Khulna University of Engineering & Technology

Department of Building Engineering and Construction Management

B. Sc. Engineering 2nd Year 1st Term Regular Examination, 2018

BECM 2101

(Building Engineering System)

Full Marks: 210   Time: 3 hrs

N.B. i) Answer any three questions from each section in separate script.

  ii) Figures in right margin indicate full marks.

Section - A

1. (a) Write down the objectives and elements of water supply. Discuss the planning and design considerations of a water supply project in Khulna. (09)

  (b) Deduce, $Q = \dfrac{\pi K(D^2 - d^2)}{\log_e (\frac{R}{r})}$, where the symbols bear usual meaning with neat sketch. (07)

  (c) Define aquiclude and co-efficient of transmissibility. Calculate the flow in each pipe in the following looped network by Handy-Cross method with two trials. (19)
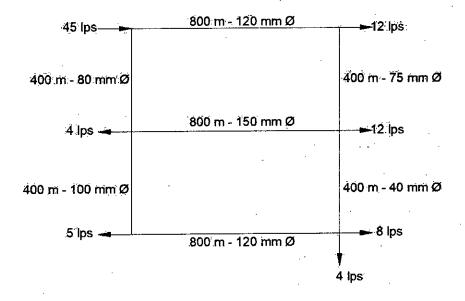

Figure – Question 1 (c)

2. (a) Define septic tank. Name the performance parameters of septic tank. Draw a septic tank showing its different parts with proper notations. Design a septic tank to serve a household of 120 persons who produce 190 lpcd of wastewater. The tank is to be desuldged every two years. Also, design the soak pit for that septic tank when long tern infiltration rate is 50 l/m² –day. (20)

  (b) Explain hydro-pneumatic pumping system with necessary sketch. (08)

  (c) Explain various types of drainage system. (07)

3. (a) Deduce, $Q = \dfrac{A_2}{\sqrt{1-\frac{A_2^2}{A_1^2}}}\cdot\sqrt{2g(h_1^* - h_2^*)}$, where the symbols bear usual (20)

meaning. Water is to be supplied in a ten-storied building having four flats in each floor. Each flat is provided with two toilets, a kitchen and average number of persons living per flat is 5. The municipal water supply in the area is intermittent and irregular with supply restricted to 2 hours in morning and 4 hours in evening. Separate water meters are not provided in flats. Design the motor power to be installed to ensure continuous tank supply. The living standard do require average daily demand of 200 lpcd.

(b) Write short notes on i) Stop cocks and ii) Bib cocks. (06)

(c) Describe briefly the domestic underground water tanks. (09)

4. (a) Water supply is provided in an eight storied building through an (25) overhead tank installed at terrace @ 1m height. The height of each floor is 3m and water taps are installed @ 1m height in each floor. One down take pipe from the tank is serving two flats in each floor, and each flat is provided with the following water supply fixture, mentioned distance from down take:

1. W.C (FU = 1) - flushing tank type @ 8 m.

2. W.B (FU = 1) - @ 5 m.

3. Bath tap with showers (FU = 4) - @ 4.5 m.

4. Kitchen sink (FU = 2) - @ 1.5 m.

Design pipe diameter for the main (down take) as well as the top floor branch line only. The probable simultaneous demand may be worked out Table-1. Suitable values of discharge rates may be assumed from tables.

Table-1		Table-2	
Load in FU	Probable flow in pipe (lps)	Pipe Fittings	Equivalent length in diameter
1	0.12	90⁰ Elbow	30
2	0.24	Tee	40
6	0.30	Gate valve	20
8	0.30	Globe valve, bib taps	300
16	0.40		
32	0.50	Table -3	
48	0.60	15 mm ∅	100%
64	0.90	20 mm ∅	100%
80	1.0	25 mm ∅	50%
96	1.25	50 mm ∅	25%
112	1.30		
200	2.30		
500	4.20		

