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DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/ MANAGEMENT/COMMERCIAL PRACTICE — APRIL, 2019

ENGLISH FOR COMMUNICATION - II

[*Time* : 3 hours

(Maximum marks : 100)

PART — A

Marks

I   Read the following excerpts and answer the questions that follow :

1.   "Son I thank you, Nobody ever did a nicer thing-"

   (a)   Identify the speaker.   1

   (b)   Why does he thank him ?   2

   (c)   What prompted the son to do such a nice thing ?   4

2.   "The search became madness with me. I neglected everything else."

   (a)   What is the search reffered to here ?   1

   (b)   What was remarkable about the face on the wall ?   2

   (c)   What are the three extra ordinary things about the story ?   4

3.   You have all the greatest men have had.

   (a)   What do we have ?   1

   (b)   What does the poet say so ?   2

   (c)   What is the message conveyed by poem ?   4

4.   There are many legends or myths relating to the origin of fire.

   (a)   How did the early humans create fire ?   1

   (b)   What might have been the ancient uses of fire ?   2

   (c)   What does the Greek legend say about the discovery of fire ?   4

PART — B

II 1.   Rob's father has a barn

   (a)   Change the sentence into negative.

   (b)   Find the subject of the sentence.   (2×1 = 2)

[7]

Marks

2. Choose the correct word from the brackets and fill in the blanks.

   (a) Plumbers .... pipes with pliers. (clamp, groove)

   (b) Vimal has gone to the .... store. (stationary, stationery)

   (2×1 = 2)

3. Combine the sentences using suitable relative clauses.

   (a) A scientist is a person. He/she does experiments.

   (b) A hotspot is an area. People go there to access the internet.

   (2×1 = 2)

4. Your sister is afraid of taking exam. Write two sentences giving her advice.

   2

5. You want to appreciate the boy in "somebody's mother". Write two sentences praising the boy.

   2

6. Given below are dictionary entries of the word 'observe'. Study it carefully and answer the questions that follow.

observe(v)
1. notice
2. watch carefully
3. make a remark
observer (n)
Observable(adj)

   (a) To which parts of speech 'observe' belong ?

   (b) Use 'observe' in a sentence of your own,

   (c) The role of scientists is to be observe and describe the world not to try to control it. Here 'observe' means ....

   (d) 'Observer' is the .... form of observe.

   (4×1 = 4)

7. Write down the following words in their orthographic form (English).

   (a) /mɔːnɪŋ/ (b) /tʃaɪld/ (c) /stæmp/

   (d) /letə/

   (4×1 = 4)

III 1. Fill in the blanks choosing the correct words from the box given below.

Ushered, loiter, ubiquitous, sobbing, anxious, hastily, chore

   (a) Priya was extremely .... about her exam.

   (b) Traffic signals are .... in a modern city.

   (c) Television .... in an era of entertainment at home.

   (d) Gowri tried to console the .... child.

   (4×1 = 4)

Marks

2. Pick out the words that is different from the others in meaning.

   (a) defeat   success   triumph   prevail
   (b) reveal   disclose   conceal   unveil
   (c) final   hindmost   last   commence
   (d) suggest   offer   prefer   propose   (4×1 = 4)

3. There are some errors in the passage. They are given in bold letters.
   Correct the errors and write them down.
   We **agred** with him, and our **orginal** discussion on supernatural **occurences** set
   in again with **Incresed** excitement.   (4×1 = 4)

4. Use the Passive Voice.

   (a) Chocolates ...... by children. (love)

   (b) Results .... at the end of this year.(announce)

   (c) The room .... a month ago. (paint)

   (d) My uncle .... in the hospital yesterday. (admit)   (4×1 = 4)

5. Read the following dialogue and complete the paragraph.

   Meenu : Hai Manju, How are you ?

   Manju : Hai meenu, I am fine.

   Meenu : Have you seen the new film ?

   Manju : I haven't seen it.

   Meenu : The songs are beautiful. How sad you haven't seen !

