Checked Sid 06.12.2014

L-1/T-1/MME Date : 06/12/2014

BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY, DHAKA

L-1/T-1 B. Sc. Engineering Examinations 2013-2014

Sub : **CHEM 107** (Inorganic and Physical Chemistry)

Full Marks : 210 Time : 3 Hours

The figures in the margin indicate full marks.

USE SEPARATE SCRIPTS FOR EACH SECTION

SECTION – A

There are **FOUR** questions in this section. Answer any **THREE**.

1. (a) Define energy of hydration. How does it depend on the size of the ion?
10 g each of hypothetical ionic compounds XZ and YZ are placed in separate 2.0-L beakers of water. XZ completely dissolves whereas YZ is insoluble. Explain this difference in solubility that might be due to the different energy of hydration of the X^+ ion and Y^+ ion. **(3+2+3)**

(b) What are the colligative properties of dilute solution? Sketch the phase diagram showing the effect a nonvolatile solute on freezing point and boiling point. **(2+6)**

(c) "Freezing-point-despression constant of water is 1.858 °C/m" – what is meant by this statement. **(4+6+3)**

The formula for low-molecular-mass starch is $(C_6H_{10}O_5)_n$, where n = 200. When 0.798 g of starch is dissolved in 100.0 mL of water solution, what is the osmotic pressure, in mmHg at 25°C? If you assume that the molarity is equal to the molality for this dilute solution, calculate the freezing point depression.

(d) Define colloids. What are hydrophilic and hydrophobic colloids? **(6)**

2. (a) What do the following statements mean? **(3+3)**

(i) Enthalpy is an extensive property of a substance

(ii) Change in enthalpy is a state function.

(b) Define pressure-volume work. When 2 mol of Na and 2 mol of H_2O react in a beaker, 1 mol of H_2 gas forms and heat evolves. Calculate this pressure-volume work at 25°C and 1.0 atm pressure. **(3+4)**

(c) What is Hess's law of heat summation? What are the applications of Hess's law? **(4+4)**

(d) Compounds with carbon-carbon double bonds, such as ethylene, C_2H_4, add H_2 in a reaction called hydrogenation. **(8)**

$$C_2H_4\,(g) + H_2\,(g) \rightarrow C_2H_6\,(g)$$

Calculate the enthalpy change for the above reaction, using the following combustion data:

$$C_2H_4\,(g) + 3\,O_2\,(g) \rightarrow 2\,CO_2\,(g) + 2\,H_2O\,(l); \qquad \Delta H = -1411\ kJ$$

$$C_2H_6\,(g) + \frac{7}{2}\,O_2\,(g) \rightarrow 2\,CO_2\,(g) + 3\,H_2O\,(l); \qquad \Delta H = -1560\ kJ$$

$$H_2\,(g) + \frac{1}{2}\,O_2\,(g) \rightarrow H_2O\,(l); \qquad \Delta H = -286\ kJ$$

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(e) Calculate the heat of vaporization of carbon disulfide at 25°C. The vaporization process is, **(6)**

$$CS_2\,(l) \rightarrow CS_2\,(g)$$

The standard enthalpy of formation of CS_2 (l) is 89.70 kJ/mol and that of CS_2 (g) is 116.9 kJ/mol.

3. (a) Sketch the plot of the logarithm of vapor pressure versus $\frac{1}{T}$. Derive an expression for the two-point form of the Clausius-Clapeyron equation. **(4+4)**

(b) Carbon disulfide, CS_2, has a boiling point of 46°C and a heat of vaporization of 26.8 kJ/mol. What is the vapor pressure of CS_2 at 35°C? **(6)**

(c) What is phase rule? What are the degrees of freedom for the following equilibria : **(5)**

$$H_2O\,(l) \rightleftharpoons H_2O\,(g)$$

$$H_2O\,(s) \rightleftharpoons H_2O\,(l) \rightleftharpoons H_2O\,(g)$$

(d) The oxygen-oxygen bond length in O_2^+ is 112 pm and in O_2 is 121 pm. Explain why the bond length in O_2^+ is shorter than in O_2. Would you expect the bond length in O_2^- to be larger or shorter than that in O_2? Why? **(8)**

(e) What is inert pair effect? How is the variable valency of Pb and Tl explained on this basis? **(2+6)**

4. (a) Explain the concept of hybridization. Discuss the structure of IF_7 on the basis of hybridization. **(3+9)**

(b) Explain the meaning of electron affinity. Why is the electron affinity of fluorine less than that of chlorine, although fluorine has higher electro-negativity than chlorine? **(3+5)**

(c) Discuss the Pearson's hard and soft acid and base principle. Give reasons for the following on the basis of this principle. **(5+5+5)**

(i) AgI_2^- is stable but AgF_2^- is not.

(ii) Ca and Mg occur as oxides and carbonates but not as sulphides in nature.

SECTION – B

There are **FOUR** questions in this section. Answer any **THREE**.

