]

1. a) What are the features of Coulomb's law?
- b) What is polarization?
- c) Define scalar and vector field.
- d) State dielectric boundary conditions
- e) Define magnetic field intensity.
- f) Define the term relative permeability.
- g) Define mutual inductance.
- h) Classify the magnetic materials.
- i) What is the significance of displacement current?
- j) Define pointing vector. What is its unit?

PART-B

Answer one question from each unit

[5x12=60M]

UNIT-I

2. a State and prove Gauss's law. Write applications of Gauss's law. 7M
law. Describe any one application of Gauss's law.
- b A point charge $Q=300\mu\text{C}$ located at $(1,-1,-3)\text{m}$ experiences a force $F_1=8a_x - 8a_y + a_z(\text{N})$ due to point charge Q_2 at $(3,-3,-2)\text{m}$. Find the charge Q_2 . 5M

(OR)

3. a Derive an expression for potential energy stored in the system of n point charges. 6M
- b Given a field $E = (-6y/x^2) a_x + (6/x) a_y + 5a_z \text{ v/m}$. Find the potential difference V_{AB} given $A(-7,1,2)$ and $B(4,1,2)$. 6M

UNIT-II

4. a Derive Poisson's and Laplace's equation. 6M
- b Given the potential field, $V = (50 \sin \theta / r^2) \text{ V}$, in free space, determine whether V satisfies Laplace's equation. 6M

(OR)

5. a Derive the capacitance of a parallel plate capacitor. 8M
- b Explain the electric field distribution inside and outside a conductor. 4M

UNIT-III

6. a State and explain Biot-Savart law. 6M
b Using Ampere's law, derive an expression for H due to an infinite sheet of current carrying conductor. 6M

(OR)

7. a Derive the magnetic field intensity in the different regions of co-axial cable by applying Ampere's circuital law. 6M
b Using Biot-Savart law, derive an expression for H due to an infinite line of current carrying conductor. 6M

UNIT-IV

8. a What is Lorentz force equation for a moving charge? Write its applications. 6M
b Derive an expression for a torque on a closed rectangular loop carrying current. 6M

(OR)

9. A solenoid is 50 cm long, 2 cm in diameter and contains 1500 turns. The cylindrical core has a diameter of 2 cm and a relative permeability of 75. This is coil is co-axial with a second solenoid, also 50 cm long, but 3 cm diameter and 1200 turns. Calculate L for the inner solenoid and L for the outer solenoid. 12M

UNIT-V

10. a Calculate the self-inductance of infinitely long solenoid. 6M
b Write Maxwell's equation in point form or differential form and in integral form. 6M

(OR)

11. a State and prove poynting theorem. 6M
b Derive an expression for displacement current 6M

CODE:13ME2006**ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)****II B.Tech I Semester Supplementary Examinations, December-2017
ENGINEERING METALLURGY AND MATERIAL SCIENCE
(Mechanical Engineering)****Time : 3 Hours****Max Marks: 70****PART – A****Answer all questions****[1X10=10]**

1. a) What is a packing density of crystal?
b) What is a metallic bond?
c) What are types of phase diagram?
d) What is a hypo eutectic and hyper eutectic?
e) What is the major application of TTT diagram?
f) What are properties of tool steels?
g) Difference between fatigue and creep?
h) What are properties possible to measure by tensile testing machine?
i) What is meant by apparent density?
j) List of secondary operations in powder metallurgy?

PART-B**Answer one question from each unit****[5 X 12 = 60 M]****UNIT- I**

2. (a) What are different types of crystal structures and explain them?
(b) What are the significances of the dislocations?

(OR)

3. (a) Explain interstitial compounds, Inter metallic compounds and electron compounds?
(b) Explain the Hume Rothery rules for maximum solid solubility?

UNIT – II

4. Explain Iron-IronCarbide phase diagram with different phases?

(OR)

5. What are principles of solidification of alloy and metal and explain in detail?

UNIT- III

6. (a) What are purposes of heat treatment and explain briefly about different heat treatment processes?
(b) What are the hardening methods and explain it?

(OR)

7. (a) Explain alloy steels with classification, properties and applications?
(b) What are the properties of titanium and its alloys? Explain types of titanium alloys?