   Manju : Thank you, I will definitely watch it.

   Meenu met Manju, greeted her and asked her ....(a) Manju replied that .... (b)
   and hoped that the songs were beautiful and that ......(c) Manju thanked her
   and said that ....(d)   (4×1 = 4)

6. Each line contains an error. Correct the error and write them down.
   The <u>Zorastrian</u> .... (a) worshipped fire as the most potent and sacred power
   and <u>believe</u> .... (b) that it is <u>present</u> .... (c) to man <u>Direct</u> .... (d)
   from heaven.   (4×1 = 4)

PART — C

IV You are the purchase manager of RTF Ltd. You ordered a new copy machine for your
   office. When it is installed, you find that the copy machine is defective. Send an e-mail
   to the service centre telling them about the exact nature of the complaint.   5

V Describe the person whom you admire the most. Give attention to his/her physical
   appearance, character etc.   5

VI Write a letter to the Principal of your institution asking him to issue your T C and C C. 5

VII Read the process given below about photosynthesis and rewrite it in the format given in the helpbox and use appropriate linkers.

Plants take in Carbon dioxide from the air through small pores on the leaves. It also absorbs water from the soil through the roots. It then utilizes the energy from sunlight to split water into Hydrogen and Oxygen. The plant releases this Oxygen into the atmosphere. It uses the Carbon dioxide and Hrydrogen to make sugar.

5

Begin like this : Carbon dioxide is taken in by plants through small pores on the leaves. At the same time water ....

VIII The schedule of the daily activity of Mr. Hareesh, the CEO of INFOTECH, is given below. Study it and write a brief report.

> 9am:checks into office; 10am:conducts board meeting;11am:check appraisals; 12noon:calls on various department heads; 1.30pm:updating files; 2pm:conduct interviews; 3pm:looks at the daily reports; 4.30pm:Day review meeting; 5.30pm: leaves office

5

IX Imagine you are the Vice Chairperson of your college union. Prepare a Vote of thanks to be delivered at the close of your annual day celebrations.

5

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Reg. No. ....

Signature ....

DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/ MANAGEMENT/COMMERCIAL PRACTICE — APRIL, 2019

ENGINEERING MATHEMATICS - II

[*Time*.: 3 hours

(Maximum marks : 100)

PART — A

(Maximum marks : 10)

Marks

I Answer *all* questions. Each question carries 2 marks.

1. Find the unit vector in the direction of $2\hat{i} - 3\hat{j} + \hat{k}$.

2. Evaluate $\begin{vmatrix} \text{Sec } \theta & \tan \theta \\ \tan \theta & \text{Sec } \theta \end{vmatrix}$

3. If A = [0 2 3]   B = [1 4 –1].   find $A^{T}B$.

4. Integrate $\sec^2 x - \frac{1}{x}$ with respect to x.

5. Find the order and degree of the differential equation

   $$\frac{d^3y}{dx^3} + \frac{d^2y}{dx^2} + \left(\frac{dy}{dx}\right)^2 = e^x$$

   (5 × 2 = 10)

PART — B

(Maximum marks : 30)

II Answer any *five* of the following questions. Each question carries 6 marks.

1. Find the dot product and angle between the vectors $6\hat{i} - 3\hat{j} + 2\hat{k}$ and $2\hat{i} + 2\hat{j} - \hat{k}$.

2. Find the middle terms in the expansion of $(x + 2y)^7$

3. Solve by Cramer's rule, Given

   $2x - 3y + z = -1, \quad x + 4y - 2z = 3, \quad 4x - y + 3z = 11$

4. If A = $\begin{bmatrix} 1 & 2 \\ 4 & 9 \end{bmatrix}$ verify that $AA^{-1} = A^{-1}A = I$.

5. Evaluate $\int_0^{\pi/2} \cos 4x \cos x \, dx$.

6. Obtain the volume of a sphere of radius 'r' using integration.

7. Solve $\frac{dy}{dx} + y \cot x = 2 \cos x$.   (5 × 6 = 30)

[8]

PART — C

(Maximum marks : 60)

(Answer *one* full question from each unit. Each full question carries 15 marks.)