5. (a) A voltaic cell consists of a silver-silver ion half-cell and a nickel-nickel (II) ion half cell. Silver ion reduced during operation of the cell. The two half-cells are connected by a salt bridge. Sketch the cell, labeling the anode and cathode and indicating the corresponding electrode reactions. Show the direction of electron flow in the external circuit and the direction of cation movement in the half-cells. **(12)**

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(b) Describe Lead Storage Battery. Write the half-cell and over-all cell reaction during discharging and charging. **(3+6=9)**

(c) Define anode and cathode. Predict whether the following reaction would proceed spontaneously as written at 298 K. If, not, write the spontaneous reaction and calculate ∇G° and K_c for the spontaneous reaction. **(2+4+2+6=14)**

$Co\ (s) + Fe^{2+}\ (aq) \rightarrow Co^{2+}\ (aq) + Fe\ (s)$, given that

$[Co^{2+}] = 0.25$ M, $[Fe^{2+}] = 0.94$ M, $E^{\circ}_{Fe^{2+}/Fe} = -0.44$ V

and $E^{\circ}_{\frac{Co^{2+}}{Co}} = -0.28$ V.

6. (a) Derive the integral form of Van't Hoff equation and show the graphical representation of that equation for exothermic and endothermic reactions. **(8+4=12)**

(b) The reaction $CO\ (g) + H_2O\ (g) \rightleftharpoons CO_2\ (g) + H_2\ (g)$ is used for the production of mixture of gases. Suppose you start with 1.00 mol each of carbon monoxide and water vapor in a 50.L vessel. How many moles of each substance are in the equilibrium mixture at 1000°C? The equilibrium constant, K_c at this temperature is 0.58. What is the K_p of the above reaction? **(12+2=14)**

(c) Show the linear graphical representation of zero order, first order and second order reactions. **(9)**

7. (a) What is meant by radial probability distribution curve? Discuss distribution curves for 1s and 2s orbitals. **(3+8=11)**

(b) Explain Heisenberg's uncertainty principle. Show that this principle is valid only for small particles like electron and not for large objects. **(4+8=12)**

(c) The electron energy (E) in H-atom is given by $E = \frac{-21.7 \times 10^{-12}}{n^2}$ erg. Calculate the energy required to remove an electron completely from n = 2 orbit. What is the longest wavelength of light that can be used to cause this radiation ($R_H = 109686\ cm^{-1}$). **(6)**

(d) Write a note on physical significance of Ψ and Ψ^2. **(6)**

8. (a) What is an opposing reaction? Derive the rate constant equation of this reaction. How can the rate constants of this reaction be determined? **(2+8+4=14)**

(b) What do you understand by shielding effect? Explain the factors affecting it. **(3+6=9)**

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(c) Iodide ion is oxidized in acidic solution to tri-iodide ion, I_3^-, by hydrogen peroxide. **(8+4=12)**

$$H_2O_2\,(aq) + 3\,I^-\,(aq) + 2\,H^+\,(aq) \rightarrow I_3^-\,(aq) + 2\,H_2O\,(l)$$

A series of four experiments was run at different concentrations, and the initial rates of I_3^- formation were determined (see table). (i) From this data, obtain the reaction orders with respect to H_2O_2, I^-, and H^+ (ii) Find the rate constant of the above reaction.

	Initial concentrations (mol/L)			Initial Rate [mol/)L.s)]
	H_2O_2	I^-	H^+	
Exp. 1	0.010	0.010	0.0005	1.15×10^{-6}
Exp. 2	0.020	0.010	0.0005	2.30×10^{-6}
Exp. 3	0.010	0.020	0.0005	2.30×10^{-6}
Exp. 4	0.010	0.010	0.0010	1.15×10^{-6}

Extra

L-1/T-1/MME Date : 03/01/2015

BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY, DHAKA

L-1/T-1 B. Sc. Engineering Examinations 2013-2014

Sub : **MME 131** (Introduction to Metallurgy and Materials)

Full Marks : 210 Time : 3 Hours

The figures in the margin indicate full marks.

USE SEPARATE SCRIPTS FOR EACH SECTION

SECTION – A

There are **FOUR** questions in this section. Answer any **THREE**.

1. (a) What are engineering ethics? Why do engineers need them? Discuss the moral foundations of engineering ethics. **(2+1+8=11)**

   (b) Explain the recyclability and biodegradability of engineering materials. What materials are suitable for recycling? Write a short note on the recycling of glass. **(4+4+10=18)**

   (c) Define and classify structure of materials. **(2+4=6)**

2. (a) Using the concept and characteristics of chemical bonding, explain why metals are ductile and electrically conductor while ceramics are not. **(5+5)**

   (b) Explain the terms crystal, lattice and unit cell. Draw a neat sketch of a body-centred cubic unit cell and determine its (i) lattice parameter (a) in terms of atomic radius (r), (ii) co-ordination number, (iii) number of atoms per unit cell, and (iv) atomic packing density. **(3+2+15=20)**

   (c) Using suitable examples, discuss the importance of packing sequence of atoms in metals. **(5)**

3. (a) Why are defects important in crystalline solids? Define and indicate importance of the following defects in engineering materials: (i) vacancy, (ii) dislocation, (iii) grain boundary. **(2+12=14)**

   (b) Calculate the equilibrium number of vacancies per cubic meter for copper at 27 and 1000 C. The energy for vacancy formation is 0.9 eV/atom; the atomic weight and density for copper are 63.5 g/mol and 8.4 g/cm^3, respectively. **(10)**

   (c) Define and classify diffusion. Why does diffusion of atoms in metals is faster than in ceramics or polymers? **(1+4+6=11)**

4. (a) Distinguish between the following properties of materials: (i) strength and hardness, (ii) modulus of elasticity and modulus of resilience, (iii) stiffness and toughness, (iv) ductility and malleability. **(16)**

   (b) Why does the flexural strength of brittle materials higher than their respective tensile strengths? **(5)**

   (c) What is alloying? Using suitable example, explain the mechanism by which a metal is strengthened during alloying. **(4+10=14)**

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MME 131

SECTION – B

There are **FOUR** questions in this section. Answer any **THREE**.