(b) What are the general requirements of domestic water storage tanks? (10)

Section – B

5. (a) What do you mean by HVAC? Briefly explain the terms involved in HVAC system. (09)

    (b) What are the needs of HVAC system? Write down the advantages and disadvantages of HVAC system. (11)

    (c) Describe refrigeration system. Mention its types. Briefly describe primary and secondary refrigeration. (15)

6. (a) What is refrigerant? Write down the properties of a good refrigerant. (10)

    (b) Describe the functions of different components of vapour compression refrigeration system with suitable block diagram. (15)

    (c) Differentiate between vapour compression and vapour refrigeration system. (10)

7. (a) Define air conditioning. Also classify air conditioning system. (10)

    (b) What is human comfort? Describe the factors affecting human comfort. (10)

    (c) Describe summer air conditioning system with suitable block diagram. Also differentiate between summer and winter air conditioning system. (15)

8. (a) Write down the objectives and advantages of DCS. Also explain why it is environmental friendly? (12)

    (b) Define: i) Psychrometry and ii) Psychrometric chart. (08)

    (c) Write short notes on: i) Moist air ii) Humidity and iii) Dew point temperature. Also differentiate between humidification and dehumidification process. (15)

Khulna University of Engineering & Technology
Department of Building Engineering and Construction Management
B. Sc. Engineering 2nd Year 1st Term, Regular Examination, 2018
BECM 2151
(Aesthetics and Design)

Full Marks: 210 Time: 3 hrs

N.B. i) Answer any three questions from each section in separate script.

ii) Figures in the right margin indicate full marks.

Section – A

1. (a) How can we define Aesthetics? Does Aesthetics have any utilitarian value for a designer? (15)

(b) Write down the differences between Art, Science and Design? (10)

(c) What are the universal theories of beauty and art? (05)

(d) Explain the various function of art in your life. (05)

2. (a) Broadly describe the mediaeval period (Art, Architecture and Sculpture). (15)

(b) Write down the differences about stationary art and portable art. (10)

(c) Every cubic art is abstract art but every abstract art is not cubic - explain it. (10)

3. (a) Write shortly about the following statements concerning music: (4x5)
   (i) Music is entertainment of soul
   (ii) Rhythm is the element of "TIME" in music
   (iii) Harmony vs. melody
   (iv) Music originated from voice

(b) Illustrate music as element of aesthetics to expand architectural design idea. (15)

4. (a) The renaissance reached its zenith by the work of Italian masters - explain it with necessary example. (15)

(b) Write short note on given topics: (3x5)
   (i) Raga
   (ii) Plato's theory about Art
   (iii) New stone age

(c) What is dynamics in music? (05)

Section – B

5. (a) "Design is expressed by a language of line, form, texture and its space". Explain how this language is expressed? (15)

(b) Can you explain in your own words that "The form and shape of void is the definition of its space"? (10)

(c) Do you agree or disagree with "Architecture is nothing but an applied art'? Show your logic. (10)

6. (a) Can you defend your position about "All designs are composition but all compositions are not design"? (10)

(b) Briefly discuss about the ideas of design. (17)

(c) What differences exist among vernacular, traditional and professional design ideas? (08)

7. (a) Briefly discuss about the five principles of design with neat sketches.   (15

    (b) By using Axis and Datum how a building designer can achieve unity in design?   (10

    (c) Show the properties and uses of lines and planes in designing a building.   (10

8. (a) Provide the definition of space from the point of view of a building designer. How   (10)
         perception of space depends on the properties of enclosure and visual qualities of
         space? Illustrate it with necessary sketches.

    (b) Can you differentiate the main ideas among normative, interpretive and descriptive   (10)
         criticism?

    (c) What does it mean by design in nature? Illustrate the nature responsive design   (15)
         character.

