L-2/T-2/ME **Date : 06/07/2013**

BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY, DHAKA

L-2/T-2 B. Sc. Engineering Examinations 2011-2012

Sub : **MATH 263** (Complex Variables, Fourier Series, Harmonic Function and Partial Differential Equation)

Full Marks : 280 Time : 3 Hours

The figures in the margin indicate full marks.

Symbols used have their usual meaning.

USE SEPARATE SCRIPTS FOR EACH SECTION

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## SECTION – A

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

1. (a) Describe graphically the region represented by $z(\bar{z}+2)=3$. **(6⅔)**

(b) Show that if z lies on the circle $|z|=2$, then $\left|\frac{1}{z^4-4z^2+3}\right| \le \frac{1}{3}$. **(6)**

(c) Show that Cauchy-Riemann equations for f(z) are satisfied at z = 0 but f(z) is not differentiable at z = 0, where $f(z)=\begin{cases}\frac{z^3}{|z|} & \text{if } z\neq 0\\ 0, & \text{if } z=0\end{cases}$ **(20)**

(d) Find all the roots of $\left(-8-8\sqrt{3}\,i\right)^{\frac{1}{4}}$ in rectangular coordinates and exhibit the distinct roots graphically. **(14)**

2. (a) Find the image of the infinite strip $0 < y < \frac{1}{2^c}$, $c > 0$ under the transformation $w=\frac{1}{z}$. Sketch the strip and its image. **(12)**

(b) Show that $u(x, y)=\frac{1}{2}\log(x^2+y^2)$ is harmonic in some domain. Find a function v(x, y) such that f(z) = u + iv is analytic in that domain and express f(z) in terms of z. **(14⅔)**

(c) If $f(z)=e^{\bar{z}}$ then show that f'(z) does not exist at any point. **(10)**

(d) Solve the equation sin z = 2. **(10)**

3. (a) Evaluate $\int_C \frac{4-3z}{z(z-1)(z-2)}dz$ by Caychy's integral formula where C is the circle $|z|=\frac{3}{2}$, taken in the counterclockwise direction. **(10⅔)**

(b) Expand $f(z)=\frac{1}{(z+1)(z+3)}$ in a Laurent's series valid for **(16)**

(i) $1 < |z| < 3$ and (ii) $0 < |z+1| < 2$

(c) Evaluate the following integrals by using Cauchy's residue theorem where C is the circle |z| = 3 oriented in positive sense: **(10+10)**

(i) $\int_C \frac{1+z^2}{(z-1)^2(z+2i)}dz$ (ii) $\int_C \frac{\sin z}{z^2(z^2+4)}dz$

Contd ..... P/2

## MATH 263

4. Evaluate the following by using the method of contour integration:

(i) $\int_0^{\infty} \frac{\cos 3x}{(x^2+1)(x^2+4)}\,dx$ **(24⅔)**

(ii) $\int_0^{2\pi} \frac{\cos 3\theta}{5-4\cos\theta}\,d\theta$ **(22)**

### SECTION – B

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

5. (a) Solve the following partial differential equations:

(a) $x(y^2+z)p - y(x^2+z)q = z(x^2-y^2)$ **(14)**

(b) $2xz - px^2 - 2qxy + pq = 0$ **(14)**

(c) $p^2 + q^2 - 2px - 2qy + 1 = 0$ **(18⅔)**

6. Solve the following higher order PDEs:

(a) $\left(2D_x^2 + D_xD_y - 15D_y^2\right)z = x^3y^2$ **(15)**

(b) $\left(2D_x - 3D_y + 5\right)\left(4D_x + D_y - 6\right)z = e^{2x+y}\sin(3x+2y)$ **(16⅔)**

(c) $\left(x^2D_x^2 - 4xyD_xD_y + 4y^2D_y^2 + 6yD_y\right)z = x^2y$ **(15)**

7. (a) Expand in Fourier series the function $f(x) = x + x^2$ in the interval $-\pi < x < \pi$. **(22)**

(b) Find the Fourier transform of $f(x) = \begin{cases} 1-|x|, & |x|<1 \\ 0, & |x|>1 \end{cases}$ **(24⅔)**

and hence evaluate $\int_0^{\infty} \frac{\sin^4 x}{x^4}\,dx$.

8. (a) An infinitely long rectangular plate with insulated faces has temperature u(x, y) on the boundaries always and given by **(23)**

$u = 0$ at $x = 0$, $x = \pi$ and $y \to \infty$

$$u(x,0) = \begin{cases} x, & 0 < x \le \frac{\pi}{2} \\ \pi - x, & \frac{\pi}{2} < x < \pi \end{cases}$$

Determine the steady state temperature within the plate.

