MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY
(Autonomous Institution – UGC, Govt. of India)
I B.Tech I Semester Regular Examinations, Nov/Dec 2018
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. a) Robert Frost, in his poem "The Road Not Taken" uses the road as a symbol of the choice made by people in life. Discuss. [7M]

b) Elaborate the conclusion made by the poet in the poem "The Road Not Taken". [7M]

OR

2. a) Read the passage given below and answer the questions that follow in full sentences. [7M]

Scientists know many things about the Sun. They know how old it is. The Sun is more than 4½ billion years old. They also know the Sun's size. The Sun may seem small, but that is because it is so far away. It is about 93 million miles (150 million kilometers) away from the Earth. The Sun is so large that the diameter of the Sun is 109 times the Earth's diameter. The Sun also weighs as much as 333,000 Earths. The Sun is the center of our Solar System. Besides the Sun, the Solar System is made up of the planets, moons, asteroid belt, comets, meteors, and other objects.

(a) How old is the sun?

(b) Why does the sun seem small?

(c) What is the distance of the sun from the Earth?

(d) What is there at the center of the Solar System?

(e) What is the solar system made up of?

(f) Complete the sentence: The Sun is so large that the diameter of the Sun is_____.

(g) What is the meaning of the word 'besides' _____

b) Write the meaning/function of the prefixes in the following words and give an example of your own using each of the prefixes. [7M]

i. postmortem	ii. premature	iii. mismanage	iv. overcrowded
v. semicircle	vi. translate	vii. dishonest	

SECTION-II

3. What are the things that Abraham Lincoln asks his son's teacher to teach his child? [14M]

OR

4 a) Compose an email apologizing to the HR manager of a company for not being able to attend the scheduled interview.[7M]

b) Fill in the blanks with the synonyms for the word in brackets from one of the choices given.[7M]

check   annoyed   grown-ups   enormous   frequently   scared   amazed

1. He died at the age of 60, but he didn't have a healthy lifestyle. He was _____ (often) drunk.

2. Listen to me Rahul! If you are good and behave well, you can eat with the _____.(adults)

3. Please _____ (verify) that there is sufficient memory available before loading the program.

4. Rahul was not in good condition when the tournament began, so his parents were _____ (astonished) to learn that he had won the competition.

5. At first Rahul was really _____ (afraid); but he realised very soon that it was a cat which had made the noise.

6. My children are really very nice, they gave me two _____ (huge) bunches of flowers on Mother's day.

7. I was beginning to get _____ (irritated) with them about their carelessness.

SECTION-III

5.a. "It is a great and beautiful thing to die for one's country." Do you agree or disagree? Explain your answer with reference to "*War*" by L. Pirandello. [7M]

b. Why does the old man say that parents should be proud of the death of a son in the war?[7M]

OR

6. a)Use the correct prepositions to fill in the blanks.[7M]

i. Is the train _____ time?

ii. The writer was born _____ a small village in Nalgonda district.

iii. They usually travel _____ bus.

iv. My friends come to college by car, but I prefer to come _____ foot.

v. The parents divided the property _____ the four children.

vi. The dog was killed _____ a tiger.

vii. Raghu has been reading that novel _____ a week.

b)Write an essay in about 150-200 words on the dangers of using mobile while driving. [7M]

SECTION-IV

7."As is a tale, so is life: not how long it is, but how good it is, is what matters." Discuss this powerful message delivered by JK Rowling in her "Harvard Address"[14M]

OR

8 a)Rewrite the following sentences by using the misplaced modifiers at the right places.[7M]

i. She **almost** failed every exam she took.

ii. People who laugh **rarely** are sad.

iii. She saw a puppy and a kitten **on the way to the store**.

iv. He bought a horse for his sister **they call Prince**.

v. We met Sita yesterday **only**.

vi. **Crying on the examination table**, the doctor gave the small child his vaccine.

vii. **Dressed in an attractive white gown**, everyone watched the celebrity enter the room.

b). Write a letter to the Principal seeking permission to organize blood donation camp in the campus. [7M]

SECTION-V

9. Write the meanings of the following pairs of words and use them in your sentences so as to bring out the difference of meaning. [14M]

i. alter-altar   ii. pear-pair   iii. Stationary-stationery iv. affect-effect

v. eminent-imminent vi. accept-except   vii. decent-descent

OR

10 a)Rewrite the following sentences after making necessary corrections.[7M]

i. They did not get something in return.