UNIT — I

III (a) If $\vec{a} = 5\hat{i} - \hat{j} - 3\hat{k}$, $\vec{b} = \hat{i} + 3\hat{j} - 5\hat{k}$. Show that the vectors $\vec{a} + \vec{b}$ and $\vec{a} - \vec{b}$ are perpendicular to each other. 5

(b) Expand $\left(x^3 - \dfrac{1}{x^2}\right)^5$ binomially. 5

(c) Find the moment about the point A(4, 0, −3) of a force represented by $3\hat{i} + 2\hat{j} + 6\hat{k}$ acting through the point B(2, −1, 5). 5

OR

IV (a) The constant forces $2\hat{i} - 5\hat{j} + 6\hat{k}$, $-\hat{i} + 2\hat{j} - \hat{k}$ and $2\hat{i} + 7\hat{j}$ act on a particle from the position $4\hat{i} - 3\hat{j} - 2\hat{k}$ to $6\hat{i} + \hat{j} - 3\hat{k}$. Find the total work done. 5

(b) Find the coefficient of x^{18} in the expansion of $\left(x^4 - \dfrac{1}{x^3}\right)^{15}$ 5

(c) Find the area of parallelogram whose adjacent sides are represented by the vectors $\vec{a} = \hat{i} - \hat{j} + 3\hat{k}$ and $\vec{b} = 2\hat{i} - 7\hat{j} + \hat{k}$. 5

UNIT — II

V (a) If $A = \begin{bmatrix} 1 & 2 & 2 \\ 2 & 1 & 2 \\ 2 & 2 & 1 \end{bmatrix}$ show that $A^2 - 4A - 5\,I = 0$. 5

(b) Solve x if $\begin{vmatrix} 2 & 1 & x \\ 3 & -1 & 2 \\ 1 & 1 & 6 \end{vmatrix} = \begin{vmatrix} 4 & x \\ 3 & 2 \end{vmatrix}$ 5

(c) If $A = \begin{bmatrix} 1 & 2 & 3 \\ -4 & 5 & -1 \end{bmatrix}$ and $B = \begin{bmatrix} 1 & 2 \\ 3 & 4 \\ -1 & 1 \end{bmatrix}$ compute AB and BA. 5

OR

VI (a) Find inverse of $\begin{bmatrix} 1 & -1 & 1 \\ 2 & 1 & -3 \\ 1 & 1 & 1 \end{bmatrix}$ 5

(b) If $A = \begin{bmatrix} 1 & 0 & 5 \\ -2 & 1 & 6 \\ 3 & 2 & 7 \end{bmatrix}$ compute $A + A^T$ and $A - A^T$. Hence show that one is symmetric and the other is skew-symmetric. 5

(c) Solve $\dfrac{6}{x} + \dfrac{7}{y} = 5$, $\dfrac{2}{x} + \dfrac{5}{y} = 3$ by determinant method. 5

UNIT — III

VII (a) Find $\int \dfrac{\sec^2 x}{1+\tan x}\ dx$. 5

(b) Find $\int x^2 e^{2x}\ dx$. 5

(c) Evaluate $\int_0^\pi \cos^2 2x\ dx$. 5

OR

VIII (a) Find $\int \sqrt{1+\sin 2x}\ dx$. 5

(b) Evaluate $\int_0^{\frac{\pi}{2}} x\ \sin x\ dx$. 5

(c) Evaluate $\int_0^1 \dfrac{2x+1}{x^2+x+1}\,dx$. 5

UNIT — IV

IX (a) Find the area enclosed between $y = x^2$ and the straight line $y = x + 2$. 5

(b) Find the volume of the solid generated by the rotation of the area bounded by the curve $y = 2\cos x$, the x-axis and the lines $x = 0$ and $x = \frac{\pi}{4}$ about x axis. 5

