N19 - 00035

TED (15) – 2001

(REVISION — 2015)

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

ENGLISH FOR COMMUNICATION - II

[*Time* : 3 hours

(Maximum marks : 100)

PART — A

Marks

1 Read the following excerpts and answer the questions that follow.

1. He smiled and milked steadily, two strong streams rushing into the pail, frothing and fragrant.

   (a) Who milked the cows ? 1

   (b) What is the incident referred to ? 2

   (c) When did he realize that his father loved him ? What impact did it have on him ? 4

2. Figure it out for yourself, my lad,
   You have all that the greatest of men have had

   (a) Who wrote the poem 'equipment' ? 1

   (b) You have all that the greatest of men have had. What do we have ? 2

   (c) How is the poem inspirational ? 4

3. It is not only for transport that the wheel is vital.

   (a) When the wheel was is invented ? 1

   (b) Cite a few instances where wheel is used in transportation. 2

   (c) What are the other uses of the wheel ? 4

4. In fact the strange thing was that while the patches on the wall grew larger and changed their shapes, this never did.

   (a) Where was the patch located ? 1

   (b) What features made this patch a special one ? 2

   (c) What impact did the patch create on the narrator ? 4

Marks

PART — B

II 1. The crowd hailed rotten eggs at the public speaker.

(a) Change this statement into a negative.

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

2. Choose the correct word from the brackets and fill in the missing gaps.

(a) Karim Knows how to ..... a horse (drive, ride)

(b) He arrived at half ..... four in the evening (passed, past) (2 × 1 = 2)

3. Combine the sentences using suitable relative clauses.

(a) A Scientist is a person. He / she does experiment.

(b) A hotspot is an area. People go there to access the internet. (2 × 1 = 2)

4. Write two pieces of advice to consult a doctor that somebody mother would like to give a diseased child. 2

5. Write two sentences congratulating your younger sister, who has scored full A+ in the SSLC examination. 2

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

> **respect.** *Noun*
>
> *1. differential esteem*
>
> *2. heed,regard*
>
> *3. detail,aspect*
>
> *4. reference, relation*
>
> *5. polite greetings*
>
> ***respectful.*** *Adj.*
>
> ***respectfully.*** *adverb*

(a) What is the adjective form of the word 'respect' ?

(b) He is a man of respect. Here the meaning of 'respect' is .....

(c) Use 'respectfully' in a sentence of your own.

(d) 'respectfully' is the ..... form of respect. (4 × 1 = 4)

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

(a) /'kɒlɪdʒ/ (b) /ɪgˌzæmɪ'neɪʃ(ə)n/ (c) /'tiːtʃə/ (d) /'riːtʃɑːdʒ/ (4 × 1 = 4)

Marks

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

Stable, curious, stammer, lads, converge, exploit

(a) Keep the horses in the .....

(b) I was ..... about the people who lived near the forest.

(c) The ..... were playing in the park.

(d) Several small rivers ..... in the sea. (4 × 1 = 4)

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

(a)	Silver	golden	metal	diamond
(b)	Eager	impatient	anxious	mute
(c)	Start	hastily	embark	set out
(d)	Triumph	Fail	defeat	disaster

(4 × 1 = 4)

3. The following sentence has 4 spelling errors. Correct and rewrite the passage.

Good morning, ladies and gentlemen. First of all, I **extent** my sincere gratitude to our beloved **principle.** He has **recieved** many awards while a student at the **politeknic.** (4 × 1 = 4)

4. Each line contains an error. Correct the error and write them down.

Rob **has attended** a course in Spoken English at present. 1 .....

It **begins** two weeks ago. 2 .....

and it **will coming** to an end after a month. 3 .....

By the time he finishes the course, he **will learnt** to speak English fluently. 4 ..... (4 × 1 = 4)

5. Use the passive voice

(a) Let me ..... to go home (permit)

(b) The book ..... by him last year (write)

(c) The operation ..... tomorrow (do)

(d) Our food ..... by her (cook) (4 × 1 = 4)

6. Read the following dialogue and complete the paragraph.

Mother : why are you late from school, Amith ?

