Code No: **R18A0001**

**R18**

# MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

**(Autonomous Institution – UGC, Govt. of India)**

**I B.Tech I Semester Supplementary Examinations, May 2019**

**ENGLISH**

**(Common to all Branches)**

| Roll No | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|

**Time: 3 hours** **Max. Marks: 70**

**Note:** This question paper Consists of 5 Sections. Answer **FIVE** Questions, Choosing ONE Question from each SECTION and each Question carries 14 marks.

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## SECTION-I

1. Write stanza wise summary of the poem "The Road Not Taken" bringing out its implicit message. [14M]

**OR**

2. a) Write a paragraph in about 100 words about a normal day you spend in your college using simple Present tense. [7M]

b) What are 'signal words'? How are they useful while reading a paragraph? [7M]

## SECTION-II

3. Why do you think Abraham Lincoln writes a letter to his son's teacher asking him to teach his son various things? [14M]

**OR**

4. a) Write a letter of complaint to the service manager of a hotel where you stayed about the poor facilities and service provided during your stay. [7M]
   b) Write short notes on skimming and scanning as reading techniques. [7M]

## SECTION-III

5. Discuss the attitudes of the different characters towards war and personal sacrifice in "***War***" by L. Pirandello. [14M]

**OR**

6. Rewrite the following sentences, without affecting the meaning, using the form of the adjective given in brackets. [14M]
   i. Krishna is taller than everyone in his family. (tallest)
   ii. Our house is the costliest in the neighbourhood. (costlier)
   iii. Ishita is more intelligent than Rani. (intelligent)
   iv. My table is not as large as yours. (larger)
   v. Of the four cars, the green one impressed the least. (less)
   vi. This village has more number of literates than all the others in the district. (most)
   vii. My house is nearer to the college than my friends'. (nearest)

## SECTION-IV

7. a)What is the importance of 'imagination' in real life, according to JK Rowling? [7M]
   b) Why does JK Rowling say that failure has many benefits in one's life? [7M]

**OR**

8. a)Fill in the blanks with appropriate articles; if no article is needed, use a cross mark (X) to indicate it [7M]
   i. I want to open ____ savings account in _____ bank that you suggest.
   ii. The Hi Tech City building in _____ Hyderabad is _____ best place to start your company.
   iii. Krishna is employed but his brother is still in _____ college.
   iv. Ram is carrying _____ briefcase and _____ airbag.

b) Write One-Word Substitutes for the following. [7M]

i. Person who is unable to pay his/her debts.
ii. Top surface of a room.
iii. One who knows many languages
iv. Fear of closed spaces.
v. One who can use both the hands with equal ease
vi. One who can read and write.
vii. Handwriting that cannot be read.

## SECTION-V

9 a) Identify each of the items as a phrase or a clause. [7M]

i. He works hard every day
ii. After a good day
iii. Before the next flight
iv. Because it is the right thing to do
v. Whenever it gets cold
vi. This car is not working
vii. Inside a deep, dark well

b) Identify each item as an independent clause or a dependent clause. [7M]

i. Because it is the best solution.
ii. It does not really interest me.
iii. There could be a problem.
iv. If he ever calls.
v. I should have given her a ride.
vi. Since the last time they visited.
vii. Working at this job is a lot of fun.

**OR**

10 a) Fill in the blanks with the right form of the verb agreeing with subject. [7M]

i. Idli and chutney _____ (is/are) my favourite breakfast.
ii. The president and secretary _____ (have/has) arrived in time.
iii. All the students of the college ____ (has/have) sports classes every week.
iv. One of my friends _____ (practice/practices) cricket every day
v. Either his father or his sister _____ (guides/guide) him for the test.
vi. Everyone _____ (want/wants) to succeed.
vii. Rs. 10,000 a month _____ (is/are) a good salary for a fresher.

b) What are the various components of a memo; discuss its features. [7M]

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Code No: R18A0021

**R18**

# MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

**(Autonomous Institution – UGC, Govt. of India)**

**I B.Tech I Semester Supplementary Examinations, May 2019**

**Mathematics-I**

**(Common to all Branches)**

| Roll No | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|

**Time: 3 hours** **Max. Marks: 70**

**Note:** This question paper Consists of 5 Sections. Answer **FIVE** Questions, Choosing ONE Question from each SECTION and each Question carries 14 marks.