(c) Solve $\dfrac{dy}{dx} = e^{3x+y}$ 5

OR

X (a) Find the area bounded by the curve $y = x^2 - 5x + 6$ and the x axis. 5

(b) Solve $\dfrac{d^2y}{dx^2} = \operatorname{cosec}^2 x$. 5

(c) Solve $(x^2 + 1)\ \dfrac{dy}{dx} + 2xy = 4x^2$. 5

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DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/ MANAGEMENT/COMMERCIAL PRACTICE — APRIL, 2019

ENGINEERING PHYSICS – II

[*Time* : 3 hours

(Maximum marks : 100)

PART — A

(Maximum marks : 10)

Marks

I   Answer *all* questions in one or two sentences. Each question carries 2 marks.

1. Define angular velocity.

2. What is torque ?

3. What is a geostationary satellite ?

4. State and explain Ohms law.

5. Give the definition of one electron volt (eV).   (5×2 = 10)

PART — B

(Maximum marks : 30)

II   Answer any *five* of the following questions. Each question carries 6 marks.

1. A car moves along a circular loop of radius 1 km at constant speed 720 km/hr. Find its centripetal acceleration.

2. State and explain parallel axes and perpendicular axes theorems.

3. What is orbital velocity of a satellite ? Derive an expression for orbital velocity of an artificial satellite.

4. Describe the series and parallel combination of resistances.

5. Give three characteristics and three applications of LASER.

6. What is meant by photoelectric effect ? Obtain the expression for Einstein's photoelectric equation.

7. Explain the terms nuclear fission, nuclear fusion. Give Einstein's mass energy relation.

(5×6 = 30)

PART — C

(Maximum marks : 60)

(Answer *one* full question from each unit. Each full question carries 15 marks.)

UNIT — I

III   (a)   Obtain the relation between linear velocity and angular velocity.   3

(b)   Explain what is meant by banking of roads ? Obtain its Expression, What is meant by super elevation ?   6

[228]   [P.T.O.

(c) A body moves in a circle of radius 20cm at a speed that increases uniformly. If the speed changes from 5 m/s to 6 m/s in t = 2s, find its angular acceleration.

6

OR

IV (a) Define moment of inertia of a body. Write its expression.

3

(b) Obtain the expression for moment of inertia of a ring about an axis passing through its centre and perpendicular to its plane.

6

(c) Calculate the moment of inertia about an axis passing through the centre and perpendicular to the plane of a solid disc of radius 0.1m and mass 10kg.

6

Unit — II

V (a) State Newton's Law of Gravitation.

3

(b) What are the different types of satellites ? Give some of the applications of satellites.

6

(c) An artificial satellite revolves round the earth at a height 100 km above the surface of the earth. Find the orbital velocity. R = 6400 km and g = 9.8m/s².

6

OR

VI (a) Define gravitational potential.

3

(b) What is meant by escape velocity of a satellite ? Derive an expression for it.

6

(c) Two spheres each of mass 50 kg are 30cm apart. Find the force of attraction between them. G = 6.671 × 10⁻¹¹ Nm²kg⁻².

6

Unit — III

VII (a) State Biot Savart Law.

(b) State and explain Kirchhoff's laws.

(c) The resistance of a copper wire of length 100 m and radius 0.3mm is 6Ω. Calculate the resistivity.

6

OR

VIII (a) Describe the principle of shunt resistance.

6

(b) How can a galvanometer converted to a voltmeter. Explain.

3

(c) Find the effective resistance when two resistances 6Ω and 2Ω are connected in series and parallel.

6

6

Unit — IV

IX (a) What is meant by population inversion ?

3

(b) With the help of a diagram explain the working of a He-Ne laser.

6

(c) The energy of a photon is 3.2eV. Find its wavelength.

6

OR

X (a) Briefly explain nuclear chain reaction.

3

(b) What are the essential components of a nuclear reactor ? Explain the function of each component.

6

(c) Give some of the uses of nuclear reactors.