ii. The car is too comfortable to travel.

iii. Why you are roaming in the corridors?

iv. Although the student is late, but he is allowed into the examination hall.

v. They are not knowing how to deal with their child.

vi. She has been working in that office since four years.

vii. Neither the boy nor their parents knows the truth.

b) How are a memo and a letter different from each other in their structure and purposes? [7M]

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MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY
(Autonomous Institution – UGC, Govt. of India)
I B.Tech I Semester Regular Examinations, Nov/Dec 2018
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 and reduce the matrix A into Normal form and hence find
   its rank   (10M)

$$A = \begin{bmatrix} 0 & 1 & 2 & -2 \\ 4 & 0 & 2 & 6 \\ 2 & 1 & 3 & 1 \end{bmatrix}$$

   b) Find weather the following equations are consistent, if so solve them
   $x + y + 2z = 4, 2x - y + 3z = 9, 3x - y - z = 2$ (4M)

OR

Q. No. 2 a) Find the eigen values and the corresponding eigen vectors of the matrix

$$A = \begin{bmatrix} 6 & -2 & 2 \\ -2 & 3 & -1 \\ 2 & -1 & 3 \end{bmatrix}$$ (12M)

   b) State Cayley Hamilton theorem.   (2M)

SECTION-II
Q. No. 3 a) Find the first and second order partial derivatives of f(x,y)= $ax^2 + 2hxy + by^2$ and   verify

   $$\frac{\partial^2 f}{\partial x \partial y} = \frac{\partial^2 f}{\partial y \partial x}.$$ (6M)

   b) If $x = r\cos\theta, y = r\sin\theta,$ *find* $\dfrac{\partial(x, y)}{\partial(r, \theta)}$ *and* $\dfrac{\partial(r, \theta)}{\partial(x, y)}.$

   Also show that $\dfrac{\partial(x, y)}{\partial(r, \theta)} \cdot \dfrac{\partial(r, \theta)}{\partial(x, y)} = 1$ (8M)

OR

Q. No. 4 a) Show that the function $u = xy + yz + zx, v = x^2 + y^2 + z^2, and\ w = x + y + z$ are
   Functionally dependent. Find the relation between them.   (6M)

   b) A rectangular box open at the top is to have volume of 32 cubicft. Find the
   dimensions of the box requiring least material for its construction.   (8M)

SECTION-III

Q. No. 5 a) Solve $(xy^3 + y)\,dx + 2(x^2 y^2 + x + y^4)\,dy = 0.$ (7M)

b) A body is originally at $80^0 C$ and cools down to $60^0 C$ in 20 minutes. If the
temperature of the air is $40^0 C$, find the temperature of the body after 40 minutes.
    (7M)

OR

Q. No.6 a) Solve $(D^2 - 4)y = 2\cos^2 x.$ (7M)

b) Solve $\dfrac{d^2 y}{dx^2} - 6\dfrac{dy}{dx} + 13y = 8\,e^{3x}\sin 2x.$ (7M)

SECTION-IV

Q. No. 7 a) Form partial differential equation by eliminating the arbitrary constants a,b from

$(i)\ z = a\,\log\left[\dfrac{b(y-1)}{1-x}\right]$

$(ii)\ 2z = (x+a)^{1/2} + (y-a)^{1/2} + b$ (8M)

b) Solve $x(y-z)p + y(z-x)q = z(x-y)$ (6M)

OR

Q. No. 8 a) Solve $z = px + qy + \sqrt{p^2 + q^2 + 1}$ (4M)

b) Solve $z^2(p^2 + q^2) = x^2 + y^2$ (10M)

SECTION-V

Q. No. 9 a) Find the Laplace transform of $e^{3t} - 2e^{-2t} + \sin 2t + \cos 3t + \sinh 3t - 2\cosh 4t + 9$ (4M)

b) Find $L\{e^{3t}\cos t\}$ (4M)

c) Find $L\{\dfrac{\cos 2t - \cos 3t}{t}\}$ (6M)

OR

Q. No. 10 a) Using convolution theorem, find $L^{-1}\{\dfrac{1}{(s^2 + a^2)^2}\}$ (7M)

b) Solve the differential equation $\dfrac{d^2 x}{dt^2} - 4\dfrac{dx}{dt} - 12x = e^{3t}$, given that
$x(0) = 1\ and\ x^{'}(0) = -2$ using Laplace transform.   (7M)

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MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY
(Autonomous Institution – UGC, Govt. of India)
I B.Tech I Semester Regular Examinations, Nov/Dec 2018
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.