Amith : while coming from school to bus stop, slipped on a banana peel.

Mother : O, my son ! Did you hurt yourself ?

Amith : I got a bad bruise on my left knee.

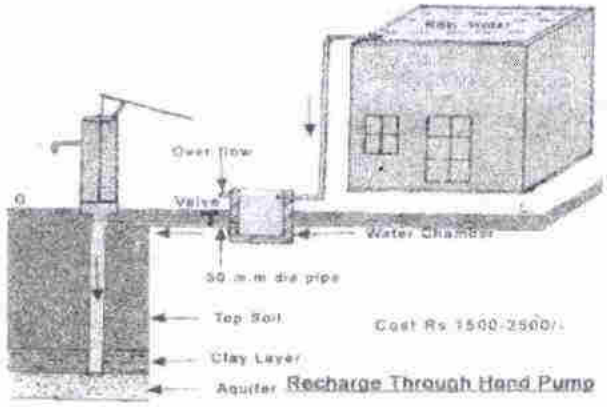
Mother asked Amith ..... Amith replied that while coming from school to bus stop ..... peel.

Mother was shocked to hear this. She further asked ..... Amith answered that 4

Marks

PART — C

IV Describe the following in about 50 words



Describe its functions like

1. Roof top rain waterdiverts to an open well.
2. A filter tank of required size has to be provided
3. Overflow water may be diverted to a percolation pit nearby.
4. Recharge through open well is effective than bore well

5

V You have purchased a laptop from M/S. Eagle Pvt. Ltd., 72, Indira Gandhi Chowk, New Delhi-110001. E-mail: eaglecare@gmail.com. You realised that the product is not of the specifications you had asked for. Send an e-mail to customer care requesting for replacement. 5

VI Read the process given below and rewrites it in the format given in the help box. 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 the sunlight to split water into Hydrogen and Oxygen. The plant releases this Oxygen into the atmosphere. It uses the Carbon dioxide and Hydrogen to make sugar.

Begin like this : Carbon dioxide is taken in by plants through small pores on the leaves. At the same time water 5

VII Write a letter to your Group tutor requesting him to permit you to participate in the seminar on 'Green Campus' conducts by the Central University of Kerala. 5

VIII You are the Senior Sales Manager of Ashoka Engineering Works, Mumbai. Study the schedule of your daily activity given below and prepare report.

9 am : punching, register updating. 10 am : meeting with sales representatives. 11am : calling up with clients. 12 noon : Checking bank transaction. 2 pm : updating customer files. 3 pm : Progress assessment of the day. 4 pm. visits company retail outlets. 5 pm : update work diary for the day. 5

IX You are the Secretary of the English Club of your College. Prepare a welcome speech to be delivered on the occasion of inaugurating the club. 5

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DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/ MANAGEMENT/COMMERCIAL PRACTICE — OCTOBER, 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 length of the vector $3\hat{i} + 4\hat{j} + \hat{k}$
2. If $\begin{vmatrix} x^2 & 3 \\ 4 & 1 \end{vmatrix} = \begin{vmatrix} 9 & 4 \\ 8 & 5 \end{vmatrix}$ find x.
3. $A\begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$, $B = \begin{bmatrix} 0 & -2 \\ -3 & -3 \end{bmatrix}$, find $(A+B)^T$.
4. Find $\int (3x^2 - 2x + 1)\, dx$.
5. Solve : $\frac{dy}{dx} = ky$. (5 × 2 = 10)

PART — B

(Maximum marks : 30)