6

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DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/ MANAGEMENT/COMMERCIAL PRACTICE —APRIL, 2019

ENGINEERING CHEMISTRY - II

[*Time* : 3 hours

(Maximum marks : 100)

PART — A
(Maximum marks : 10)

Marks

I   Answer *all* questions in one or two sentences.   Each question carries 2 marks.

1.   State Hund's rule of maximum multiplicity.

2.   What are strong electrolytes and weak electrolytes ?

3.   Give the functional group of
     (a) Ketone   (b) Alcohol

4.   Define galvanization.

5.   Define calorific value of fuel. $(5 \times 2 = 10)$

PART — B
(Maximum marks : 30)

II   Answer any *five* of the following questions.   Each question carries 6 marks.

1.   (a)   Explain hydrogen bonding with an example.
     (b)   State Aufbau principle.

2.   (a)   What is a primary cell ?   Give two examples.
     (b)   State Faraday's first law of electrolysis.

3.   (a)   Reduction potentials of Zn and Ag electrodes are -0.76 V and 0.8 V
           respectively.
           (i)   Compute the emf if a cell is constructed using these electrodes.
           (ii) Which metal displaces the other from its salt solution ? Give reason.
     (b)   Explain dry corrosion.

4.   (a)   Distinguish between organic and inorganic compounds.
     (b)   Give monomer(s) of the following polymers.
           (i) PVC   (ii) Natural rubber

5.   (a)   What is catalytic cracking ?   Mention any two advantages of it.
     (b)   Give any two harmful effects of acids rain.

[9]

6. (a) What are the qualities of a good fuel ?

   (b) What are synthetic fuels ? Give one example.

7. (a) Give any two differences between addition polymerization and condensation polymerization.

   (b) Define polymerization. $(5 \times 6 = 30)$

PART — C

(Maximum marks : 60)

(Answer *one* full question from each unit. Each full question carries 15 marks.)

UNIT — I

III (a) State Pauli's exclusion principle. Calculate the de-Broglie wave length for an electron moving with a velocity of 10^3 m s^{-1} (h=6.625 $\times$ 10^{-34} Kg m^{2}s^{-1}, m=9.1 $\times$ 10^{-31}Kg) 6

   (b) State octet rule. Explain the bond formation in NaCl. 5

   (c) What is a co-ordinate bond ? Give two examples. 4

OR

IV (a) State Heisenberg's uncertainty principle. Calculate the uncertainty in the velocity of an electron, if the uncertainty in position is 10^{-10}m.
   (h = 6.625 $\times$ 10^{-34} Kg m^2 s^{-1}, m$_e$= 9.1 $\times$ 10^{-31}Kg) 6

   (b) How is a covalent bond formed ? Give three examples. 5

   (c) Differentiate between orbit and orbital. 4

UNIT — II

V (a) Explain the process of electrolysis by taking molten NaCl as an example. 6

   (b) What is a salt bridge ? Give the functions of salt bridge. 5

   (c) What are secondary cells ? Give two examples. 4

OR

VI (a) What are the factors that influence rate of corrosion ? Explain. 6

   (b) What is electrochemical theory of corrosion ? 5

   (c) How is corrosion prevented by cathodic protection method ? Explain. 4

UNIT — III

VII (a) Distinguish between Thermoplastics and Thermosetting plastics. 6

   (b) What are refractories ? Give their functions. 5

   (c) Mention four characteristics of refractories. 4

OR

Marks

VIII (a) Define vulcanization ? Give any four properties of vulcanized rubber. 6

(b) What is optical fibre ? Give three uses of it. 5

(c) Explain homo polymer and co-polymer with one example for each. 4

UNIT — IV

IX (a) Compare solid, liquid and gaseous fuels. 6

(b) Define pollutant. Explain the major sources of water pollution. 5

(c) What are primary fuels ? Give two examples. 4

OR

X (a) What do you understand by Green house effect ? What are its consequences ? Mention two ways to reduce it. 6

(b) Give the major components present in the following fuels.