5. (a) What do you understand by non-destructive testing? What are the five most common non destructive inspection methods? **(15)**

   (b) With the help of figures describe die penetrant inspection. Mention its advantages and disadvantages. **(20)**

6. (a) Differentiate between ductile and brittle fracture. Use figures to illustrate your answer. **(15)**

   (b) What is creep failure? Explain the different stages in the creep strain versus time curve with the help of a labelled diagram. **(20)**

7. (a) With the help of diagrams, differentiate between grey cast iron, white cast iron, malleable cast iron and ductile cast iron. **(20)**

   (b) What are TMT steels? Are they earthquake resistant? If so, why? **(15)**

8. (a) What are the different types of phase transformation? **(15)**

   (b) Determine the size of the critical nucleus when a sample of liquid copper is required to be cooled 100°C below its melting temperature (1083°C) for homogeneous nucleation. How many atoms will be required to form such a nucleus? **(20)**

   Data of Cu : $\gamma_{sl} = 1.1$ J/m^2, $\Delta H^f = 2.03 \times 10^9$ J/m^3, Atomic radius = 0.128 nm.

L-1/T-1/MME **Date : 08/01/2015**

BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY, DHAKA

L-1/T-1 B. Sc. Engineering Examinations 2013-2014

Sub : **MATH 171** (Calculus and Differential Equations)

Full Marks : 210 Time : 3 Hours

The figures in the margin indicate full marks.

USE SEPARATE SCRIPTS FOR EACH SECTION

SECTION – A

There are **FOUR** questions in this section. Answer any **THREE**.

Symbols used have their usual meaning.

1. (a) A function f(x) is defined as follows: **(18)**

$$f(x)=\begin{cases}-2x+3, & x<1\\ 1, & 1\le x\le 2\\ 2x-3, & x>2\end{cases}$$

Discuss the continuity of the function at x = 1 and differentiability at x = 2. Also sketch the graph of the function.

(b) If $y=\dfrac{1}{x^2+a^2}$ then show that $y_n=\dfrac{(-1)^{n+1}\ n!(\sin\theta)^{n+1}\sin(n+1)\theta}{a^{n+2}}$, where $\theta=\cot^{-1}(x/a)$ and hence find the nth derivative of $\tan^{-1}x$. **(17)**

2. (a) If $y=\sin^{-1}x$, then show that $(1-x^2)y_{n+2}-(2n+1)xy_{n+1}-n^2y_n=0$, and also find $(y_n)_0$. **(18)**

(b) If v is a function of x, y and z and $F(v^2-x^2, v^2-y^2, v^2-z^2)=0$, show that **(17)**

$$\frac{1}{x}\frac{\partial v}{\partial x}+\frac{1}{y}\frac{\partial v}{\partial y}+\frac{1}{z}\frac{\partial v}{\partial z}=\frac{1}{v}.$$

3. (a) Find for which values of x the function $\dfrac{x^2+x+1}{x^2-x+1}$ is maximum and minimum. **(17)**

(b) Prove that the condition that $x\cos\alpha + y\sin\alpha = p$ should touch the curve $x^m y^n = a^{m+n}$ is $p^{m+n}\, m^m\, n^n = (m+n)^{m+n}(\sin\alpha)^n(\cos\alpha)^m$. **(18)**

4. Find the following:

(a) $\displaystyle\int\frac{dx}{\cos 3x-\cos x}$ **(11)**

(b) $\displaystyle\int(x-3)^3\sqrt{6x-x^2}\,dx$ **(12)**

(c) $\displaystyle\int\frac{2}{(2-x)^2}\sqrt[3]{\frac{2-x}{2+x}}\,dx$ **(12)**

Contd P/2

MATH 171 (MME)

SECTION – B

There are **FOUR** questions in this section. Answer any **THREE**.

5. (a) Find a reduction formula for $I_n = \int x \sin^n x \, dx$ and hence find $\int x \sin^4 x \, dx$. **(11)**

   (b) Evaluate: $\int_0^{\pi} \frac{x \sin x}{1 + \cos^2 x} dx$. **(12)**

   (c) Evaluate: $\int_1^{\infty} \frac{\sqrt{x}}{(1+x)^2} dx$. **(12)**

6. (a) Find the area common to the curves $y^2 = ax$ and $x^2 + y^2 = 4ax$. **(20)**

   (b) Find the volume of the solid generated by the revolution of the curve $y(a^2 + x^2) = a^3$ about its asymptote. **(15)**

7. Solve the following differential equations:

   (a) $\frac{dy}{dx} = \sin(x + y)$ **(10)**

   (b) $\frac{dy}{dx} = \frac{x + 2y - 3}{2x + y - 3}$ **(13)**

   (c) $\frac{dy}{dx} + \frac{\tan y}{1+x} = (1+x)e^x \sec y$ **(12)**

8. Solve the following:

   (a) $(D^2 - 4D + 3)y = x^3$ **(10)**

   (b) $(D^2 + 4)y = \tan 2x$ **(11)**

   (c) $x^2 \frac{d^2y}{dx^2} - 2x\frac{dy}{dx} - 4y = x^4$. **(14)**

L-1/T-1/MME Date : 13/01/2015

BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY, DHAKA

L-1/T-1 B. Sc. Engineering Examinations 2013-2014

Sub : **PHY 103** (Optics, Waves and Oscillations)

Full Marks : 210 Time : 3 Hours

The figures in the margin indicate full marks.