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

1. If $\vec{a} = 2\hat{i} + 3\hat{j} - \hat{k}$ and $\vec{b} = 3\hat{i} + 4\hat{j} + 2\hat{k}$.
   Calculate (i) $(\vec{a}+\vec{b}).(\vec{a}-\vec{b})$ (ii) $(\vec{a}+\vec{b}) \times (\vec{a}-\vec{b})$
2. Find the coefficient of x^{32} in the expansion of $\left(x^4 - \frac{1}{x^3}\right)^{15}$.
3. Solve the following system of equations using determinants :
   $x + 2y - z = -3$, $3x + y + z = 4$, $x - y + 2z = 6$
4. Express the matrix $A = \begin{bmatrix} 1 & 4 & 5 \\ 2 & 2 & 3 \\ 3 & 1 & 0 \end{bmatrix}$, as the sum of a symmetric and skew symmetric matrices.

[12]

Marks

5. Evaluate $\int_0^{\frac{\pi}{2}} sin3x\ cosx\ dx$.

6. Find the volume of a sphere of radius r using integration.

7. Solve : $\frac{dy}{dx} + y\ tanx = cosx$. $(5 \times 6 = 30)$

PART — C

(Maximum marks : 60)

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

UNIT — I

III (a) Find the dot product and angle between the vectors $\hat{i} - 2\hat{j} + 3\hat{k}$ and $3\hat{i} - 2\hat{j} + \hat{k}$ 5

(b) Find the moment of a force represented by $\hat{i} + \hat{j} + \hat{k}$ acting through the point $-2\hat{i} + 3\hat{j} + \hat{k}$ about the point $\hat{i} + 2\hat{j} + 3\hat{k}$. 5

(c) Find the middle term(s) in the expansion of $\left(2x + \frac{3}{x}\right)^9$. 5

OR

IV (a) If $\vec{a} = 2\hat{i} + 3\hat{j} + 4\hat{k}$ and $\vec{b} = -\hat{i} + 3\hat{j} + 2\hat{k}$ find the unit vector in the direction of the vector $3\vec{a} + 4\vec{b}$ 5

(b) Find the work done by the force $\vec{F} = \hat{i} + 2\hat{j} + \hat{k}$ acting on a particle which is displaced from the point with position vector $2\hat{i} + \hat{j} + \hat{k}$ to the point with position vector $3\hat{i} + 2\hat{j} + 4\hat{k}$. 5

(c) Expand $\left(x^3 - \frac{1}{x^2}\right)^5$ using binomial theorem. 5

UNIT — II

V (a) Find the inverse of $\begin{bmatrix} 1 & 2 & -2 \\ -1 & 3 & 0 \\ 0 & -2 & 1 \end{bmatrix}$. 5

(b) If $A = \begin{bmatrix} 3 & 1 & -1 \\ 0 & 1 & 2 \end{bmatrix}$ show that $A.A^T$ is symmetric. 5

(c) Solve : $\frac{5}{x} + \frac{2}{y} = 4$; $\frac{2}{x} - \frac{1}{y} = 7$. 5

OR

VI (a) Solve for x if $\begin{vmatrix} 3 & 1 & 9 \\ 2x & 2 & 6 \\ x2 & 3 & 3 \end{vmatrix} = 0$. 5

(b) If $A = \begin{bmatrix} 1 & 2 & 3 \\ -4 & 5 & -1 \end{bmatrix}$ and $B = \begin{bmatrix} 1 & 2 \\ 2 & 4 \\ -1 & 1 \end{bmatrix}$. Find AB and BA. Prove that $AB \neq BA$ 5

(c) Find A and B if $A + B = \begin{bmatrix} 4 & 6 \\ 2 & 3 \end{bmatrix}$ and $A - B = \begin{bmatrix} -2 & 8 \\ 4 & -1 \end{bmatrix}$. 5

Marks

UNIT — III

VII (a) Evaluate (i) $\int sin^2\ x dx$ (ii) $\int \frac{x^2+2}{x}\ dx$. (3 + 2 = 5)