Khulna University of Engineering & Technology
Department of Building Engineering and Construction Management
B. Sc. Engineering 2nd Year 1st Term Regular Examination, 2018

CE 2111
(Mechanics of Solids – I)

Full Marks: 210   Time: 3 hrs

N.B. i) Answer any three questions from each section in separate script.

     ii) Figures in right margin indicate full marks.

Section - A

1. (a) What is strength of materials? Define beam. Classify beam with neat (10) sketches. Briefly describe types of load on beam.

    (b) Show that the change of bending moment between any two sections is (10) equal to the area of the shear diagram of the interval.

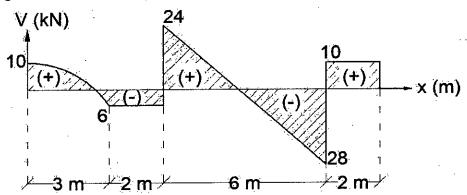   (c) Draw the moment and load diagram corresponding to the given shear (15) diagram as shown in figure below.

Figure – Question 1 (c)

2. (a) Write short notes on: (i) Dangerous section, (ii) Point of contra-flexure, (10) (iii) Inflection Points, (iv) Neutra surface

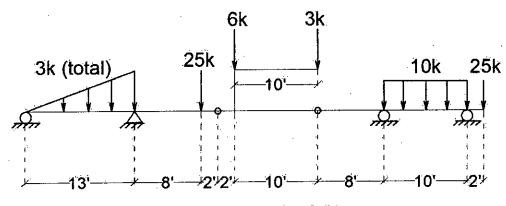   (b) Draw the SFD and BMD for the structures as shown in figure below. (25)

Figure – Question 2 (b)

3. (a) Differentiate between statically determinate and statically (05) indeterminate beam.

    (b) A portion of the floor plan of a certain building is shown in figure below. (30) The total loading (including live and dead load) in each bay is shown in figure below. Determine the size of the section of the beam (B-1), (B-

2) and (B-3) if the maximum allowable flexural stress are 150 MPa, 160 MPa and 155 MPa respectively. Assume the beams are adequately braced and the depth of cross-section is 1.40 times the width.
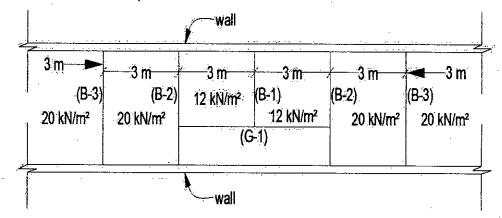

Figure – Question 3 (b)

4. (a) What is flexural stress? What are the assumptions taken to derive the flexure stress formula? Derive flexure formula. (10)

(b) In a laboratory test of a beam loaded by end couples, the fibers at layer AB in the following figure found to 40×10^{-3} mm while those at CD decrease 85×10^{-3} mm in the 250 mm gauge length. Using, E = 75 GPa determine the flexure stress in the top and bottom fiber. (10)
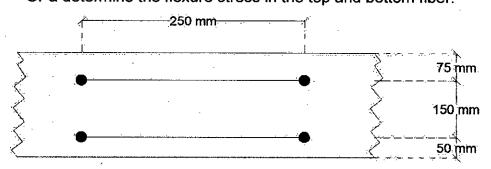

Figure – Question 4 (b)

(c) At section (i) – (i) for the beam, loaded as shown in figure, find (a) the maximum normal stress at (i) – (i), (b) the normal stress midway between the top and the bottom fibers. (15)
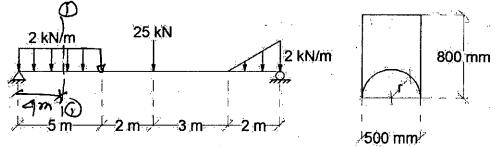

Figure – Question 4 (c)

Section – B

5. (a) Define normal stress, shearing stress and bearing stress. A 8-inch square steel bearing plate lies between a 5-inch diameter wooden post and a concrete footing as shown in figure below. Determine the safe (18)

value of the axial load F if the stress in wood is limited to 1700 psi and that in concrete to 700 psi.