SECTION-I

1 a.   State and explain de Broglie's hypothesis   **[6M]**

Prove that wave nature of matter waves using Davisson and Germer's experiment   **[8M]**

OR

2 a.   State and explain about Heissenberg's uncertainty principle.   **[4M]**

       Derive Schrodinger's time independent wave equation.

b.   **[10 M]**

SECTION-II

3 a.   Derive an expression for density of states.   **[10 M]**

       Explain classification of materials on the basis of energy bands.

b.   **[4M]**

OR

4 a.   Explain band theory on the basis of Kronig-Penney model   **[10 M]**

b.   Discuss in detail about E-K diagram.   **[4M]**

SECTION-III

5 a.   Discuss about p-type and n-type semiconductors.   **[4M]**

       Derive an expression for concentration of electrons in n-type semiconductor.

b.   **[10 M]**

OR

6 a.   Explain formation of a pn-junction and also discuss V-I characteristics of a PN diode.   **[8M]**

b.   Explain how PN junction acts as LED   **[6M]**

SECTION-IV

7 a.   Derive expressions for ionic polarizations.   **[8M]**

b.   Discuss about classification of dia, para and ferromagnetic materials.

[6M]

OR

8 a.   Derive an expression for Bohr magneton.   **[8M]**

b.   Explain hysteresis curve based on domain theory of ferromagnetism

[6M]

SECTION-V

9 a.   Write short notes on absorption, spontaneous emission and stimulated emission.   **[6M]**

b.   Describe construction, principle and working of He-Ne laser.

[8M]

OR

10 a.   Derive the expression for Numerical Aperture and acceptance of an optical fiber.   **[10 M]**

b.   Calculate Numerical aperture ,acceptance angle and fractional refractive index

[4M]

change when the refractive index of core and cladding 1.52 and 1.50 respectively
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MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous Institution – UGC, Govt. of India)

I B.Tech I Semester Regular Examinations, Nov/Dec 2018

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 Nernst Equation? How is it used to calculate the cell emf? give its applications.   **[7M]**

  b   What is Cathodic Protection? How are metals protected by Impressed current Cathodic method ?   **[7M]**

OR

2 a   Explain the Electrochemical theory of wet corrosion taking rusting of iron as example.   **[7M]**

  b   Discuss the construction of Lithium ion cells. Write cell reactions and applications of Lithium ion cells.   **[7M]**

SECTION-II

3 a   Explain the Postulates of the Molecular Orbital Theory?   **[7M]**

  b   Write the Molecular Orbital Energy level diagram of N_2 molecule.   **[7M]**

OR

4 a   Discuss the Crystal Field Splitting in Octahedral geometry.   **[10M]**

  b   Write salient features of   crystal field theory.   **[4M]**

SECTION-III

5	a	What are specifications of portable water?. Discuss two methods of disinfection of potable water.	**[7M]**
	b	Discuss ion exchange process for softening of hard water.	**[7M]**

OR

6	a	Explain desalination of water by Reverse Osmosis	**[7M]**
	b	Distinguish between Temporary and Permanent hardness. Write the expression and the units of hardness	**[7M]**

SECTION-IV

7	a	Explain the role of peroxides in the anti-Markownikoff's addition of HBr to alkenes	**[7M]**
	b	Write mechanism for the S_N^2 type of reactions. Give examples	**[7M]**

OR

8	a	Distinguish between SN1 and SN2 substitution reactions.	**[7M]**
	b	Discuss Oxidation and Reduction reaction by giving examples	**[7M]**

SECTION-V

9	a	Define Knocking and explain the terms Octane and Cetane numbers, Write their significance	**[7M]**
	b	Give an account of the analysis of coal by ultimate analysis and its significance	**[7M]**

OR

10	a	Write the advantages and disadvantages of gaseous fuel. write composition and uses of Natural gas and LPG	**[7M]**
	b	What is cracking? Explain fluid bed catalytic with a neat sketch..	**[7M]**