    (i) L P G   (iv) Water gas

    (ii) Producer gas   (v) CNG

    (iii) Natural gas 5

(c) Write a short note on ozone layer depletion. 4

DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/ MANAGEMENT/COMMERCIAL PRACTICE — APRIL, 2019

BASIC ELECTRONICS

[*Time* : 3 hours

(Maximum marks : 100)

PART — A

(Maximum marks : 10)

Marks

I   Answer *all* questions in one or two sentences. Each question carries 2 marks.

1. What is the difference between Active and Passive components ?
    Name at least two in each category.

2. A carbon resistor has the colour bands : green, blue, red and gold. What is the resistance value ? Also write the colour band sequence for $390 \pm 20\%$ Ω.

3. Draw the energy band diagram of a semiconductor.

4. Define ripple factor and write ripple factor for full wave rectifier.

5. Why ordinary transistors are called bipolar transistors ? $(5\times2 = 10)$

PART — B

(Maximum marks : 30)

II   Answer any *five* of the following questions. Each question carries 6 marks.

1. Describe the working principle of Transformer with suitable diagram.

2. Three capacitors having 10F, 20F and 30F are connected in series. Calculate the effective capacitance.

3. Draw the symbol of a Zener diode. Also plot the V-I characteristics.

4. With relevant sketches discuss the working of half wave rectifier with capacitor filter.

5. Illustrate the working of negative diode clamper with necessary diagram.

6. Write the difference between Drift Current and Diffusion Current in a PN junction. And also draw the circuit symbol of PN junction diode.

7.   Draw the common base configuration of NPN transistor. Also draw its output characteristics. $(5\times6 = 30)$

PART — C

(Maximum marks : 60)

(Answer *one* full question from each unit. Each full question carries 15 marks.)

Unit — I

III (a) Explain constructional features of a Wire Wound Resistor. What is the range of wattage of wire wound resistors.   9

    (b) Enumerate different types of Capacitors and its specifications.   6

Or

IV (a) Explain Colour Coding of Carbon Resistors with suitable example.   10

    (b) Define Inductance and enumerate the classifications of Inductors.   5

Unit — II

V (a) Draw V-I characteristics of Tunnel Diode and write its applications.   9

   (b) Differentiate between Zener and Avalanche Breakdown.   6

Or

VI (a) Explain the formation of Potential Barrier and establishment of current flow in forward biased PN junction diode.   10

    (b) Explain the working of Varactor and write applications.   5

Unit — III

VII (a) Analyse the working of π section filter with the help of neat figure.   9

    (b) Describe the working of Full Wave Voltage Doubler with relevant sketches.   6

Or

VIII (a) With neat circuit diagram and wave forms explain the working of a centre taped full wave rectifier with capacitor filter.   10

    (b) Compare the performance of half wave, centre taped and bridge rectifiers.   5

Unit — IV

IX (a) Identify Cut off, Active and Saturation Regions in characteristic curve of CE Configuration and also explain these regions.   9

   (b) With the help of diagrams, describe the principle of operation of PNP transistor.   6

Or

X (a) Derive the relation between α and β of a Transistor.   9

   (b) Compare the three transistor configurations and write the applications of each.   6

DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/ MANAGEMENT/COMMERCIAL PRACTICE — APRIL 2019

ENGINEERING GRAPHICS

[*Time* : 3 hours

(Maximum marks : 100)

[*Note* :— Sketches to be accompanied.]

PART — A

(Maximum marks : 10)

Marks

I   Answer *all* questions in one or two sentences. Each question carries 2 marks.

1. List different types of lines used in engineering drawings.

2. Define first angle projection.

3. Write different types of scales used in engineering practice.

4. State the use of auxiliary views in engineering drawing.

5. List any four options for drawing a circle using Auto CAD.   (5×2 = 10)

PART — B

(Maximum marks : 30)

II   Answer any *five* of the following questions. Each question carries 10 marks.