(b) Obtain steady temperature distribution in a semicircular plate of radius R, insulated on both faces with its curved boundary kept at constant temperature $u_0$ and its boundary diameter kept at zero temperature. **(23⅔)**

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L-2/T-2/ME **Date : 22/07/2013**

BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY, DHAKA

L-2/T-2 B. Sc. Engineering Examinations 2011-2012

Sub : **MME 291** (Metallic Materials)

Full Marks: 210 Time : 3 Hours

USE SEPARATE SCRIPTS FOR EACH SECTION

The figures in the margin indicate full marks.

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## SECTION – A

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

1. (a) With necessary diagram show the material balance on a iron blast furnace. **(15)**

   (b) How iron ore is converted to pig iron in a blast furnace? Describe the process with detail chemical reactions. **(20)**

2. (a) What are the differences between acid Bessemer and basic Bessemer processes of steelmaking? **(12)**

   (b) Describe the order of elimination of impurities in L.D. process of steelmaking. **(18)**

   (c) Why most high–grade alloy steels are manufactured in the electric furnace? **(5)**

3. (a) What are the effects of various alloying elements on the structure and properties of gray cast iron? **(15)**

   (b) Explain the heat transfer cycle for producing ferritic malleable cast iron. **(20)**

4. (a) With the help of Fe–Cr equilibrium phase diagram, describe the overall process of producing martensitic stainless steel. Also draw the final microstructure of martensitic stainless steel. **(15+5)**

   (b) Mention some applications of austenitic stainless steel. **(5)**

   (c) Write short note on high speed tool steel. **(10)**

## SECTION – B

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

5. (a) Differentiate malleability and ductility. **(5)**

   (b) For FCC unit cell locate point coordinate 100, draw [100] direction and (111) plane. **(10)**

   (c) Al is more ductile than Mg — why? **(10)**

   (d) Classify alloy structure. **(10)**

Contd ..... P/2

**MME 291**

6. (a) For Pb–Sn alloy system, a 30% Sn alloy is slow cooled from 300°C. Calculate the chemical composition and amount of liquid and solid phases at 200°C. Draw the microstructure at 110°C. (Fig. 1) **(20)**

   (b) How does the tensile strength vary in the Pb–Sn alloy system? Indicate the strengthening mechanism for the variation. **(15)**

7. (a) For 0.45% C steel, draw microstructure above $A_3$, between $A_3$ and $A_1$ and below $A_1$. Determine (i) the fraction of ferrite and cementite, (ii) the fraction of ferrite and pearlite and (iii) the fraction of pro–eutectoid ferrite for this alloy just below the eutectoid temperature. **(25)**

   (b) Normalising produces a finer and more abundant pearlite in the structure than is obtained by annealing — why? **(10)**

8. (a) Differentiate induction and flame hardening. **(10)**

   (b) Name different NDT. Describe the penetrant impaction method. **(15)**

   (c) Draw stress–strain curve for ductile metal and indicate different important points on it. **(10)**

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Contd.... P/3

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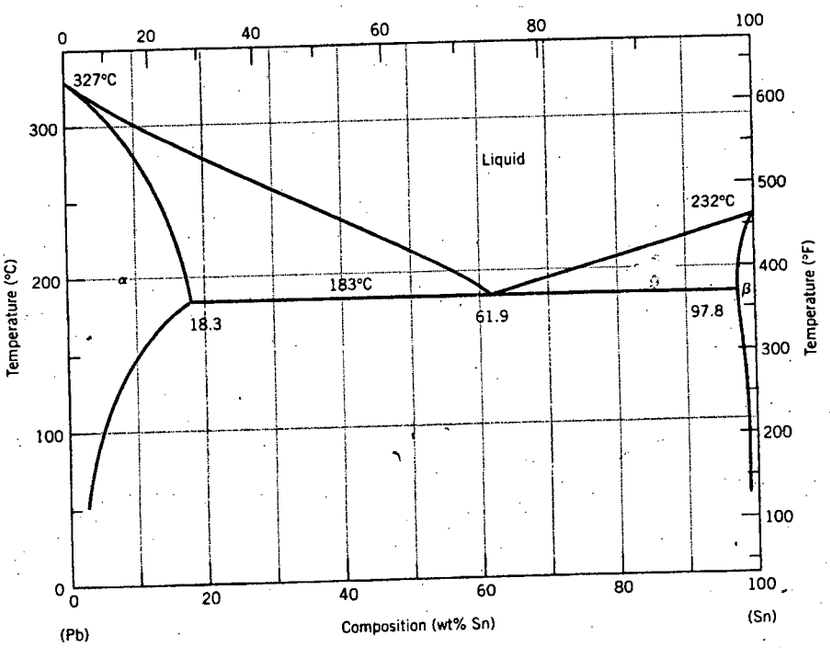