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## SECTION-I

Q. No. 1 a) Define rank of a matrix , reduce the matrix A into Echelon form and hence find its rank (8M)

$$A=\begin{bmatrix} 2 & -4 & 3 & -1 & 0 \\ 1 & -2 & -1 & -4 & 2 \\ 0 & 1 & -1 & 3 & 1 \\ 4 & -7 & 4 & -4 & 5 \end{bmatrix}$$

b) Express the matrix $\begin{bmatrix} 1+i & 2 & 5-5i \\ 2i & 2+i & 4+2i \\ -1+i & -4 & 7 \end{bmatrix}$ as sum of hermition and skew hermition matrices. (6M)

**OR**

Q. No. 2 State and verify Cayley Hamilton theorem , hence find the inverse and $A^4$ of the matrix $A=\begin{bmatrix} 1 & 2 & 3 \\ 2 & -1 & 4 \\ 3 & 1 & -1 \end{bmatrix}$ (14M)

## SECTION-II

Q. No. 3 a) If $U=\log(x^3+y^3+z^3-3xyz)$, then prove that $\left(\frac{\partial}{\partial x}+\frac{\partial}{\partial y}+\frac{\partial}{\partial z}\right)^2 U=\frac{-9}{(x+y+z)^2}$. (4M)

b) If $u=\frac{yz}{x}, v=\frac{zx}{y}, w=\frac{xy}{z}$, show that $\frac{\partial(u,v,w)}{\partial(x,y,z)}=4$. (4M)

c) Find the maxima and minimum values of $x^3+y^3-3axy$. (6M)

**OR**

Q. No. 4 a) Find the minimum value of $x^2+y^2+z^2$ given that $x+y+z=3a$ . (7M)

b) Expand the function $f(x,y)=e^x siny$ in terms of x and y up to the terms of 3rd degree using Taylors theorem. (7M)

## SECTION-III

Q. No. 5 a) Solve $x^2 y\,dx - (x^3 + y^3)\,dy = 0.$ (7M)

b) A bacterial culture, growing exponentially increases from 200 to 500 grms in the period from 6 am to 9 am. How many grams will be present at noon. (7M)

**OR**

Q. No.6 a) Solve $y'' + 4y' + 4y = 4\cos x + 3\sin x,\ y(0) = 0,\ y'(0) = 0.$ (7M)

b) Solve $\left(D^2 + a^2\right) y = \tan ax,$ by the method of variation of parameters. (7M)

**SECTION-IV**

Q. No. 7 a) Form partial differential equation by eliminating the arbitrary functions from $z = x\ f_1(x+t) + f_2(x+t).$ (7M)

b) Solve $x^2 p^2 + y^2 q^2 = z^2.$ (7M)

**OR**

Q. No. 8 a) Solve $p\sqrt{x} + q\sqrt{y} = \sqrt{z}.$ (7M)

b) Solve $(mz - xy)p + (nx - lz)q = ly - mx.$ (7M)

**SECTION-V**

Q. No. 9 Find the Laplace transform of

$(i)\ t e^{2t} \sin 3t \quad (ii)\ \dfrac{e^{-at} - e^{-bt}}{t}.$ (14M)

**OR**

Q. No. 10 a) Find $L^{-1}\left\{\dfrac{4s+5}{(s-1)^2(s+2)}\right\}$ (7M)

b) Solve the initial value problem by using Laplace transform method of $y'' + 7y^1 + 10y = 4e^{-3t},\ y(0) = 0,\ y'(0) = -1.$ (7M)

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Code No: **R18A0012**

**R18**

# MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

## (Autonomous Institution – UGC, Govt. of India)

## I B.Tech I Semester Supplementary Examinations, May 2019

### Applied Physics

### (EEE , ECE, CSE &IT)

| Roll No | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|

**Time: 3 hours** **Max. Marks: 70**

**Note:** This question paper Consists of 5 Sections. Answer **FIVE** Questions, Choosing ONE Question from each SECTION and each Question carries 14 marks.