1. Read the dimensioned drawing shown in figure 1. Redraw the figure and dimension it as per BIS.

2. Inscribe an ellipse within a parallelogram of sides 100 mm and 60 mm. The acute angle is 60°.

3. Draw an involute of a square of side 25 mm.

4. Draw the projections of the following points on a common reference line.
    (a) Point P is in HP and 30mm in front of VP.
    (b) Point Q is in VP and 35mm below HP.
    (c) Point R is in both HP and VP.
    (d) Point H is in HP and 35mm behind VP.
    (e) Point T is in VP and 30mm above HP.

5. A line AB measuring 70 mm has its end A 15 mm in front of VP and 20mm above HP and other end B is 60 mm in front of VP and 50mm above HP. Draw the projections of the line and find the inclinations of the line with both the reference planes of projections.

6. Draw the development of the funnel as shown in the figure 2.

7. A regular pentagonal lamina 40 mm side has its plane vertical and inclined 30° to the VP. Draw the projections when one of its sides is perpendicular to the HP.

(5×10 = 50)

PART — C

(Maximum marks : 40)

(Answer any *two* questions from the following. Each question carries 20 marks.)

III The pictorial view of a block is shown in figure 3. Draw the following views in first angle projections.

(a) Front view in the direction of F.

(b) Top view in the direction of T.

(c) Left hand side view in the direction of L.

IV The pictorial view of a machine part is shown in figure 4. Draw the front view and a sectional top view taking section along A-A.

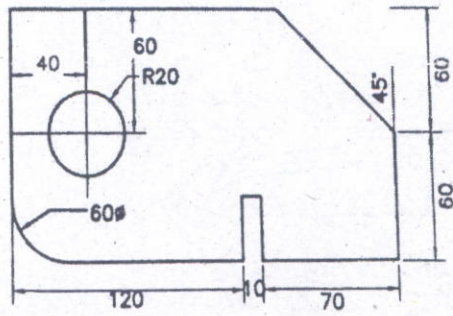V The orthographic views of a guide block are shown in figure 5. Draw its cavalier oblique projection and show all the dimension on it.
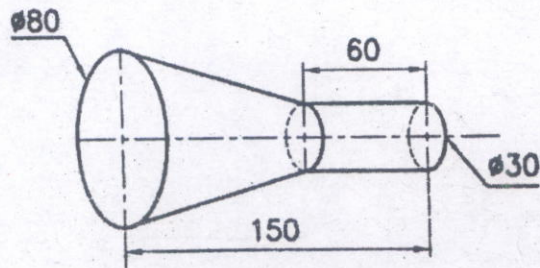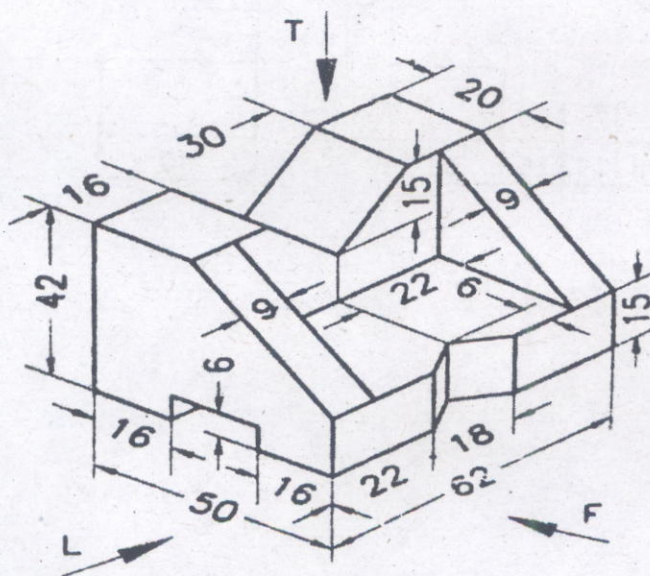
(2×20 = 40)

Figure 1.

Figure 2.

Figure 3.

Figure 4.

Figure 5.