(b) Evaluate $\int_0^{\frac{\pi}{2}} \sqrt{1 + sin2x}\ dx$. 5

(c) Evaluate $\int x^2\ log\ x dx$. 5

OR

VIII (a) Evaluate (i) $\int \frac{sec^2\ x}{\sqrt{1-tan^2 x}}\ dx$ (ii) $\int sinx + \frac{1}{x} + cosec^2 x dx$. (3 + 2 = 5)

(b) Evaluate $\int \frac{2x^4}{1+x^{10}}\ dx$. 5

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

UNIT — IV

IX (a) Find the area enclosed by the curve $y = x^2$ and the straight line $y = 3x + 4$. 5

(b) Find the volume of the solid obtained by rotating one arch of the curve $y = sinx$ about the $x - axis$. 5

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

OR

X (a) Find the area enclosed between the parabola $y = x^2 - x - 2$ and the $x - axis$. 5

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

(c) Solve : $x\ (1 + y^2)dx + y\ (1 + x^2)\ dy = 0$. 5

N19 - 00045

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DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/ MANAGEMENT/COMMERCIAL PRACTICE — OCTOBER, 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. What is meant by "super elevation" ?
2. Define the term gravitational potential.
3. State Ohm's law.
4. What is polar satellite ? Mention its use.
5. What do you understand by the term "Nuclear fusion" ? (5 × 2 = 10)

PART — B

(Maximum marks : 30)

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

1. Obtain the relation between
   (a) Linear velocity (v) and angular velocity (ω).
   (b) Linear acceleration (a) and angular acceleration (α).
2. Derive the expression for acceleration due to gravity at the surface of the earth starting from Newton's law of gravitation.
3. State and explain Kirchhoff's laws. Using these laws, derive the balancing condition of Wheatstone's net work.
4. What are the laws of photoelectric effect ? Explain them using Einstein's theory.
5. Derive an expression for the moment of inertia of a uniform circular disc about an axis passing through the centre and perpendicular to its plane.
6. Calculate the height at which a geostationary satellite revolves above the earth if acceleration due to gravity g = 9.8 m/s^2 and radius of earth R = 6400 km.
7. Give the circuit diagram and calculate the current through two resistors 5Ω and 10Ω, if they are in parallel and connected to a potential difference of 20 Volt. (5 × 6 = 30)

Marks

PART — C

(Maximum marks : 60)

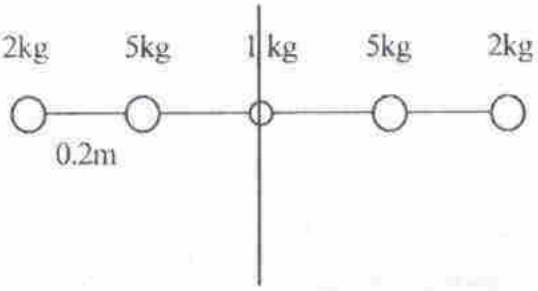
(Answer *one* full question from each unit. Each full question carries 15 marks.)

Unit — I

III (a) State and explain parallel axes theorem. 3

(b) Define angular momentum and torque of an object in rotational motion and write the relation between angular momentum and torque. 6

(c) Five masses 2 kg, 5 kg, 1 kg, 5 kg and 2 kg are placed on a mass less rod as shown in the figure. The distance between consecutive masses is 0.2 m. Find the moment of inertia about the perpendicular axis passing through the 1 kg mass.



6

Or

IV (a) Explain the idea of centripetal force with one example. 3

(b) Derive an expression for total kinetic energy of a circular disc rolling on a horizontal surface. 6

(c) A circular disc has moment of inertia 3.2 kgm^2 about its axis. When a constant torque is applied, it acquires an angular velocity 4π rad/s in 4 seconds after starting from rest. Calculate the value of torque acting. 6

Unit — II

V (a) What do you know about geostationary satellite ? 3

(b) With necessary theory derive the expression for orbital velocity of a satellite revolving around earth. 6