USE SEPARATE SCRIPTS FOR EACH SECTION

SECTION – A

There are **FOUR** questions in this section. Answer any **THREE**.

1. (a) What are Lissajous' figures? On what factors it depend? **(5+2=7)**

   (b) Two oscillating bodies of masses m_1 and m_2 are connected by a spring on a horizontal frictionless surface. Show that their relative motion can be represented by oscillation of a single body having reduced mass μ. **(20)**

   (c) Two masses $m_1 = 3$ kg and $m_2 = 2$ kg are connected by a spring. Find the oscillation frequency of the two body system. Given that the extension of the spring is 1.0 cm for the applied force of 2.5 N. **(8)**

2. (a) Distinguish between particle velocity and wave velocity and obtain a relation between the maximum particle velocity and wave velocity. **(4+3=7)**

   (b) Show that the rate of transfer of energy of a plane progressive wave depends on the square of the amplitude and square of frequency. **(20)**

   (c) A musical instrument of frequency 300 Hz is sending out waves of amplitude 10^{-3} cm. Calculate the intensity of sound. Given, the velocity of sound is 332 m/s and density of air is 1.29 kg/m^3. **(8)**

3. (a) What is reverberation and reverberation time? On what factors it depend? **(5+2=7)**

   (b) What are assumptions of Sabine? Deduce expressions for the growth and decay of intensities of sound in a room and hence find an expression for the reverberation time. **(20)**

   (c) Find the reverberation time of a room of 8 m wide, 15 m long and 4 m high, which contains 50 wooden seats. There are 50 people in the room. Absorption co-efficient of room (wall, floor and ceiling) is 0.03. Absorbing power per person = 0.4 Sabine and per wooden seat = 0.2 Sabine. **(8)**

4. (a) Describe the defects "coma and astigmatism". Explain how they can be minimized. **(12)**

   (b) Explain with a suitable diagram what do you mean by spherical aberration. How is it minimized when two thin lenses are placed at a distance from each other? **(18)**

   (c) Two convex lenses of focal length 12 cm and 4 cm and of the same material are placed at a certain distance apart so as to satisfy the condition of minimum spherical aberration. Is the combination achromatic? **(5)**

Contd P/2

PHY 103 (MME)

SECTION – B

There are **FOUR** questions in this section. Answer any **THREE**.

5. (a) Explain with suitable diagram, the lateral and axial chromatic aberration. Show that the axial chromatic aberration for a thin lens is given by $\frac{\omega v^2}{f}$, where the symbols have their usual meaning. **(15)**

   (b) Describe the circle of least confusion in chromatic aberration. Show that the diameter of the circle of least confusion depends on the diameter of lens aperture and the dispersive power of the material. Also show that it is independent of the focal length of the lens. **(15)**

   (c) The focal lengths of a convex lens are 100 cm and 98 cm for red and blue rays respectively. Calculate the dispersive power of the material of the lens. **(5)**

6. (a) What do you understand by the term achromatism? Derive and discuss the condition for achromatism of two lenses separated by a distance. **(15)**

   (b) Define resolving power of an optical instrument. Derive an expression for resolving power of a microscope. **(15)**

   (c) The focal length of an achromatic combination of two lenses in contact is 150 cm. If the dispersive power of the two lenses are 0.018 and 0.027. Calculate the focal lengths of the two lenses. **(5)**

7. (a) Mention some important conditions for sustained interference of light. **(8)**

   (b) Briefly explain how interference fringes are formed by a thin wedge-shaped film when examined by normally reflected light. Find expression for fringe separation. **(20)**

   (c) The distance between the slit and biprism and between biprism and eye-piece are 45 cm each. The obtuse angle of biprism is 178 degree and refractive index of the material of prism is 1.5. If the fringe separation is 15.6×10^{-3} cm, calculate the wavelength of light used. **(7)**

8. (a) Distinguish between Fresnel class and Fraunhofer class of diffraction of light. **(8)**

   (b) By Brewster's law, show that light incident on a transparent substance at polarizing angle gives reflected and refracted rays at right angle to each other. **(10)**

   (c) Explain how nicol prism can work as an analyzer. **(10)**

   (d) In a Newton's ring experiment, the diameter of the 15th ring was found to be 0.590 cm and that of the 5th ring is 0.336 cm. If the radius of curvature of the plano-convex lens is 100 cm, determine the wavelength of light used. **(7)**

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Date : 11/12/2014

BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY, DHAKA

L-1/T-1 B. Sc. Engineering Examinations 2013-2014

Sub : **EEE 155** (Electrical Engineering Fundamentals)

Full Marks : 210 Time : 3 Hours

The figures in the margin indicate full marks.

USE SEPARATE SCRIPTS FOR EACH SECTION

SECTION – A

There are **FOUR** questions in this section. Answer any **THREE**.