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## SECTION-I

| | | |
|---|---|---|
| **1 a.** | Explain significance of wave function. | **[5M]** |
| **b.** | Derive energy of a particle in one dimensional square well potential. | **[9M]** |

OR

| | | |
|---|---|---|
| **2 a.** | Explain construction, principle and working of G.P.Thomson experiment. | **[10M]** |
| **b.** | Discuss about the properties of matter waves. | **[4M]** |

## SECTION-II

| | | |
|---|---|---|
| **3 a.** | Discuss about Bolch's theorem. | **[7M]** |
| **b.** | Explain origin of energy bands in solids. | **[7M]** |

OR

| | | |
|---|---|---|
| **4 a.** | Write in detail about Fermi level and its significance. | **[7M]** |
| **b.** | Discuss about free electron theory. | **[7M]** |

## SECTION-III

| | | |
|---|---|---|
| **5 a.** | Give an account of direct and indirect band gap semiconductors. | **[4M]** |
| **b.** | Derive an expression for concentration of holes in p-type semiconductor. | **[10M]** |

OR

| | | |
|---|---|---|
| **6 a.** | Write short notes on diffusion and drift mechanisms. | **[5M]** |
| **b.** | What is Hall effect and give block diagram and experimental details of Hall experiment. | **[9M]** |

**SECTION-IV**

| | | |
|---|---|---|
| **7 a.** | Derive an expression for internal fields in a solid. | **[10M]** |
| **b.** | Discuss about properties of anti-ferro and ferri magnetic materials | **[4M]** |

OR

| | | |
|---|---|---|
| **8 a.** | Derive Clausius-Mosotti equation. | **[7M]** |
| **b.** | Discuss about hysteresis curve of ferromagnetic material. | **[7M]** |

**SECTION-V**

| | | |
|---|---|---|
| **9 a.** | Give an account of meta-stable state, types of pumping, lasing action and population inversion. | **[8M]** |
| **b.** | Describe construction, principle and working of Ruby laser. | **[6M]** |

OR

| | | |
|---|---|---|
| **10 a.** | Explain construction and working principle of an optical fiber. | **[5M]** |
| **b.** | Derive an expression for numerical aperture of an optical fiber. | **[9M]** |

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**R18**

**Code No: R18A0013**

# MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

**(Autonomous Institution – UGC, Govt. of India)**

## I B.Tech I Semester Supplementary Examinations, May 2019

**Engineering Chemistry**

**(ME &AE)**

| Roll No | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|

**Time: 3 hours** **Max. Marks: 70**

**Note:** This question paper Consists of 5 Sections. Answer **FIVE** Questions, Choosing ONE Question from each SECTION and each Question carries 14 marks.

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**SECTION-I**

1 a What is Electrode Potential? Explain the construction and working of Galvanic Cell? **[7M]**

b What are Batteries? How are they classified? Write the cell reactions involved in Lead - Acid cell **[7M]**

OR

2 a Write the construction, working principle and applications of **$H_2$- $O_2$** fuel cell **[7M]**

b Define corrosion? Explain the mechanism of electrochemical corrosion by Absorption of $O_2$. **[7M]**

**SECTION-II**

3 a What are the salient features of Molecular orbital theory. Explain the molecular orbital energy level diagram of $N_2$ molecule **[7M]**

b What is Crystal Field Theory? Draw and explain the splitling of 'd '-Orbitals in octahedral geometry **[7M]**

OR

4 a Write a note on Metallic Bonding and conduction in metals **[7M]**

b Explain the molecular orbital energy level diagram of $O_2$ molecule **[7M]**

**SECTION-III**

5 a What is Hardness? How do you estimate the hardness of water by EDTA method? Explain in detail? **[7M]**

b What are specifications of potable water. Explain disinfectation of water by ozonisation. **[7M]**

OR

6 a Explain desalination of water by reverse osmosis method. **[7M]**

b Discuss the Ion-exchange process for softening of water. **[7M]**

**SECTION-IV**

7 a What are Nucleophilic substitution reaction? Discuss the $SN^1$ reactions with suitable examples **[7M]**

b Explain why addition of HBr to olefine does not follow Markovnikov rule in the presence of peroxide **[7M]**