(c) Acceleration due to gravity at the earth surface is 9.8 m/s^2. Considering earth as a sphere of radius 6400 km, find the acceleration due to gravity at an altitude 100 km. What will be the acceleration due to gravity at a depth 120 km from earth's surface ? 6

Or

VI (a) Define escape velocity. Write an expression for escape velocity. 3

(b) Discuss the variation of acceleration due to gravity with altitude and depth. 6

(c) An artificial satellite revolves the earth very close to the surface. Calculate the orbital velocity and period of revolution from the following data. Radius of earth R = 6400 km, acceleration due to gravity g = 9.8 m/s^2. 6

Marks

UNIT — III

VII (a) State and explain Biot and Savart's law. 3

(b) Draw the circuit diagram for two resistors in parallel, connected to a potential difference "V". With necessary arguments, arrive at an expression for effective resistance R_p. 6

(c) A galvanometer has a resistance 20 Ω and range 10 mA. Show how it could be converted into an ammeter to read upto 1 A. 6

OR

VIII (a) The resistance of a copper wire of length 100 m and radius 0.3 mm is 6Ω. Calculate the resistivity of copper. 3

(b) Explain the working of moving coil galvanometer with the help of the diagram. 6

(c) Using the circuit diagram, explain how a galvanometer can be converted to a voltmeter. 6

UNIT — IV

IX (a) Explain the principle and condition for laser action. 3

(b) Explain the principle and working of He-Ne gas laser. 6

(c) The threshold wavelength for photoelectric effect in a metal is 600 nm. What is the maximum Kinetic energy of the emitted electrons when it is irradiated with ultraviolet light of wavelength 200 nm ? 6

OR

X (a) What are the characteristics of laser radiation ? 3

(b) With the help of a diagram, describe the working of a pressurised water reactor. 6

(c) Find the energy released when one U^{235} atom undergoes fission in the reaction

$$_{92}U^{235} + {}_{0}n^{1} \rightarrow {}_{56}Ba^{141} + {}_{36}Kr^{92} + 3\ {}_{0}n^{1} + \text{Energy.}$$

Given that mass of $_{92}U^{235}$ = 235.044 u : mass of Neutron = 1.0087 u : mass of Barium = 140.9136 u and mass of Krypton = 91.8976 u. 6

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

ENGINEERING CHEMISTRY - I

[*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 hard water ? Give the reason for hardness.
2. Give any two physical properties of water.
3. What is the role of Platinum in contact process for the manufacture of H_2SO_4 ?
4. Human Blood has a constant P^H of 7.4. How is this maintained ?
5. What is alloy ? Why is Carbon added to Iron in the manufacturing of steel ?

(5×2 = 10)

PART — B

(Maximum marks : 30)

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

1. Explain the important features of solid catalyst with suitable examples.
2. What is bronsted theory of acids and bases ? Write the conjugate pair of the following.
   (a) HCl (b) HNO_3
   (c) NH_3 (d) CH_3COO^-
3. Write any three important applications of p^H. Calculate the p^H of 0.01M H_2SO_4.
4. What is CNT ? Write its important properties.
5. (a) What are the disadvantages of using hard water in boiler ?
   (b) What is sterilisation of water ? Mention any two methods.
6. Explain fusion method for the preparation of Brass. Give the composition of Brass.
7. Write the physical properties of metals. (5×6 = 30)

Marks

PART — C

(Maximum marks : 60)

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

UNIT — I

III (a) Distinguish between atom and molecule. 5

(b) Give any 4 applications of nanomaterial. 4

(c) What are catalytic promoter and catalytic poison ? Give 2 examples each. 6

OR

IV (a) Give the applications of CNT. 5

(b) Explain any two methods of preparation of CNT. 4

(c) What is homogeneous and heterogeneous catalysis ? Give 2 examples. 6

UNIT — II

V (a) What is neutralisation ? Explain on the basis of Arrhenius theory and Lewis theory. 5

(b) What is ionic product of water ? Give its mathematical statement and value at 25°C. 4