1. (a) Find the RMS value of the signal shown in Fig. 1(a). **(17)**

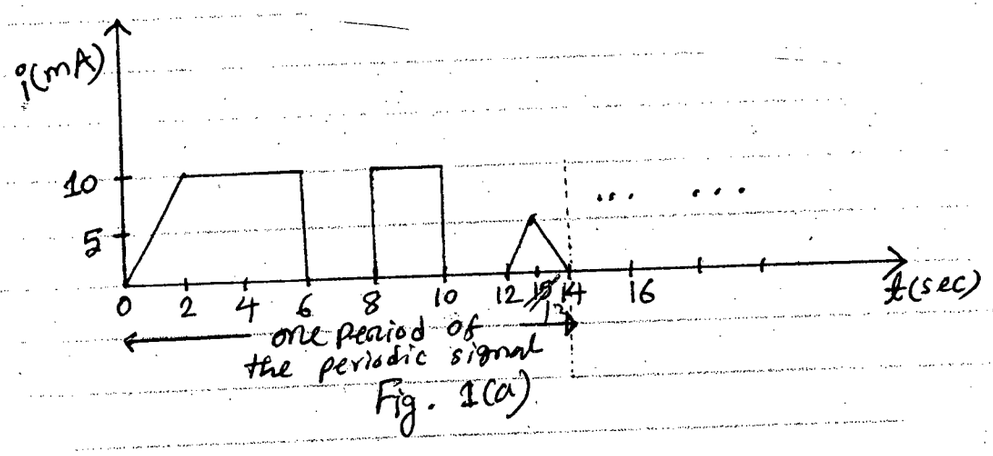

Fig. 1(a)

(b) For the network shown in Fig. 1(b), the source voltage is 100 cos(100πt + 30°) volt. Calculate: **(18)**

(i) The source voltage as phasor

(ii) Total impedance Z_T

(iii) Power delivered to the circuit by the source

(iv) Power factor of the circuit

(v) Is the power factor leading or lagging?

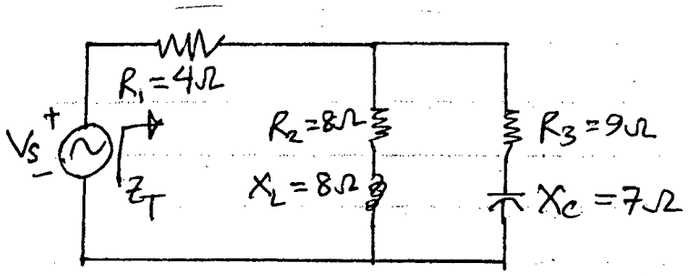

Fig. 1(b)

2. (a) For the circuit shown in Fig. 2(a), i(t) = 5 sin(1000t) Amps. Find $V_0(t)$ using nodal analysis. **(18)**

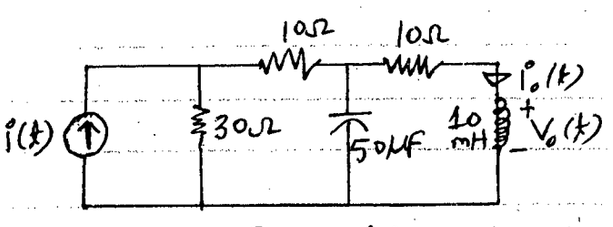

Fig. 2(a)

Contd P/2

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Contd ... Q. No. 2

(b) For the circuit shown in Fig. 2(b), i(t) = 2 cos (1000t). Find $i_o(t)$ using mesh analysis. **(17)**

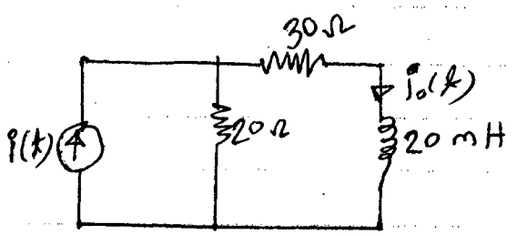


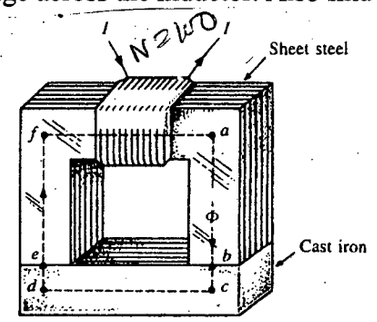
Fig. 2(b)

3. (a) A series connected load draws a current i(t) = 4 cos(100πt + 10°) A when the applied voltage is v(t) = 120 cos(100πt – 20°) V. Find the apparent power and the power factor of the load. Determine the element values that form the series-connected load. **(17)**

   (b) When connected to a 230 V, 50 Hz power line, a load absorbs 5 KW at a lagging power factor of 0.8. Find the value of capacitance necessary to raise the power factor to 0.95 (lagging). The capacitor will be connected in parallel to the load. **(18)**

4. (a) The electromagnet shown in Fig. 4(a) has picked up a section of cast iron. Determine the current I required to establish the indicated flux in the core. B-H curve is provided in the graphs attached at the end of the question paper. **(25)**

   (b) Current through a pure inductor is 2 cos(300πt + 30°). Using fundamental laws, derive the expression of voltage across the inductor. Also find the impedance of the inductor. **(10)**



$l_{ab} = l_{cd} = l_{ef} = l_{fa} = 4$ in.
$l_{bc} = l_{dc} = 0.5$ in.
Area (throughout) = 1 in^2
$\Phi = 3.5 \times 10^{-4}$ Wb

Fig. 4(a)

SECTION – B

There are **FOUR** questions in this section. Answer any **THREE**.