OR

8 a What are oxidation reactions ? Write the mechanism for oxidation of alcohols using $KMnO_4$ **[7M]**

b Can $LiAlH_4$ reduce carbonyl compounds? Explain **[7M]**

**SECTION-V**

9 a How quality of coal can be analyzed by ultimate method ?write the significance of different constituents of coal **[7M]**

b What is Refining? Write the characteristics and uses of petrol, diesel and Kerosene ? **[7M]**

OR

10 a What is meant by cracking of petroleum? Explain the fluid bed catalytic method of obtaining gasoline **[7M]**

b Write the composition, properties and uses of LPG, CNG and Natural gas **[7M]**

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Code No: R18A0501

**R18**

# MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

## (Autonomous Institution – UGC, Govt. of India)

## I B.Tech I Semester Supplementary Examinations, May 2019

### Programming for Problem Solving

### (Common to all branches)

| Roll No | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|

**Time: 3 hours** **Max. Marks: 70**

**Note:** This question paper Consists of 5 Sections. Answer **FIVE** Questions, Choosing ONE Question from each SECTION and each Question carries 14 marks.

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## SECTION-I

| | | | |
|---|---|---|---|
| **1** | a) | List and explain the steps that a programmer follows in writing a program. | **[4M]** |
| | b) | Draw the flow-chart to compute the Factorial of a given number. | **[5M]** |
| | c) | Write a program that extracts and prints the rightmost digit of the number. | **[5M]** |

OR

| | | | |
|---|---|---|---|
| **2** | a) | What are the data types supported by C language. | **[4M]** |
| | b) | Draw the flow-chart to print the Fibonacci series. | **[5M]** |
| | c) | Write a program to print the reverse of the given number. | **[5M]** |

## SECTION-II

| | | | |
|---|---|---|---|
| **3** | | Write C program to display arithmetic operations using switch statement. | **[14M]** |

OR

| | | | |
|---|---|---|---|
| **4** | a) | What is a loop? Explain different statements in C with example. | **[8M]** |
| | b) | Write a C program to find the sum of first and last digit of a number. | **[6M]** |

## SECTION-III

| | | | |
|---|---|---|---|
| **5** | a) | What is recursion? Differentiate between recursion with iteration. | **[7M]** |
| | b) | Write a C program to find factorial using recursion. | **[7M]** |

OR

| | | | |
|---|---|---|---|
| **6** | a) | What are the different ways of passing parameters to the function? Explain | **[7M]** |
| | b) | Write a C program using the concept of functions to swap the values of variables without using third variable. | **[7M]** |

**SECTION-IV**

| | | | |
|---|---|---|---|
| **7** | **a)** | What is string? Explain about declaration and initialization of string in 'C'. How strings are displayed with different formats? Explain with examples. | **[7M]** |
| | **b)** | Write a C program to perform the operation of addition of two matrices. | **[7M]** |

OR

| | | | |
|---|---|---|---|
| **8** | **a)** | Explain different types of string handling functions with example. | **[8M]** |
| | **b)** | Write a C program to check whether the given string is palindrome or not? | **[6M]** |

**SECTION-V**

| | | | |
|---|---|---|---|
| **9** | a) | Define a pointer? Explain pointer arithmetic. | **[6M]** |
| | b) | Write a C program to illustrate usage of pointer | **[8M]** |

OR

| | | | |
|---|---|---|---|
| **10** | a) | Explain structure declaration and initialization with an example. | **[7M]** |
| | b) | Write a C program to display the details where the name of a structure is Student and its members are Roll number, name and total marks. | **[7M]** |

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Code No: **R18A0301**

**R18**

# MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

## (Autonomous Institution – UGC, Govt. of India)

## I B.Tech I Semester Supplementary Examinations, May 2019

### Engineering Graphics

### (EEE, ECE, CSE & IT)

| Roll No | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|

**Time: 3 hours** **Max. Marks: 70**

**Note:** This question paper Consists of 5 Sections. Answer **FIVE** Questions, Choosing ONE Question from each SECTION and each Question carries 14 marks.