(c) Calculate the Normality and Molarity of

(i) H_2SO_4 solution containing 4.9 gm of acid in 500ml.
(At wt of S - 32, H - 1, O - 16)

(ii) Na_2CO_3 solution containing 5.3gm of base in 500ml.
(At wt of Na - 23, C-12, O-16) 6

OR

VI (a) What is a buffer solution ? How is it classified, give examples. 5

(b) Calculate the pH of (i) 0.01 M HCl
(ii) 0.01 M NaOH 4

(c) What are indicator ? Suggest a suitable indicator for the titration of
(i) HCl × Na_2CO_3 (ii) CH_3COOH × NaOH. Justify your answer. 6

UNIT — III

VII (a) Explain Ion Exchange method for removal of permanent hardness of water. 5

(b) What are the advantages of reverse osmosis in desalination of water ? 4

(c) What is potable water ? What are the characteristics of potable water ? 6

OR

Marks

VIII (a) What is desalination of water ? Explain desalination by reverse osmosis. 5

(b) What is temporary hardness ? A solution of $Ca(HCO_3)_2$ is boiled and the residue obtained is filtered off. Is the remaining solution soft water explain your answer. 4

(c) Draw a flow chart and explain the process of making potable water. 6

UNIT — IV

IX (a) What are the purposes of making alloy ? 5

(b) Give any two limitations and advantages of powder metallurgy. 4

(c) Explain : (i) annealing (ii) Quenching (iii) Tempering and (iv) Nitriding. How does it affect the properties of steel ? 6

OR

X (a) Impurities in steel changes the physical properties. Give the effect of the following elements in steel.

(i) P (ii) S (iii) N (iv) O and (v) M_n 5

(b) What are the uses of powder metallurgy ? 4

(c) Explain powder metallurgy with the different steps involved. 6

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DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/ MANAGEMENT/COMMERCIAL PRACTICE — OCTOBER, 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. Write any two specifications of a resistor.
2. Sketch the V-I characteristics of zener diode.
3. State the importance of peak inverse voltage.
4. Write the significance of the arrow head in the symbol of a transistor.
5. List the uses of capacitors. (5×2 = 10)

PART — B

(Maximum marks : 30)

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

1. Describe the charging and discharging of capacitor.
2. Define drift and diffusion current.
3. With suitable diagram explain the working of a half wave rectifier.
4. Explain with diagram the constructional details of a PNP transistor.
5. Draw the symbol and explain the working of a varactor diode.
6. Define the terms rectification efficiency and ripple factor.
7. Draw the output characteristics of CE configuration and mark the three regions of operation. (5×6 = 30)

Marks

PART — C

(Maximum marks : 60)

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

Unit — I

III (a) Explain the colour coding of resistors with example and figure. 8

(b) With diagram explain the working principle of transformer. 7

Or

IV (a) Define self inductance and mutual inductance. 8

(b) Derive the effective capacitance of series and parallel combination of capacitors. 7

Unit — II

V (a) Explain with diagram the formation of PN junction and depletion region. 9

(b) Describe zener and avalanche break down. 6

Or

VI (a) Define doping. Explain the formation of N-type semiconductor. 8

(b) Sketch and explain the V-I characteristics of diode. 7

Unit — III

VII (a) With circuit diagram and waveform explain the working of full wave bridge rectifier. 10

(b) Explain the working of negative clamper. 5

Or

VIII (a) Explain the working of full wave voltage doubler. 8

(b) Explain the working of shunt capacitor filter. 7

Unit — IV

IX (a) State the effect of temperature in leakage current of transistor. 6

(b) Explain the working principle of NPN transistor with suitable diagram. 9

Or

X (a) Derive the relation between α, β and γ. 6

(b) Draw the circuit diagram, input and output characteristics of transistor in CB configuration. 9

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

ENGINEERING GRAPHICS

[*Time* : 3 hours

(Maximum marks : 100)

[*Note* : — 1. A2 size drawing sheet to be supplied.
2. First angle projection to be followed.
3. Dimensions should be as per BIS.
4. Both sides of drawing sheet can be used.
5. Sketches accompanied.]