**Figure 1** The lead–tin phase diagram.

Fig. 1 for Q.No. 6(a)

28.9.13

**L-2/T-2/ME** **Date : 28/09/2013**

BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY, DHAKA

L-2/T-2 B. Sc. Engineering Examinations 2011-2012

Sub : **ME 243** (Mechanics of Solids)

Full Marks: 210 Time : 3 Hours

USE SEPARATE SCRIPTS FOR EACH SECTION

The figures in the margin indicate full marks.

Symbols indicate their usual meaning. Assume any missing data.

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## SECTION – A

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

1. (a) A rigid bar with negligible mass as shown in Fig. for Q. No. 1(a) is pinned at $O$ and attached to two vertical rods. Assuming that the rods were initially stress-free, what maximum load $P$ can be applied without exceeding stresses of 150 MPa in the steel rod and 70 MPa in the bronze rod. **(15)**

   (b) A bronze bar 3 m long with a cross sectional area of 320 $mm^2$ is placed between two rigid walls as shown in Fig. for Q. No. 1(b). At a temperature of $-20^0$C, the gap $\Delta = 2.5$ mm. Find the temperature at which the compressive stress in the bar will be 35 MPa. Use $\alpha = 18.0 \times 10^{-6}$ m/(m. $^0$C) and $E = 80$ GPa. **(20)**

2. (a) Apply integration method to compute the value of $EI\delta$ at midspan for the beam loaded as shown in Fig. For. Q. No. 2(a). If $E$ = 10 GPa, what value of $I$ is required to limit the midspan deflection to 1/360 of the span? **(15)**

   (b) Determine the maximum deflection of the beam carrying a uniformly distributed load over the middle portion as shown in Fig. for. Q. No. 2(b). Use area-moment method. **(20)**

3. (a) A compound shaft consisting of a steel segment and an aluminum segment is acted upon by two torques as shown in Fig. 3(a). Determine the maximum permissible value of torque $T$ subjected to the following conditions: **(15)**

   $\tau_{st} \leq 83$ MPa, $\tau_{al} \leq 55$ MPa, and the angle of rotation of the free end is limited to $6^0$. For steel, G = 83 GPa and for aluminum, G = 28 GPa.

   (b) A rigid bar, hinged at one end, is supported by two identical springs as shown in Fig. for. Q. No. 3(b). Each spring consists of 20 turns of 10-mm wire having a mean diameter of 150 mm. Compute the maximum shearing stress in the spring. Neglect the mass of the rigid bar. **(20)**

4. (a) In a reinforced beam, $b$ = 200 mm, $d$ = 400 mm, and $n$ = 10; the allowable stresses are $f_c$ = 10 MPa, and $f_s$ = 140 MPa. Determine $A_s$ for balanced-stress design and the safe resisting moment. **(20)**

Contd ..... P/2

**ME 243**

(b) A curved machine element has a T-shaped cross-section and is loaded as shown in Fig. for Q. No. 4(b). Knowing that the allowable compressive stress is 50 MPa, determine the largest force $P$ that can be applied to the component. **(15)**

## SECTION – B

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

5. (a) Draw shear force and bending moment diagrams for the beam shown in Fig. for Q. 5(a). Locate the maximum bending moment and points of inflection. Ignore beam's self-weight. **(15)**

(b) A straight steel bar is bent to a radius $\rho$ by applying a pure bending moment M. If the maximum stress is 200 MPa, calculate M and $\rho$. Cross-section of bar is shown in Fig. for Q. 5(b). Take, E = 200 GPa. **(15)**

(c) Sketch a typical economic cross-section of beams and show the distributions of flexural stresses ($\sigma$ and $\tau$) acting on the cross-section. **(5)**

6. (a) Prove that mid-span deflection ($\Delta$) of a geometrically imperfect column with pinned-pinned ends is given by the equation **(15)**

$$\Delta = e \sec \sqrt{\frac{P}{EI}} \frac{L}{2}$$

where symbols carry their usual meaning.

Hence, deduce the expression of critical load of a pinned-pinned perfect column.