UNIT – IV

8. Explain the following terms in detail:
(i) Engineering stress and engineering strain
(ii) True stress and true strain
(iii) Relation between engineering stress and true stress
(iv) Relation between true stress and true strain

(OR)

9. (a) What is meant by hardness and what are types of hardness testing? Explain the each hardness testing with type of indenter used, angle of indenter, applied load and measurement
(b) How to measure the hardness of the brittle material?

UNIT – V

10. (a) Explain the powder metallurgy process step by step to manufacture heavy duty brakes?
Design a powder metallurgy part for the production?

(OR)

11. (a) Explain the cold compaction and hot compaction in detail?
(b) Differences between infiltration and impregnation in powder metallurgy?

AR13

CODE: 13EE2008

SET-2

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)

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

ELECTRICAL TECHNOLOGY (Electronics and Communication Engineering)

Time: 3 Hours

Max Marks: 70

PART-A

ANSWER ALL QUESTIONS

[1 x 10 = 10 M]

1. a) Give the applications of DC generators
b) List the different types of Dc Motor.
c) What is KVA rating of a transformer
d) What is the difference between ideal transformer and practical transformer
e) Why single phase induction motor is not self-starting.
f) Why the rotor of a three phase induction motor can never attain the synchronous speed
g) What is voltage regulation of an alternator?
h) Define a) Pitch factor b) Distribution factor
i) State the basic requirement of any measuring instrument.
j) Which are the various effects with which deflecting torque is produced?

PART-B

Answer one question from each unit

[5x12=60M]

UNIT-I

2. a) Derive from first principles an expression for the e.m.f. of a d.c generator 6M
b) A series generator having combined armature and field resistance of 0.4Ω , is running at 1000 r.p.m. and delivering 5.5kW at a terminal voltage of 110V. if the speed is raised to 1500 r.p.m. and load is adjusted to 10 kW, find the new current and terminal voltage. Assume the machine is working on the straight line portion of the magnetization characteristics. 6M
- (OR)
3. a) With neat diagram explain the Swinburne's test conducted on DC shunt motors. What are the advantages and limitations of this test? Enumerate all calculations. 6M
b) A 400 volts shunt motor develops an output of 18.5 kW when taking 22.5 kW. Field resistance is 200Ω and armature resistance is 0.4Ω . What is the efficiency and power input when output is 9 kW? 6M

UNIT-II

4. a) Explain the following 6M
i) Losses in a transformer
ii) Efficiency of a transformer
iii) Voltage regulation of a transformer
b) A 7.5 kVA, 2400V/120V transformer was tested by short circuiting the low voltage side and applying 100 V to the high voltage side. The measured power input was 145 W. Determine the regulation when the load has 0.8 lagging power factor. 6M

(OR)

5. a Derive the expression for induced e.m.f in a transformer in terms of frequency, maximum value of flux and number of turns on the windings 6M
 b Obtain the approximate equivalent circuit of a given 200/2000 V single phase 30 KVA transformer having the following results: 6M
 OC Test: 200 V, 6.2 A, 360 W on L.v side
 SC Test : 75 V, 18A, 600 W on h.v.side

UNIT-III

6. a Explain how a rotating magnetic field is produced in a three phase induction motor. 6M
 b A 3-phase, 4-pole delta connected Induction Motor has a full-load slip of 5%, if the supply frequency is 50 Hz. Find the full-load speed, synchronous speed and frequency of rotor e.m.f. 6M

(OR)

7. a Draw and explain the slip-torque characteristics of a 3-phase induction motor 4M
 b Derive an expression for power developed in a 3-phase induction motor 8M

UNIT-IV

8. a Explain the synchronous impedance method for determine regulation of an alternator? 6M
 b Calculate the R.M.S value of the induced e.m.f. per phase of a 10-pole, 3-phase, 50 Hz alternator with 2 slots per pole per phase and 4 conductors per slot in two layers, The coil span is 150° . The flux per pole has a fundamental component of 0.12Wb and a 20% third component. 6M

(OR)