PART — A

(Maximum marks : 10)

Marks

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

1. Write any four elements of dimensioning.
2. What is an involute ?
3. Draw the symbol of first angle projection.
4. What do you meant by orthographic projection ?
5. Write the expansion of CADD. (5×2= 10)

PART — B

(Maximum marks : 50)

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

II Redraw the given figure -1 to full size and dimension it as per BIS.

III Draw a parabola of base 90 mm and axis 60 mm using tangent method.

IV Construct a regular heptagon of side 30 mm.

V Construct a plane scale of RF = 1:40 to show meters and decimetres and long enough to measure up to 5 meters. Mark on the scale a distance representing 4.3 meters.

VI Draw projections of the following points on a common reference line.

(i) Point A is 30 mm in front of VP and 40 mm above HP.
(ii) Point B is 25 mm below HP and 50 mm behind VP.
(iii) Point C is in the VP and 30 mm above HP.

Marks

(iv) Point D is 40mm below HP and 20 mm in front of VP.

(v) Point E is in both HP and VP.

VII Draw the projections of a square lamina of size 40 mm is inclined 30° to HP and perpendicular to VP.

VIII Draw the development of a funnel shown in figure- 2.

(5×10= 50)

PART — C

(Maximum marks : 40)

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

IX Isometric view of a shaft support is shown in figure - 3. Draw the front view in the direction of F, Top view and left side view.

X Pictorial view of an object is shown in figure - 4. Draw the full sectional front view in the direction of F and top view.

XI Orthographic views of an object are shown in figure - 5. Draw the isometric view of the object. (2×20= 40)

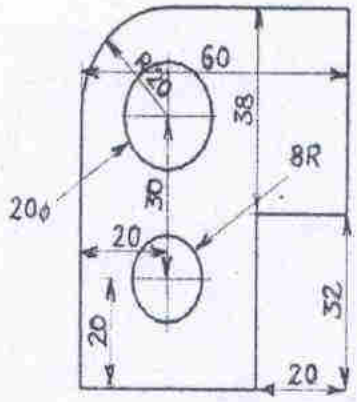

Fig-1

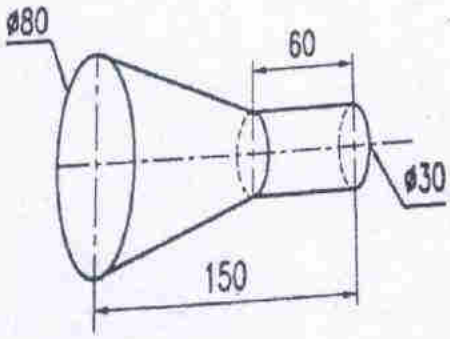

Fig - 2

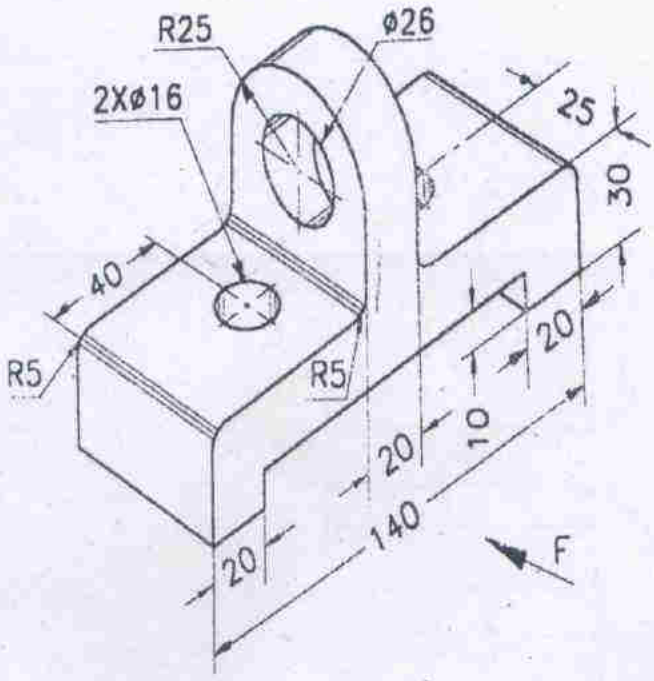

Fig (3)