(b) Draw a typical stress-strain diagram of mild steel and show: (i) (17) proportional limit (ii) yield point (iii) ultimate strength and (iv) rupture point with their definition. A glued lap splice is to be made in a 10 x 20 mm rectangular member at $\alpha = 20°$, as shown in the figure. Assuming that, the shear strength of the glued joint controls the design, what axial force P can be applied to the member? Assume the shear strength of the glued joint to be 10 MPa.
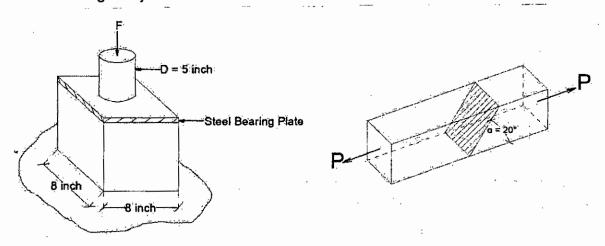

Figure – Question 5 (a)   Figure – Question 5 (b)

6. (a) Distinguish between: (i) isotropic, anisotropic and orthotropic material (18) (ii) Modulus of elasticity and modulus of rigidity. A water tank, 20 ft in diameter, is made from steel plates that are
    maximum height to which the tank may be filled if the circumferential stress is limited to 10000 psi. The specific weight of water is 62.4 lb/ft³.

    (b) Define Poisson's ratio, tangent modulus, strain hardening and (17) relaxation. A bracket consisting of an I-section is connected to the flange of vertical column as shown in figure below. The bracket carries a load of 100 kN at an eccentricity of 150 mm. Find the size of the weld required for the bracket, if the permissible stress in the weld is 100 MPa.
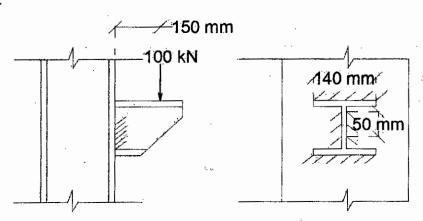

Figure – Question 6 (b)

7. (a) Define: Modulus of resilience, modulus of toughness, working stress. (20) A rigid bar of negligible weight is supported as shown in figure below. If W = 100 kN, compute the temperature change that will cause the

stress in the steel rod to be 60 MPa. Assume the co-efficient of linear expansion are 11.7 μm/(m.°C) for steel and 18.9 μm/(m.°C) for bronze.
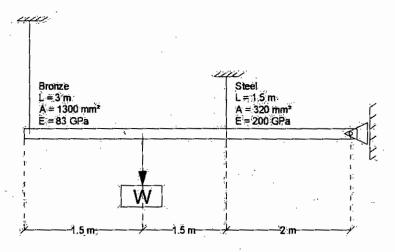

Figure – Question 7 (a)

(b) State Castigliano's theorem. Find the ratio of internal strain energy (15) from the following figure if both are of rectangular cross section and of equal depth and materials are identical.
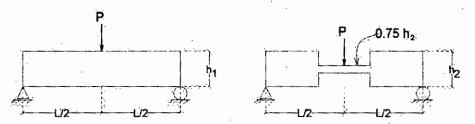

Figure – Question 7 (b)

8. (a) Define the following terms: Ductility, brittleness, permanent set, (17) toughness and stiffness. A rectangular bar 500 mm long and 100 m x 50 mm in cross – section is subjected to forces as shown below. What is the change of volume of the bar? Take modulus of elasticity for the bar material as 200 GPa and Poisson's ratio as 0.25.