9. a Describe predetermination of regulation of an alternator from the O.C and S.C tests 6M
 b A 100kVA, 3000V, 50Hz 3- phase star connected alternator has effective armature resistance of 0.2Ω . The field current of 40A produces short-circuit current of 200A and an open- circuit emf of 1040V (line value). Calculate the full-load voltage regulation at 0.8 p.f. lagging and 0.8p.f. leading. Draw phasor diagrams. 6M

UNIT-V

10. a Explain the necessity of deflecting, controlling and damping torques in an indicating instrument. How the instrument would behave if anyone of the torques is absent? 8M
 b Describe the working of moving coil instrument. Explain why it is suitable on DC only. 4M

(OR)

11. a Explain different types of torques. 6M
 b A moving coil instrument gives full- scale deflection with 15mA. The resistance of coil is 5Ω . It is desired to correct this instrument in to an ammeter to read up to 2A. How to achieve it? Further, how to make this instrument to read up to 30 volts. 6M

AR13

CODE: 13EE2003

SET-1

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)

II B.Tech I Semester Supplementary Examinations, December-2017
ELECTRICAL AND ELECTRONICS ENGINEERING

(Common to CSE & IT Branches)

Time: 3 Hours

Max Marks: 70

PART-A

ANSWER ALL QUESTIONS

[1 x 10 = 10 M]

1. a) Define electric charge 1M
- b) What is the condition to apply star-delta and delta- star transformation 1M
- c) What is the condition for maximum efficiency 1M
- d) What is the function of starter 1M
- e) Define transformer 1M
- f) Define slip 1M
- g) Classify types of instruments 1M
- h) Name the type of instruments to measure DC quantities 1M
- i) Draw symbol of transistor 1M
- j) Draw V-I characteristics of Diode 1M

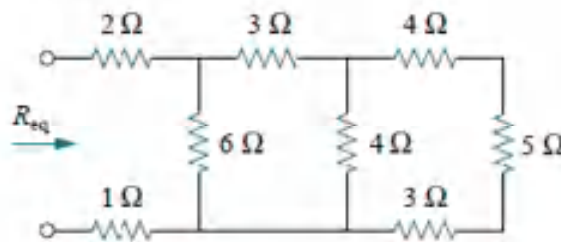
PART-B

Answer one question from each unit

[5x12=60M]

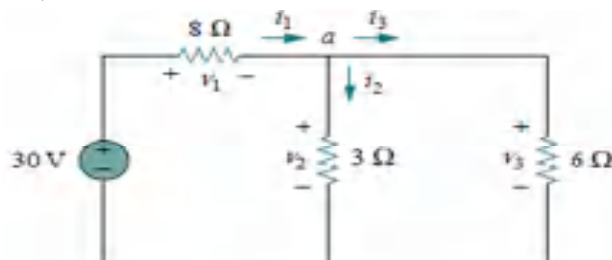
UNIT-I

2. a) What are the basic circuit elements, draw symbols and write their V-I relationships 6M
- b) Find the equivalent resistance 6M



(OR)

3. a) Determine currents and voltages in the circuit by applying KVL 6M



- b) Write a note on delta – star transformation 6M

UNIT-II

4. a Explain the construction details of DC machine 6M
b Derive expression for torque developed in DC motor 6M
(OR)
5. a Classify different types of DC motors and explain briefly 6M
b A 4 pole lap wound d.c generator has 440 armature conductors, flux/pole of 0.075wb and running at 1000 rpm calculate the amount of EMF generated 6M

UNIT-III

6. a Explain the procedure of determining regulation of alternator by synchronous impedance method 6M
b A single phase 2200/250 v 50 Hz transformer has a net core area of 36 cm^2 and maximum flux density of 6 wb/m^2 . Calculate the number of turns in primary and secondary coils 6M
(OR)
7. a What are the different types of losses in transformer explain 6M
b Explain the principle of operation of three phase Induction motor 6M

UNIT-IV

8. a What are the advantages and disadvantages of PMMC instrument 6M
b What are the essential operating torques in indicating instruments explain 6M
(OR)
9. Explain the construction and principle of operation of MI instrument 12M

UNIT-V

10. a What is a rectifier? Explain Half wave rectifier circuit. 6M
b Explain in detail how transistor acts as an amplifier 6M
(OR)
11. a Explain the construction of SCR with neat diagram 6M
b Explain p-n-p and n-p-n transistors 6M