(ii)

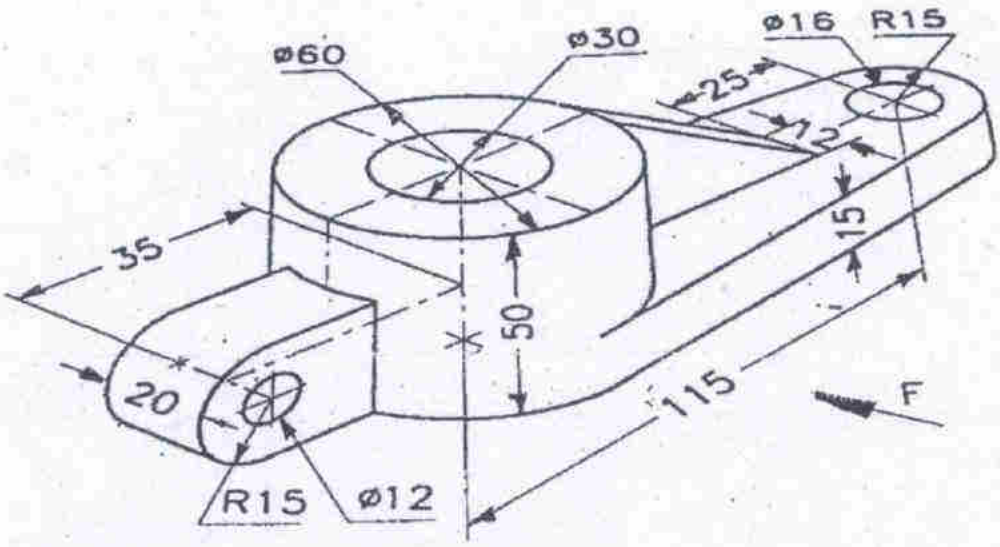

Fig - 4

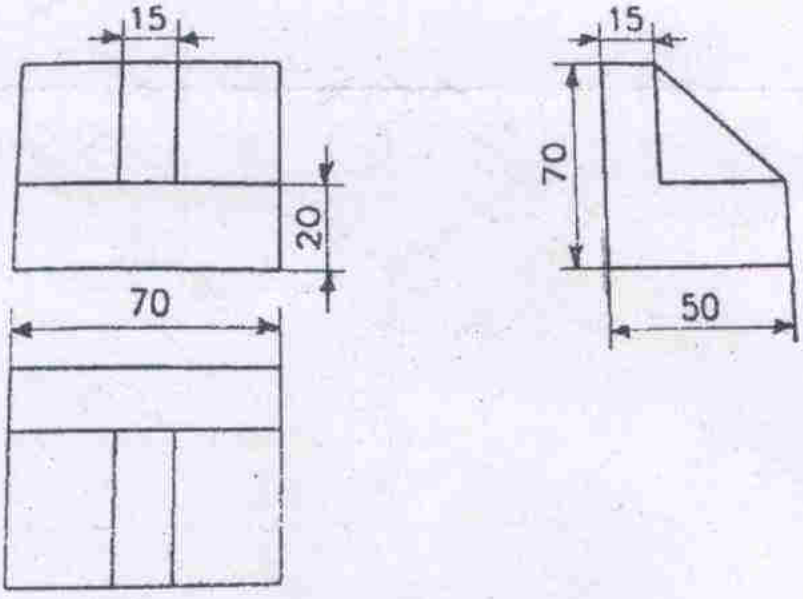

Fig - 5