(b) Define cyclic loading and fatigue. The rigid platform shown in figure (18) below has negligible mass and rests on two steel bars, each 200.00 mm long. The center bar is aluminum and 198.80 mm long. Compute the stress in the aluminum bar, after the center after P = 500 kN has been applied. For each steel bar, the area is 1200 mm² and E = 200 GPa. For the aluminum bar, the area is 2400 mm² and E = 70 GPa.
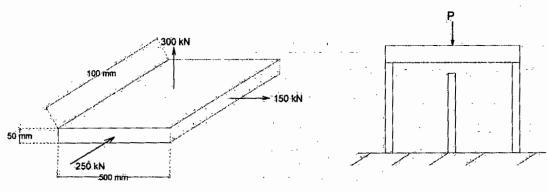

Figure – Question 8 (a)

Figure – Question 8 (b)

Khulna University of Engineering & Technology
Department of Building Engineering and Construction Management
B. Sc. Engineering 2nd Year 1st Term Regular Examination, 2018
Math 2123
(Mathematics III)

Full Marks: 210   Time: 3 hrs

N.B.   i)   Answer any three questions from each section in separate script.
            ii)   Figures in the right margin indicate full marks.

Section – A

1. (a) Define orthogonal matrix, Hermitian matrix, Idempotent matrix and lower   (12)
         triangular matrix with example.

    (b) Express the matrix $A=\begin{bmatrix} 1 & 1 & 3 \\ 5 & 2 & 6 \\ 2 & -1 & -3 \end{bmatrix}$ as the sum of a symmetric and skew-   (10)

         symmetric matrix.

    (c) Find the inverse of the following matrix applying elementary row transformation.   (13)
         $A=\begin{bmatrix} -2 & 1 & 3 \\ 0 & -1 & 1 \\ 1 & 2 & 0 \end{bmatrix}$

2. (a) Reduce the matrix $A=\begin{bmatrix} 2 & 1 & -1 & 3 \\ -3 & 0 & 1 & -2 \\ -4 & 5 & 0 & -1 \end{bmatrix}$ to echelon form and then to   (12)

         canonical form and then to normal form. Hence find its rank.

    (b) Find the non-singular matrices P and Q such that PAQ is the normal form ,   (15)
         where $A=\begin{bmatrix} 2 & -1 & 3 & 4 \\ -1 & -3 & 0 & 1 \\ 1 & -2 & -1 & 2 \end{bmatrix}$.

    (c) Show that the diagonal elements of a skew-symmetric matrix are zero.   (08)

3. (a) When the system of linear equations are called consistent? Determine the   (14)
         value of a so that the following equations has (i) no solution (ii) non-zero unique
         solution (iii) Infinite solution:
         x+y-z=1; 2x+3y+az=3 ; x+ay+3z=2.

    (b) Check the following system of linear equations are consistent or not. If   (11)
         consistent then find the non-trivial solutions of them:
         $2x_1-3x_2+x_3+5x_4=2$
         $-x_1-2x_3+x_4=3$
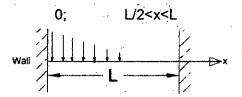 $3x_1+2x_2-x_3+2x_4= -1$

    (c) If $A=\begin{bmatrix} a_{11} & a_{12} & a_{13} \\ a_{21} & a_{22} & a_{23} \end{bmatrix}$, then show that trace (AA')=trace (A'A).   (10)

4. (a) Define elementary matrix and equivalent matrix with examples.   (07)

    (b) Show that if A is involuntary then $\frac{1}{2}$(I+A) and then $\frac{1}{2}$(I - A) are idempotent.   (08)

(c) Define Eigen values and Eigen vector and write its three properties. And also (20)
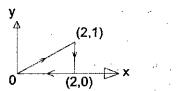find the Eigen values and Eigen vector corresponding to one of the Eigen value
of the matrix $B = \begin{bmatrix} 1 & -3 & 3 \\ 3 & -5 & 3 \\ 6 & -6 & 4 \end{bmatrix}$

Section – B

5. (a) State the sufficient conditions for the existence of Laplace transform of (12)
functions. Find Laplace transform of $\int(t) = \frac{1}{\sqrt{t}}$; $0<t<\infty$ if exist.