5. (a) Find the equivalent resistance R_{ab} in the circuit given in the figure for Q. No. 5(a). If a voltage source of 48 V is connected between a & b, what will be the voltage across 10 Ω resistance? **(20)**

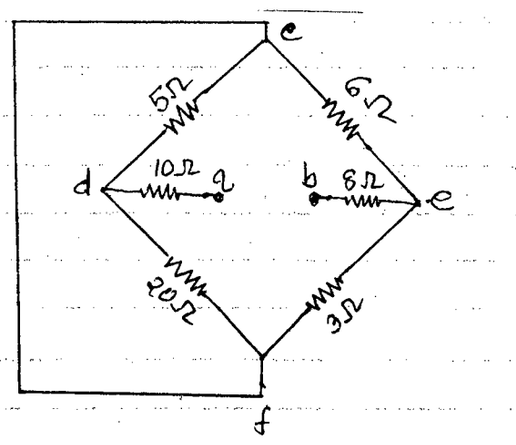


Figure for ques. no. 5(a)

Contd P/3

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Contd ... Q. No. 5

(b) Derive the corresponding equations to transform a 'Delta' (Δ) resistive network to 'Wye' (Y) resistive network. **(15)**

6. (a) Using nodal analysis, find V_0 and I_0 in the circuit given in figure for Q. No. 6(a). **(20)**

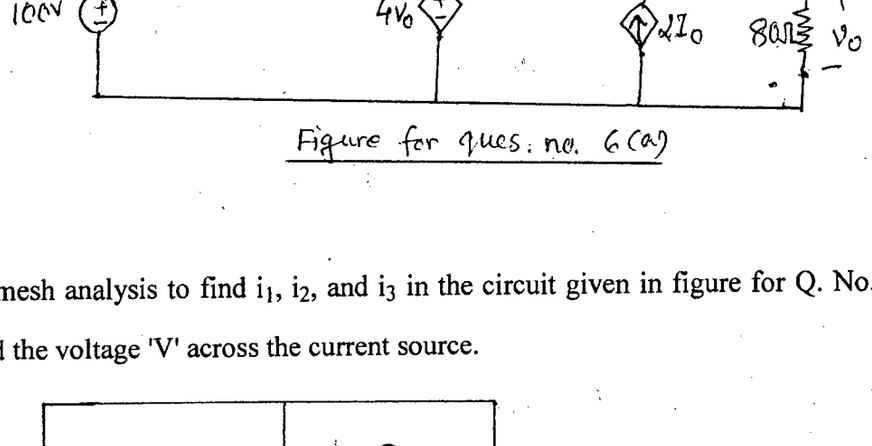


Figure for ques. no. 6(a)

(b) Use mesh analysis to find i_1, i_2, and i_3 in the circuit given in figure for Q. No. 6(b). Also find the voltage 'V' across the current source. **(15)**

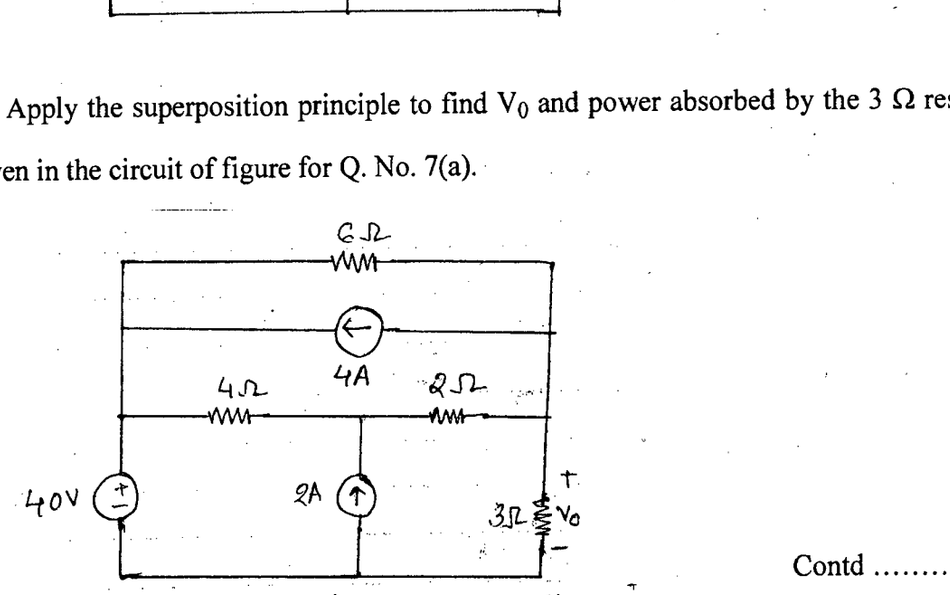


Figure for ques no. 6(b)

7. (a) Apply the superposition principle to find V_0 and power absorbed by the 3 Ω resistor given in the circuit of figure for Q. No. 7(a). **(20)**

Figure for ques. no. 7(a)

Contd P/4

EEE 155 (MME)

Contd ... Q. No. 7

(b) Use source transformation to find v_x in the circuit for Q. No. 7(b). **(15)**