(b) An ideal fixed-free column has following data: **(20)**

L = 500 mm, E = 200 GPa. Cross-section is hollow as shown in Fig. for Q. 6(b).

Calculate- (i) $P_{Cr}$ (ii) $\frac{L}{k_{min}}$

and plot shape of the column after buckling.

7. (a) A cylinder under hydrostatic pressure has following data: **(20)**

Inner radius = 200 mm, Outer radius = 300 mm, Internal pressure = 10 MPa

Calculate:

(i) Hoop stress and longitudinal stress using thin-walled cylinder's formula. What is the magnitude of corresponding maximum shear stress?

(ii) Hoop stress and radial stress at inner surface using thick-walled cylinder's formula. What is the magnitude of corresponding maximum shear stress?

Also, with a sketch show the actual hoop stress distribution over the cylinder wall thickness.

Contd ..... P/3

**ME 243**

(b) A fixed-free bar is loaded by a point load at the tip and by a torque at mid-span (see Fig. for Q. 7(b)). **(15)**

Calculate the total strain energy due to all possible kinds of elastic deformations. Given: E = 200 GPa, G = 84 GPa, the bar has solid circular cross-section of 100 mm diameter.

8. (a) Draw Mohr's circle for the plane stress element of a machine part as shown in Fig. for Q. 8(a). Calculate the principal stresses, maximum shear stress and their planes. Also, determine the failure plane of the machine part if it is brittle. **(25)**

(b) With necessary figures and equations write short notes <u>on any two</u> of following topics: (i) $\sigma - \epsilon$ diagram of a ductile material (ii) Determination of principal stresses by $45^0$ Strain rosette (iii) Centrifugal stresses in thin rings (iv) Stress-concentrations. **(10)**

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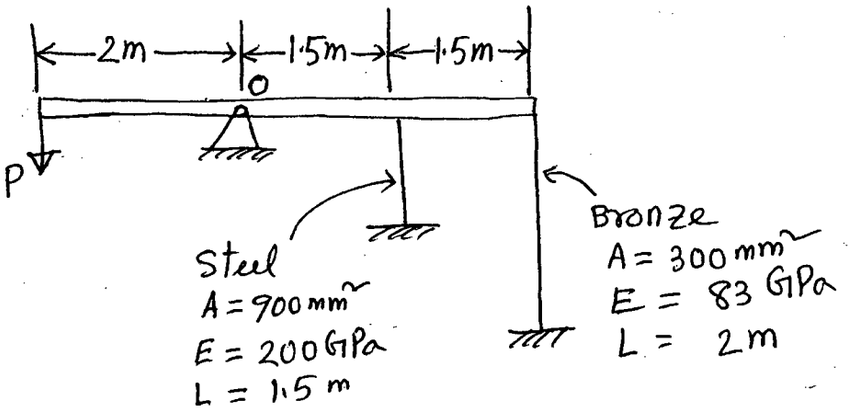



Fig. for Q. No. 1(a)

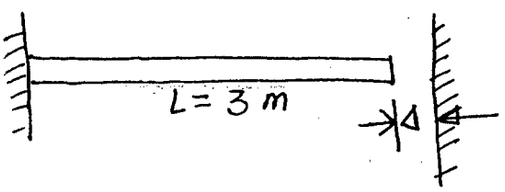



Fig. for Q. No. 1(b)

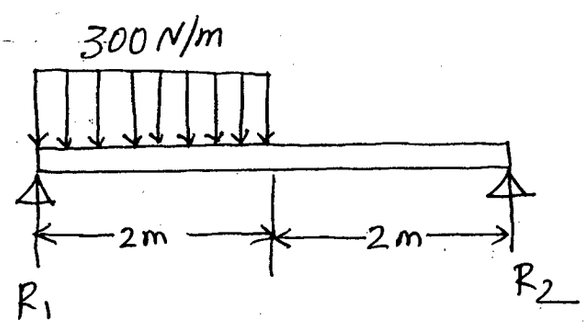



Fig. for Q. No. 2(a)

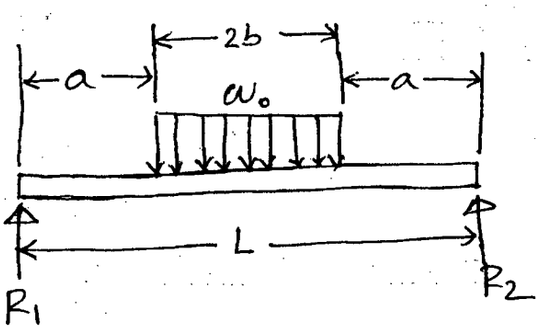



Fig. for Q. No. 2(b)