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MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous Institution – UGC, Govt. of India)

I B.Tech I Semester Regular Examinations, Nov/Dec 2018

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)	Explain the basic structure of C program.	**[7M]**
	b)	Draw the flow-chart to find the Maximum from the 3 numbers	**[7M]**

OR

2	a)	Explain about the basic data types in c language with example	**[7M]**
	a)	Write a program to generate all prime numbers from 1 to n.	**[7M]**

SECTION-II

3	a)	Explain about loop statements with examples.	**[7M]**
	b)	Write a C program to perform all arithmetic operations using switch statement	**[7M]**

OR

4	a)	Discuss about selection statements with examples	**[7M]**
	b)	Write a program to print the following series on the screen	**[7M]**

1

1 2

1 2 3

1 2 3 4

12345

SECTION-III

5 a) Explain about different storage classes with examples. Discuss their uses and scope. **[7M]**

b) Write a recursive function for finding the factorial value of a given number.

[7M]

OR

6 a) What is an user defined function? When these functions are useful? How a function is declared and what are the rules followed to call a function. **[7M]**

b) Illustrate parameters passing techniques with appropriate example programs .

[7M]

SECTION-IV

7 Explain any five string handling functions with examples **[14M]**

OR

8 a) Explain how 1-d arrays are declared and initialized in C **[7M]**

b) Write a C program to find multiplication of two matrices. **[7M]**

SECTION-V

9 a) Explain in detail about array of structure with example. **[7M]**

b) What is a pointer? And explain how the pointer variables are declared and initialized in C with example.

[7M]

OR

10 a) How do you define a structure, structure variables, access their elements and perform operations on them? Explain with examples. **[7M]**

b) Differentiate structures and unions .

[7M]

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MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous Institution – UGC, Govt. of India)

I B.Tech I Semester Regular Examinations, Nov/Dec 2018

Engineering Graphics

(CSE)

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.

SECTION-I

1 Construct a Parabola when the distance between the focus and directrix is 30 mm, draw a tangent and normal at any point on the curve.   **[14M]**

OR

2 A circle of 35 mm diameter rolls on a fixed circle of 85 mm diameter with external contact. Draw the curve traced by a point on the circumference of a rolling circle for one complete revolution.   **[14M]**

SECTION-II

3 a) Two points A and B are in the HP. The point A is 30mm in front of the V.P. While B is behind the V.P. The distance between the projectors is 75mm and line joining their top views makes an angle of 45° with xy. Find the distance of the point B from the V.P.   **[7M]**

b) A point is 50mm from both the reference planes. Draw its projections in all positions.

    [7M]

OR

4 A line AB measuring 80 mm is inclined at an angle of 30^0 to HP and 45^0 to VP. The point A is 20 mm above HP and 30 mm in front of VP. Draw the projections of the straight line AB.   **[14M]**

SECTION-III

5   A square plane ABCD of side 30mm, is parallel to H.P and 20mm away from it. Draw the   **[14M]**
projections of the plane, when two of its sides are (i) parallel to V.P and (ii) inclined at
30⁰ to V.P.

OR

6   Draw the projections of cone of base diameter 50mm an axis height 65mm and the axis   **[14M]**
is inclined at 45° to HP. Cone is resting with its base in HP

SECTION-IV

7   Draw the isometric projection of a hexagonal pyramid of side of base 30 mm and height   **[14M]**
75 mm, when it is resting on HP such that an edge of the base is parallel to VP.

OR

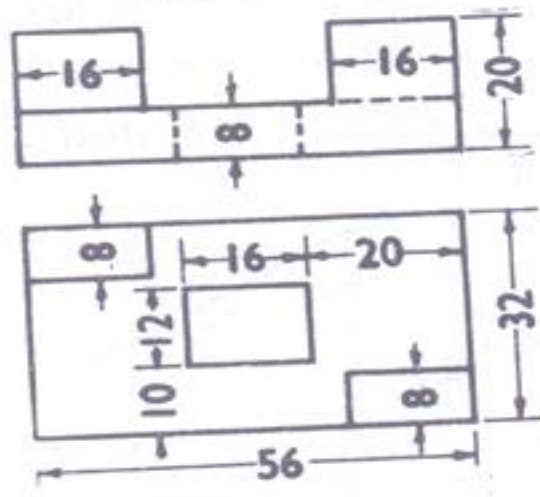**8**   Draw the isometric projection of a cube of side 60mm.   **[14M]**