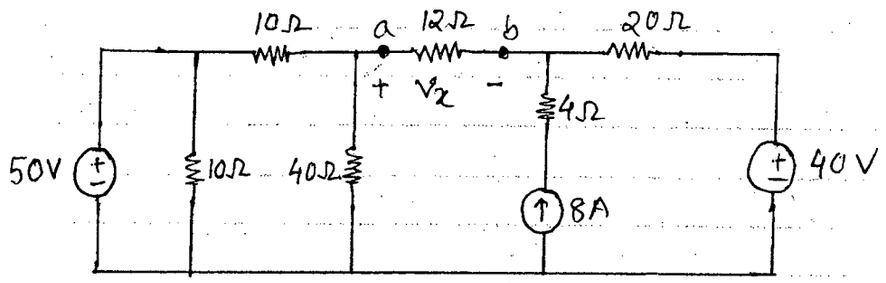


Figure for ques. no. 7(b)

8. (a) Obtain the Thevenin equivalent for the circuit given in figure for Q. No. 8(a) at terminals a-b. **(20)**

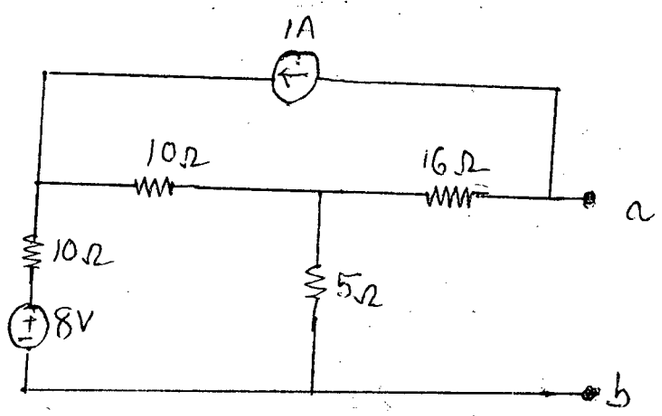


Figure for ques. no. 8(a)

(b) Find the value of R_L for maximum power transfer in the circuit of figure for Q. No. 8(b). Also find the maximum power. **(15)**

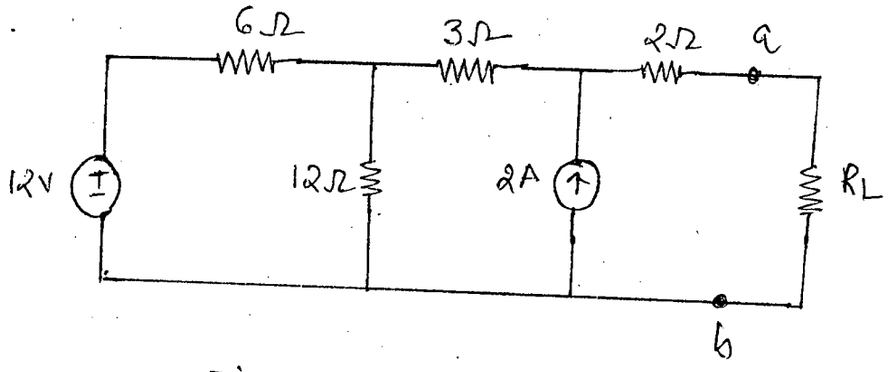
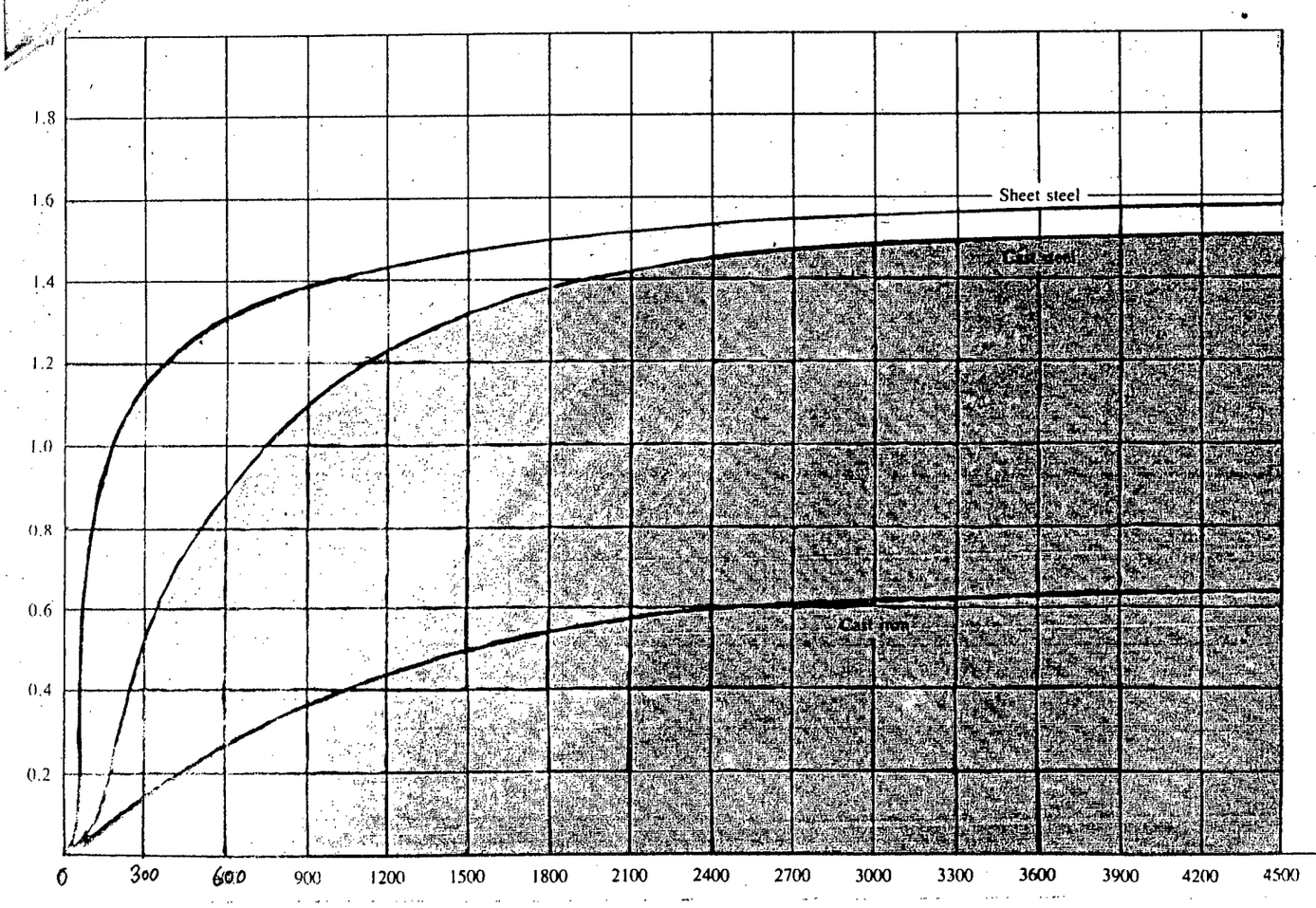