ME 243 (for ME)

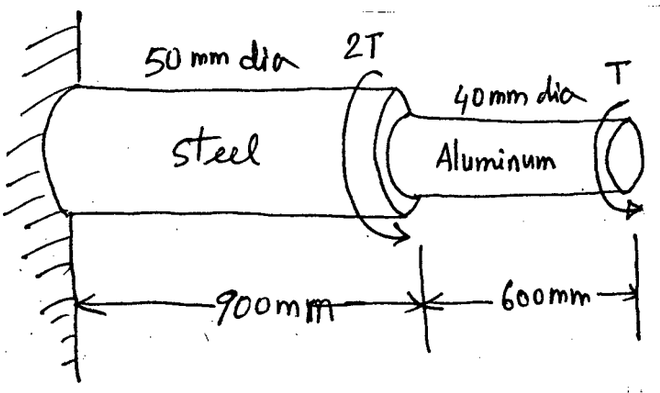



Fig. for Q. No. 3(a)

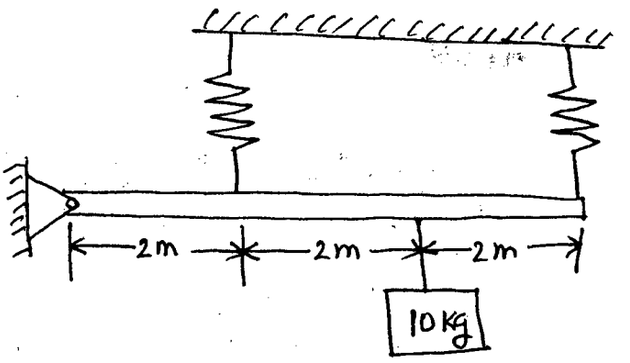



Fig. for Q. No. 3(b)

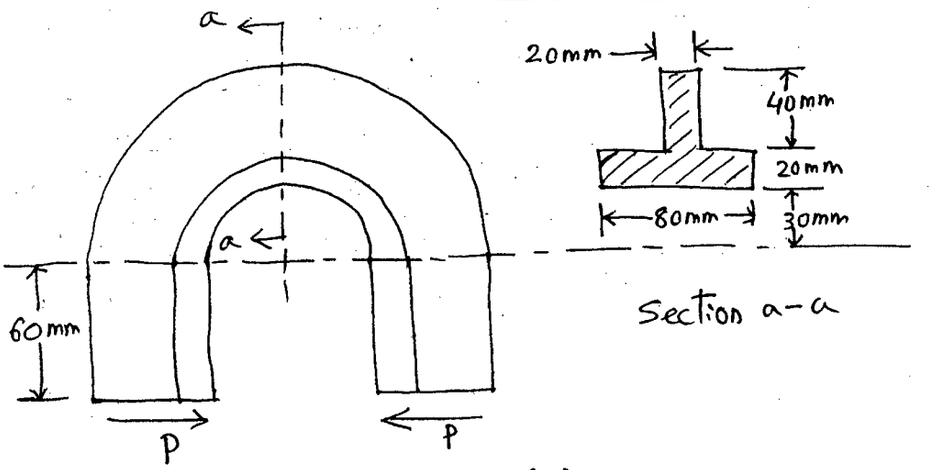
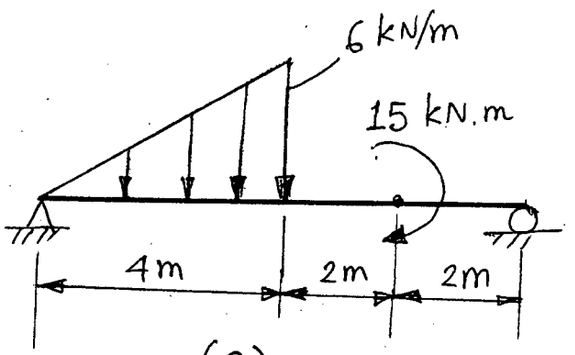
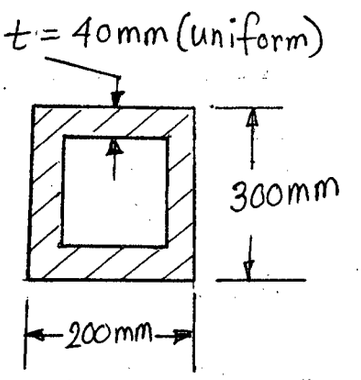