SECTION-V

9   Draw the Front view, Top view and Left Side view of the given Isometric view   **[14M]**
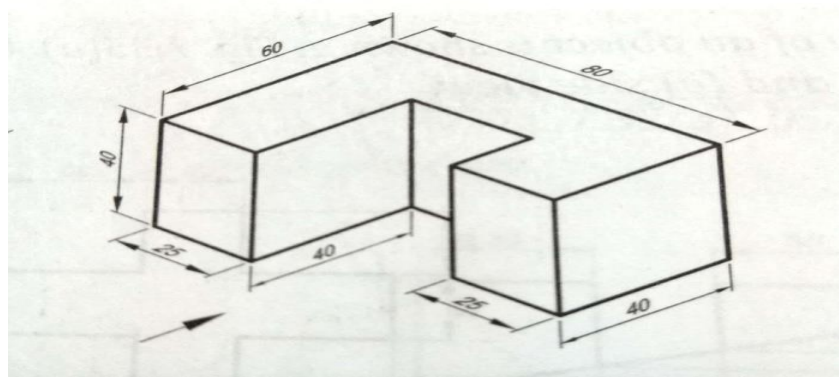
OR

10   Construct the Isometric view from the given orthographic projections   **[14M]**

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MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous Institution – UGC, Govt. of India)

I B.Tech I Semester Regular Examinations, Nov/Dec 2018

Engineering Graphics

(ECE)

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   Draw an ellipse by using eccentricity method when it focus is at a distance of 50mm from the directrix & eccentricity value is 2/3.   **[14M]**

OR

2   Construct a cycloid having a rolling circle diameter of 40mm for one revolution.   **[14M]**

SECTION-II

3   A point P is 50 mm above the HP and 30mm in front of VP. Draw it's all possible projections in all four quadrants.   **[14M]**

OR

4   A line AB is 65 mm long and has its end A both in HP and VP. It is inclined at 45^0 to the HP. Draw its projections.   **[14M]**

SECTION-III

5   A regular pentagon of 30 mm sides is resting on HP on one of it's sides with its surface 45^0 inclined to HP. Draw its projections.   **[14M]**

OR

6   A square pyramid of 30 mm side and height 50 mm long resting on HP with its base edge and axis making 45^0 to HP. Draw its projections.   **[14M]**
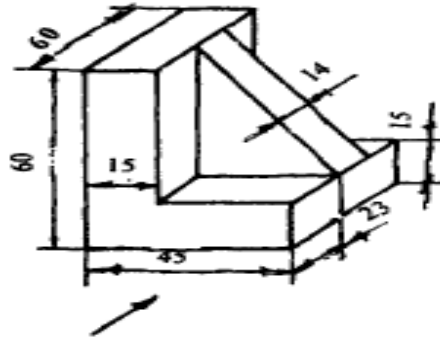
SECTION-IV

7   A rectangular prism 30 x 20 x 60 mm lies on HP on one of its largest faces with its axis   **[14M]**

parallel to both HP and VP. Draw its isometric projection.

OR

8   Draw the isometric view of a cone 40 mm diameter and axis 55 mm long when its axis is   **[14M]**

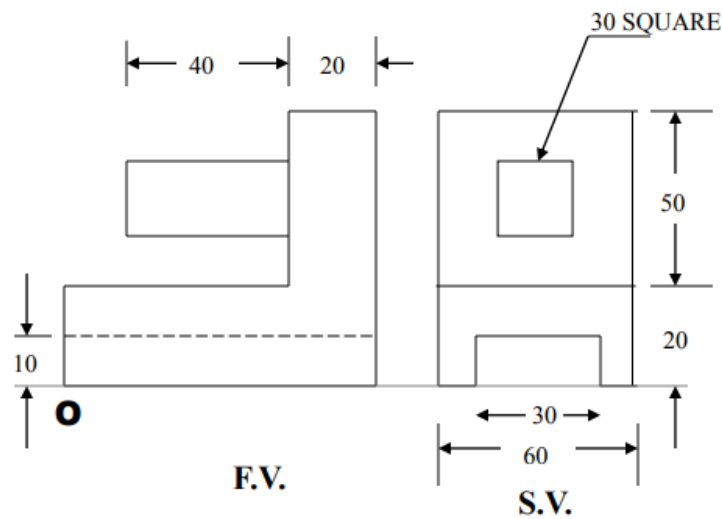vertical.