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## SECTION-I

**1** The vertex of a hyperbola is 60 mm from its focus. Draw the curve when eccentricity is 3/2. Draw a tangent and normal to the curve at a point 70mm from the directrix. **[14M]**

OR

**2** A room area 36 Sq.m. is shown on the house plan as 81 Sq.cm. Construct a scale long enough to measure 9 meters and mark a distance of 8 m 4 dm on the scale. **[14M]**

## SECTION-II

**3** Draw the projections of the following points on a common reference line keeping the distance between their projectors 30mm apart. **[14M]**

i) Point A is 20 mm below the H.P. and 50 mm in front of the V.P.
ii) Point B is in the H.P. and 40mm behind the V.P.
iii) Point C is 30mm in front of the V.P. and in the H.P.
iv) Point D is 50 mm above the H.P. and 30mm behind the V.P.
v) Point E is 20mm below the H.P. and 50mm behind the V.P.
vi) Point F is both HP and VP
vii) Point G is in VP and 40mm above HP

OR

**4** A line PQ is inclined at 45° to V.P and inclined at 30° to the H.P. One end P is 20 mm above HP and 15 mm in front of VP. Draw the projections of the line PQ. **[14M]**

## SECTION-III

**5** An equilateral triangle of 50mm side, has its plane parallel to H.P and 30mm away from it. Draw the projections when one of its sides is (i) perpendicular to V.P, (ii) parallel to **[14M]**

V.P and (iii) inclined to V.P at an angle of $45^0$.

OR

**6** a)Draw the projections of A Triangular pyramid base in VP and an edge of the base inclined at 50° to the HP. The apex being 50 mm above HP. Taking a side of the base 35 mm long and the axis 70 mm long. **[14M]**

b) Draw the projections of A square prism axis perpendicular to VP with one of the rectangular faces making 60° with HP and axis 50 mm above HP.

Take a side of the base 40 mm long and the axis 75 mm long

**SECTION-IV**

**7** Draw the isometric view of the following plane figures with side length as 30 mm **[14M]**

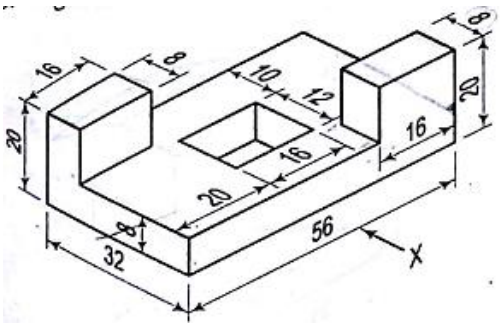
a)Hexagon b) Circle of 50 mm diameter.

OR

**8** A square prism of side of base 40 mm and height 20 mm is placed on the top face of a cylinder of 65 mm diameter and 25 mm height. The three solids have the common axis. Draw the isometric projection of combination of solids. **[14M]**

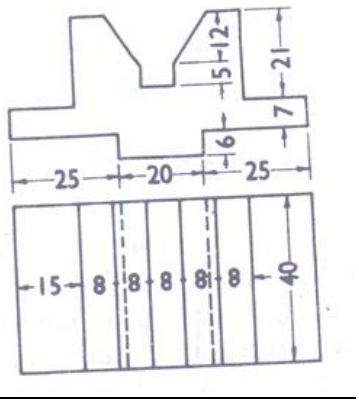
**SECTION-V**

**9** Draw front view, top view and side view of the given figure. **[14M]**




OR

**10** Construct the Isometric view from the given orthographic projections **[14M]**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Code No: R18A0261

**R18**

**MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY**

**(Autonomous Institution – UGC, Govt. of India)**

**I B.Tech I Semester Supplementary Examinations, May 2019**

**Basic Electrical and Electronics Engineering**

**(ME &AE)**

| Roll No | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|

**Time: 3 hours** **Max. Marks: 70**

**Note:** This question paper Consists of 5 Sections. Answer **FIVE** Questions, Choosing ONE Question from each SECTION and each Question carries 14 marks.