Fig. for Q. 4(b)




(a)




(b)

FIG. for Q.5

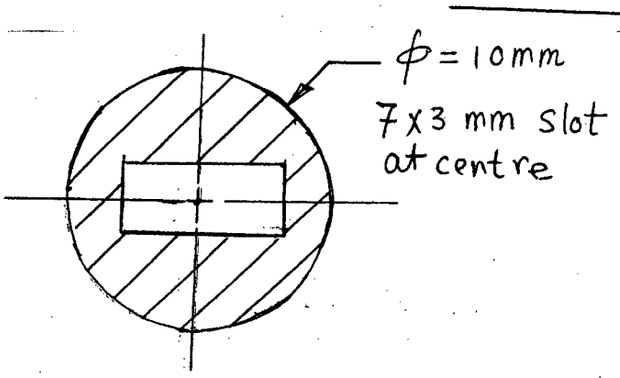



FIG. for Q. 6(b)

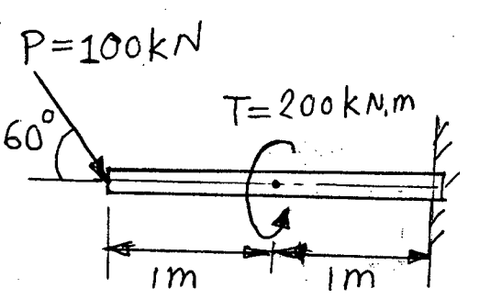



FIG. for Q. 7(b)

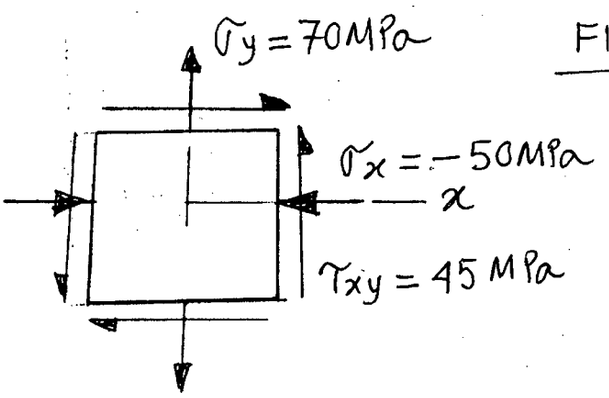



FIG for Q. 8(a)

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**L-2/T-2/ME** **Date : 05/10/2013**

BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY, DHAKA

L-2/T-2 B. Sc. Engineering Examinations 2011-2012

Sub : **ME 261** (Numerical Analysis)

Full Marks: 140 Time : 3 Hours

USE SEPARATE SCRIPTS FOR EACH SECTION

The figures in the margin indicate full marks.

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## SECTION – A

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

Symbols have their usual meaning. Assume reasonable value for any missing data.

1. (a) Determine the roots of the following non-linear system of equations using Newton-Raphson method, **(17)**

$$x^2 + y^2 = 4$$

$$e^x + y = 1$$

Use initial guesses as $[x_0, y_0] = [1, -1.7]$

Perform two sets of iterations and comment on the results.

(b) Discuss the properties of "ill-conditioned" systems in the context of linear systems of equations. Compute the error magnification factor of the following system, **(18)**

$$\begin{bmatrix} 1 & 1 \\ 1.0001 & 1 \end{bmatrix} \begin{Bmatrix} x_1 \\ x_2 \end{Bmatrix} = \begin{Bmatrix} 2 \\ 2.0001 \end{Bmatrix}$$

$$\text{with } x_{exact} = \begin{Bmatrix} 1 \\ 1 \end{Bmatrix} \text{ and } x_{computed} = \begin{Bmatrix} -1 \\ 3.0001 \end{Bmatrix}$$

Consider ∞-norm for errors.

2. (a) (i) Derive a backward difference formula for the first derivative with error term $O(h^3)$.

(ii) use this formula to evaluate $f'(x)$ at $x = 2$ for the following function (consider step size h = 0.1) **(20)**

$$f(x) = e^{-2x} - x$$

(iii) Compute the relative error from the analytical derivative for the numerical result obtained in part (ii).