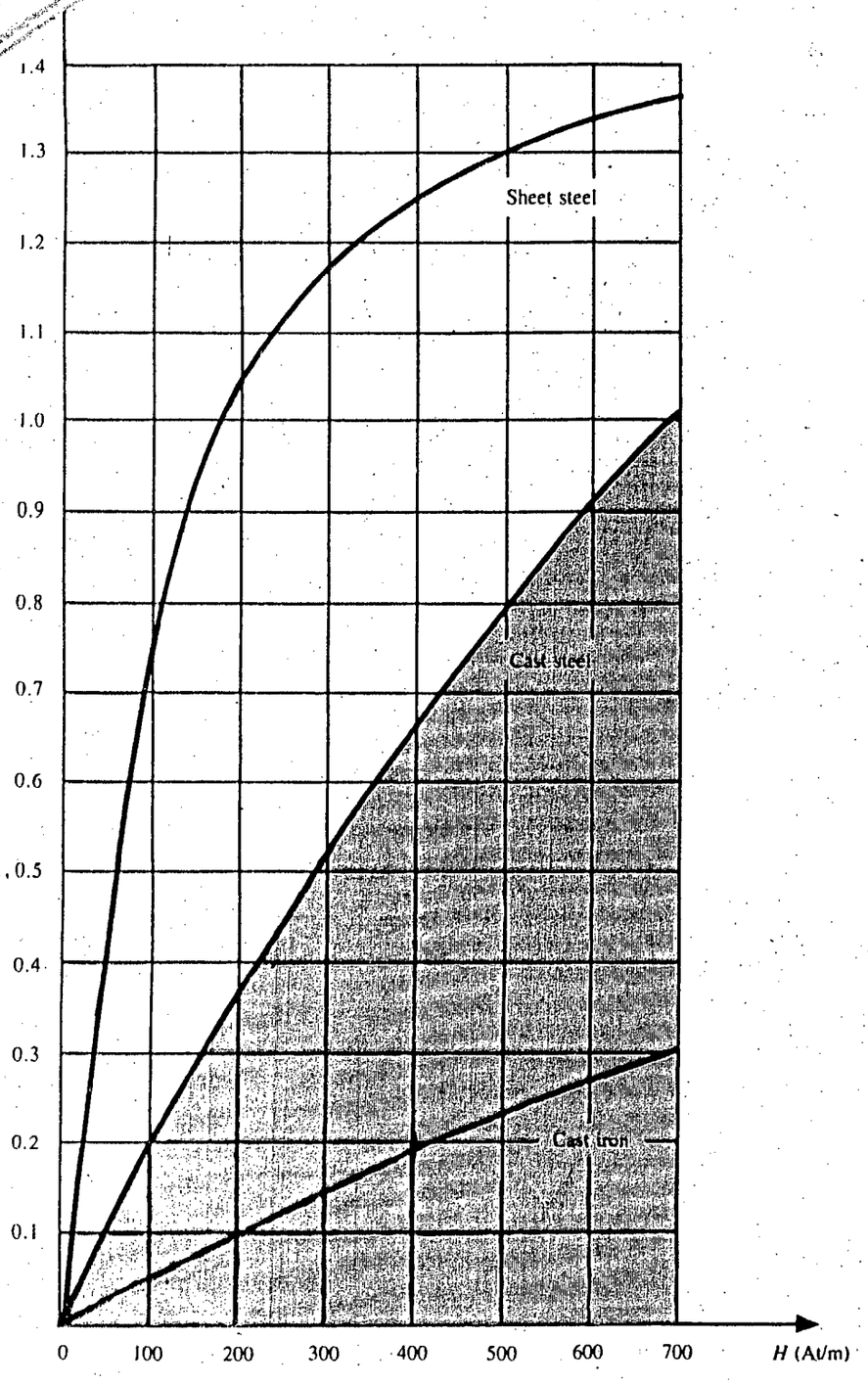
Figure for ques. no. 8(b)

Graph - 01



Magnetization Curve

Graph-02



~~FIG. 11.28~~

Magnetization Curve (Expanded View)