SECTION-V

9   Draw the front view and top view for the following isometric figure.   **[14M]**

OR

10   F.V. and S.V.of an object are given. Draw its isometric view.   **[14M]**

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MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous Institution – UGC, Govt. of India)

I B.Tech I Semester Regular Examinations, Nov/Dec 2018

Engineering Graphics

(EEE & 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.

****

SECTION-I

1   Construct a pentagon, hexagon of side 25 mm using general method.   **[14M]**

OR

2   Construct a parabola when its focus is at a distance of 50 mm from its directrix.   **[14M]**

SECTION-II

3   Draw the projections of the following points on the same ground line, keeping the projectors 25 mm apart.
a) in the HP, 20 behind VP.   **[2M]**
b) 40 above HP, 25 in front of VP.   **[2M]**
c) in the VP, 40 above HP.   **[2M]**
d) 25 below HP, 25 behind VP.   **[2M]**
e) 15 above HP, 50 behind VP.   **[2M]**
f) 40 below HP, 25 In front of VP.   **[2M]**
g) in both HP & VP.   **[2M]**

OR

4   A line of 100 mm long is parallel to & 30 mm above HP. Its 2 ends are 25 mm and 50 mm in front of VP respectively. Find its inclinations with the VP.   **[14M]**

SECTION-III

5   Rectangle 30mm and 50mm sides is resting on HP, while the surface of the plane makes 45^0 inclination with HP. Draw its projections.   **[14M]**

OR

6   A right circular cone, 40 mm base diameter and 60 mm long axis is resting on HP on one point of base circle such that its axis makes 45^0 inclination with HP and 40^0 inclination   **[14M]**

with VP. Draw its projections.

<div align="center">SECTION-IV</div>
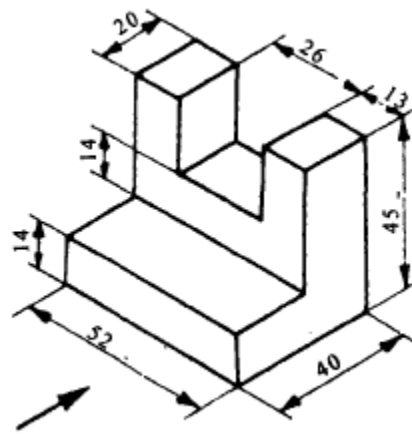
7   Draw the isometric projection of a hexagonal pyramid, side of base 30 mm and the   **[14M]**

   height 50 mm.

<div align="center">OR</div>

8   A cylinder of base diameter 30 mm axis is 60 mm is resting centrally on a slab of 60 mm   **[14M]**

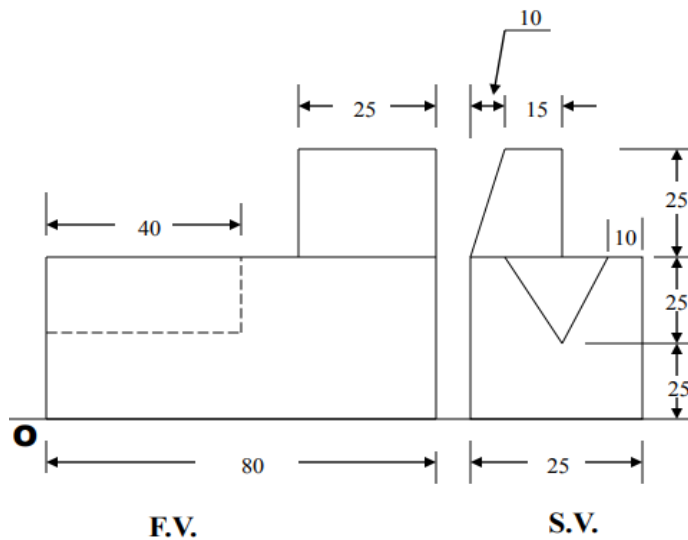   square and thickness 20 mm. Draw the isometric projection of the combination of the
solids.