(b) Discuss the convergence criteria for Gauss-Seidel method used to solve linear systems of equations. **(5)**

(c) Assume that your computer can solve a 2000 × 2000 linear system Ax = b in 1 second by Gauss elimination method. Estimate the time required to solve 100 systems of 8000 equations in 8000 unknowns with the same coefficient matrix, using LU factorization method. How much time is saved (in percentage)? **(10)**

Contd ..... P/2

## ME 261

3. (a) Solve the following system of linear equations by Jacobi's method, **(15)**

$$\begin{bmatrix} 6 & -2 & 1 \\ 1 & 2 & -5 \\ -2 & 7 & 2 \end{bmatrix} \begin{Bmatrix} x_1 \\ x_2 \\ x_3 \end{Bmatrix} = \begin{Bmatrix} 11 \\ -1 \\ 5 \end{Bmatrix}$$

Consider $\|E_{absolute}\|_\infty \leq 0.1$. (note: E stands for error between two consecutive iteration).

(b) (i) How many function evaluations are required in each iteration in Newton's method used to find a root of a non-linear equation? Name them. **(15)**

(ii) Suggest a method to reduce the number of function evaluations in Newton's method, and explain the suggested method with proper "schematic diagram" and "algorithm".

(iii) How many function evaluations are required in each iteration in your suggested method? What is the percentage reduction?

(c) Briefly discuss the algorithm to compute the inverse of a matrix in Column-by-Column fashion. (Assume A = LU is given). **(5)**

4. (a) Use the Bisection method to find a root of $3x + \sin(x) - e^x = 0$ in the interval [0, 1] to four correct decimal places. Also comment on the convergence pattern. **(17)**

(b) Discuss the followings in the context of errors in computing using computers and suggest ways to reduce them, **(10)**

(i) Large computations; (ii) Adding a large and a small number; (iii) Smearing; (iv) Subtractive cancellation.

(c) Define absolute error and relative error. Can you use absolute error in all cases? Justify your answer with proper example. **(8)**

**ME 261**

## SECTION – B

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

Symbols have their usual meaning.

5. Consider the integral **(35)**

$$I = \int_0^1 \exp(x)\,dx$$

(a) Evaluate the integral using Simpson's $\frac{1}{3}$ rule with a step size(h) small enough to guarantee four-decimal place accuracy. What is the maximum size for h?

(b) Repeat the integration using Simpson's $\frac{3}{8}$ rule with a value of h small enough to guarantee four-decimal place accuracy. What is the corresponding maximum size for h?

(c) What would be the corresponding values of h for the two methods which would ensure five-decimal place accuracy?

6. **(35)**

| $x$ | 1.0 | 2.5 | 3.5 | 4.0 |
|---|---|---|---|---|
| $y$ | 3.8 | 15.0 | 26.0 | 33.0 |

(a) Obtain a least-squares fit to the above experimental data points using the approximating function $y = C_1 + C_2 x^2$

(b) Repeat the least-squares fitting using the approximating function $y = C_1 + C_2 x + C_3 x^2$

(c) Determine which of the functions obtained best represents the given experimental data.

7. (a) Give the mathematical and graphical interpretations of the Classical Fourth-Order R-K method for solving ordinary differential equations. **(18)**

(b) The displacement field of a particular deformed body is governed by the following set of algebraic equations: **(17)**

$$\begin{aligned} 3u_x + 2u_y + 4u_z &= 0 \\ 2u_x \qquad\quad + 2u_z &= 0 \\ 4u_x + 2u_y + 3u_z &= 0 \end{aligned}$$

With reference to the above physical problem, explain the concepts of characteristic-value problem, characteristic equation, characteristic values and Eigen vectors.

Contd ..... P/4

**ME 261**

8. **(35)**

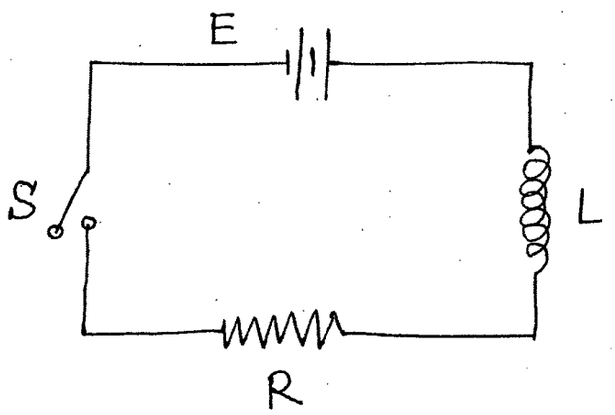


Fig. for Q 8

The above resistance-inductance CKT contains a source of emf (E), an inductance (L), a resistor (R) and a switch (S). The magnitude of the resistance varies with current (I) as

$$R = r_1 + r_2 I^2$$

Applying Kirchhoff's voltage law to the CKT loop, the following equation is obtained:

$$E = L\frac{dI}{dt} + RI$$

Switch S is closed at time t = 0 and the current flow is desired as a function of time for $t > 0$.