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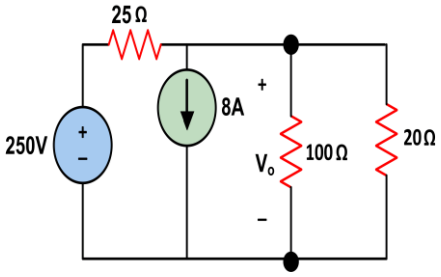
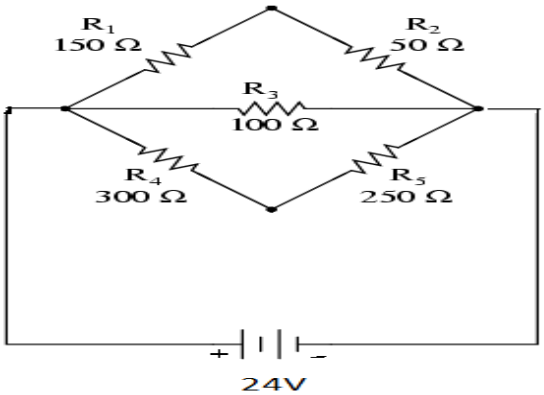
## SECTION-I

**1** (a) Find Vo using source Transformation. **[7M]**




(b) Find the current through 100Ω resistor and the voltage across 150Ω resistor in the given figure by using KVL and KCL .




**[7M]**

OR

**2** (a) Explain about the independent and dependent sources. **[9M]**

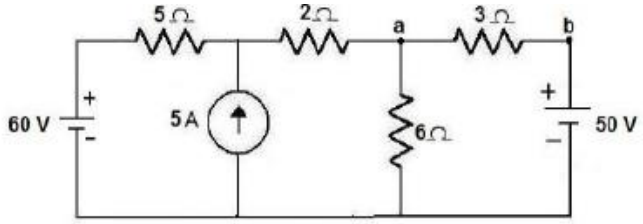
(b) Explain and derive the formula for energy stored in an inductor. **[5M]**

## SECTION-II

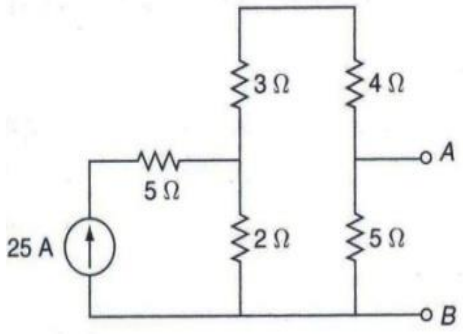
**3** State and Explain superposition theorem with an example. **[14M]**

OR

**4** (a) Find the current through branch a-b using super-mesh analysis shown in figure below. **[8M]**




(b) Determine Norton's equivalent circuit




**[6M]**

## SECTION-III

**5** (a) With a neat sketch, explain the construction principle of operation of DC generator. **[9M]**

(b) A lap wound dc shunt generator having 80 slots with 10 conductors per slot generates at no-load an emf of 400V, when running at 1,000 RPM. Find out the flux per pole. If this generator is required to generate a voltage of 220V on open – circuit, at what speed it should be rotated?

**[5M]**

OR

**6** (a) Explain in detail with a neat diagram about the constructional details of single phase transformers. **[7M]**

(b) Explain the principle of operation of single phase transformer.

**[7M]**

## SECTION-IV

**7** (a) Explain the V-I characteristics of PN Junction diode. **[7M]**

(b) Draw and explain the center tapped transformer rectifier configuration with neat waveforms.

**[7M]**

OR

**8** (a) Draw and explain the half wave rectifier configuration with neat waveforms and derive the formula for Average value of output voltage. **[8M]**

(b) A 50Ω load resistance is connected across a full wave rectifier. The input supply voltage is 230V (rms) at 50 Hz. Determine the average output voltage, RMS voltage, average load current and PIV.

**[6M]**

## SECTION-V

**9** (a) Draw and explain the construction and principle of operation of BJT in Common-Emitter configuration. **[7M]**

(b) Draw and explain the input and output characteristics of BJT in Common-Emitter configuration

**[7M]**

OR

**10** (a) Explain how transistor can be used as an amplifer. **[7M]**

(b) Draw and explain the input and output characteristics of BJT in Common-Collector configuration.

**[7M]**

**********