<div align="center">SECTION-V</div>

9   Draw the front view and top view for the following isometric figure.   **[14M]**

<div align="center">OR</div>

10 Front View and Side View of an object are given. Draw its isometric view.   **[14M]**

<div align="center">F.V.   S.V.</div>

<div align="center">**********</div>

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous Institution – UGC, Govt. of India)

I B.Tech I Semester Regular Examinations, Nov/Dec 2018

Basic Electrical and Electronics Engineering

(ME & AE)

Roll No									

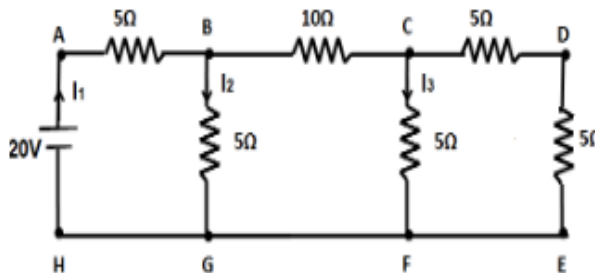**Time: 3 hours**   **Max. Marks: 70**

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

*****

SECTION-I

1   (a) For the circuit shown, use the source transformation method to calculate   **[7M]**
           V_{R4}.
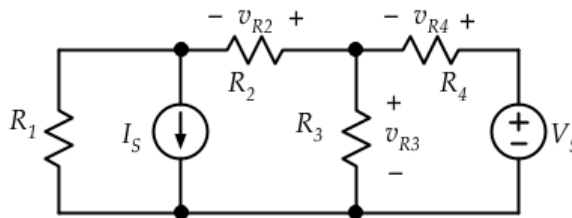
(b) Find the current flowing through 10Ω resistor.

                                                                                    [7M]
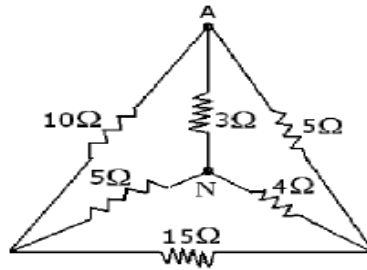
OR

2   (a) Explain about the types of elements with examples.   **[7M]**
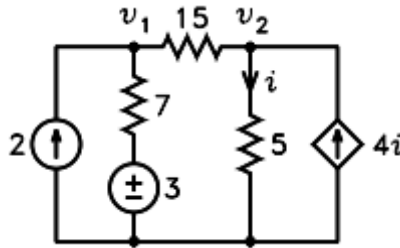   (b) State and explain Kirchhoff's Laws with examples.

SECTION-II

3   (a) Obtain the equivalent resistance between the point A and N in the circuit shown in figure   **[7M]**

(b) Determine the Voltages V1 and V2 using the Superposition principle.

[7M]

OR

4   State and Explain Thevenin's theorem with an example   **[14M]**

SECTION-III

5   (a) Explain with a neat sketch, working principle of DC motor.   **[6M]**

(b) Derive the EMF equation of DC generator.

[8M]

OR

6   (a) Derive the formula for EMF equation of a single phase transformer.   **[6M]**

(b) An 8-pole DC generate has 500 armature conductors and a useful flux of 0.05 Wb. What will be the emf generated, if it is lap connected and runs at 1200 rpm? What must be the speed at which it is to be driven to produce the same emf, if it is wave wound?

[8M]

SECTION-IV

7	(a) Explain the V-I characteristics of PN junction diode.	[6M]
	(b) Draw and explain the bridge rectifier configuration with neat waveforms	[8M]

OR

8	(a) Derive the formula for average voltage, RMS voltage and average current of a half wave rectifier configuration.	[7M]
	(b) A 85Ω load resistance is connected across a half wave rectifier. The input supply voltage is 240V (rms) at 50 Hz. Determine the average output voltage, RMS voltage, average load current and PIV.	[7M]

SECTION-V

9	(a) Draw and explain the construction and principle of operation of BJT in Common-Base configuration.	[7M]
	(b) Draw and explain the input and output characteristics of BJT in Common-emitter configuration.	[7M]

OR

10	Explain about the operation of PNP and NPN transistors with neat diagrams	[14M]

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