Assume the parameter values for the present example as

E = 200 Volts, L = 3 henries, $r_1$ = 100 Ω, $r_2$ = 50 Ω/A$^2$

Determine the first three steps solution for the current flow in the CKT with a time step of 0.002 sec using Ralston's method.

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L-2/T-2/ME Date : 21/09/2013

BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY, DHAKA

L-2/T-2 B. Sc. Engineering Examinations 2011-2012

Sub : **HUM 201** (Sociology)

Full Marks : 210 Time : 3 Hours

The figures in the margin indicate full marks.

USE SEPARATE SCRIPTS FOR EACH SECTION

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## SECTION – A

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

1. (a) What do you mean by natural environment and artificial environment? How would you explain the environmental justice? **(10)**

   (b) Define with examples, green category and orange category A industry. **(10)**

   (c) How can environmental destruction be brought under control? **(15)**

2. (a) What do you mean by human migration? Identify the social forces affecting migration. **(12)**

   (b) How would you distinguish between crime and deviance? **(8)**

   (c) What is nuclear family? What functions does the family perform for society? **(15)**

3. (a) Write down the classification of cities with examples, according to urban sociologists. **(8)**

   (b) Define capitalism. Briefly describe the features of capitalism. **(15)**

   (c) Critically discuss the evolution of cities. **(12)**

4. Write short notes on any THREE of the following: **(35)**

   (a) Consequences of global warming

   (b) Relationship between physical environment and social development

   (c) Malthusian population theory

   (d) The growth of cities

## SECTION – B

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

5. (a) 'Sociology is the study of social relationships' – Justify this statement on the basis of nature of sociology. **(10)**

   (b) 'Ethnocentrism is a habit to judge other ways of life by the standards of our own group' – Explain. **(10)**

   (c) How does functionalist differ from conflict viewer for explaining human society and it's elements? **(15)**

Contd ..... P/2

**HUM 201**

6. (a) What do you understand by socialization? Critically evaluate the influence of family and peer group in the process of socialization. **(10)**

   (b) Define culture. Make a comparison between culture and civilization. **(15)**

   (c) Explain primary socialization and anticipatory socialization with suitable examples. **(10)**

7. (a) What do you understand by poverty? Write the features of absolute poverty and relative poverty in the context of Bangladesh. **(10)**

   (b) Explain the socio-cultural causes of poverty in Bangladesh. **(10)**

   (c) Define globalization. Illustrate the contribution of mass media and technology in the process of globalization. **(15)**

8. Write short notes on any three of the following: **(35)**

   (a) Karl Marx's view of culture and technology

   (b) Looking glass self theory

   (c) System of social stratification

   (d) Social values and norms

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Marut 21/09/13

L-2/T-2/ME Date : 21/09/2013

BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY, DHAKA

L-2/T-2 B. Sc. Engineering Examinations 2011-2012

Sub : **HUM 203** (Government)

Full Marks : 210 Time : 3 Hours

The figures in the margin indicate full marks.

USE SEPARATE SCRIPTS FOR EACH SECTION

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## SECTION – A

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

1. (a) Make a comparative discussion on society and state. **(15)**

   (b) What is the significance of the concept of nationalism? Analyze the merits of nationalism. **(20)**

2. (a) Discuss the political rights and duties of a citizen in a state. **(15)**

   (b) Classify democratic form of government. Which form of government do you like most and why? **(20)**

3. (a) Analyze the functions of executive in a state. **(15)**

   (b) Discuss the advantages and disadvantages of parliamentary form of government. **(20)**

4. (a) Examine the agenda for good governance. **(15)**

   (b) Define bureaucracy. Explain the features of Max Weber's Ideal Type of Bureaucracy. **(20)**

## SECTION – B

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

5. (a) Critically explain the principles of Marxism. **(20)**

   (b) Discuss the significance of the language movement of 1952. **(15)**

6. (a) Review the determinants of foreign policy of Bangladesh. **(20)**

   (b) Define local government. Discuss the functions of local government in Bangladesh. **(15)**

7. (a) Explain the salient features of the constitution of Bangladesh. **(20)**

   (b) Discuss the major characteristics of the constitution of United Kingdom (UK). **(15)**

8. (a) What do you know about United Nations Organization? Explain the major organs of United Nations Organization. **(20)**

   (b) Discuss the power and functions of the president of United States of America (USA). **(15)**

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