(b) Find the Laplace transform of g(t), where $g(t) = \int_0^t \frac{\sin u}{u} du + te^{2t}\cos 2t$. (13)

(c) Using convolution theorem find the inverse Laplace transform of $\frac{1}{s^2(s+1)^2}$. (10)

6. (a) Using Laplace transform solve the following equation (15)
$$\frac{d^2x}{dt^2} - 2\frac{dx}{dt} + x = e^t \text{ with } x = 2, \frac{dx}{dt} = -1 \text{ at } t = 0$$

(b) A beam of length L is embedded at both ends as shown in figure below. Find (20)
the deflection of the beam when the load is given by
$w(x) = w_0(1-\frac{2}{L}x)$; $0<x<\frac{L}{2}$

0; $L/2<x<L$

7. (a) Geometrically interpret the scalar triple product and use it to determine (10)
whether the following set of vectors are linearly dependent or not:
$\vec{A} = \hat{\imath} - 3\hat{\jmath} + 2\hat{k}, \vec{B} = 3\hat{\imath} + 2\hat{\jmath} - \hat{k}, \vec{C} = 2\hat{\imath} + \hat{\jmath} - 3\hat{k}$.

(b) A force $\vec{F} = 3\hat{\imath} + 2\hat{\jmath} - 4\hat{k}$ is applied at the point (1,-1, 2).Find the moment of (10)
the force about the point (2, -1, 3).

(c) Show that the vector field represented by (15)
$\vec{F} = (z^2 + 2x + 3y)\hat{\imath} + (3x + 2y + z)\hat{\jmath} + (y + 2zx)\hat{k}$ is not solenoidal. Is $\vec{F}$
conservative? If so, find its scalar potential ø.

8. (a) Find the value of a and b so that the surface ax^2-byz= (a+z) will be (10)
orthogonal to the surface $4x^2y+z^3=4$ at the point (1, -1, 2).

(b) If $\vec{F} = (2x + y^2)\hat{\imath} + (3y - 4x)\hat{\jmath}$ evaluate the $\int_c \vec{F}.d\vec{r}$ around the triangle c of (10)
below figure in the directed path:

(c) Evaluate $\iint_s \underline{A}.\underline{n}\,ds$, where $\underline{A} = z\underline{i} + x\underline{j} - 3y^2z\underline{k}$ and s is the surface of the (15)
cylinder $x^2+y^2=16$ included in the first octant between z=0 and z=5.

Full Marks: 210   Time: 3 hrs

N.B.   i)   Answer any three questions from each section in separate scripts.
           ii) Figures in the right margin indicate full marks.

Section – A

1. (a)   Define economics and engineering economics. What are the fundamental (10)
          principles of engineering economics?

    (b)   Define law of demand. Why the demand curve is downward sloping?   (15)

    (c)   Explain the determinants of supply.   (10)

2. (a)   What is market equilibrium? Explain market equilibrium with the help of (10)
          demand and supply curve.

    (b)   Solve the problem: (25)
          There are 10,000 identical individuals in the market for commodity x, each with
          a demand equation is given by $\theta_{dx} = 12 - 2P_x$, and 1000 identical producers of

          commodity x, each with a supply equation is given by $\theta_{sx} = 20P_x$.

          (i) Find the market demand and market supply equation for commodity x.
          (ii) Obtain equation price and quantity.
          Now, if the government decides to collect sales tax $2 per unit sold, from each
          of the 1000 sellers of commodity x.
          (iii) What effect does this have on the equilibrium price and quantity of
          commodity x?
          (iv) Who actually pays the tax?
          (v) What is the total amount of taxes collected by the government?

3. (a)   What is price-elasticity of demand? Explain the types of price-elasticity of (10)
          demand with example.

    (b)   The "Meghna Corporation" is a producer of cement. The corporation hires an (25)
          economist to determine the demand for its cement. After months of hard work
          the economist informed that the demand for its product is given by the
          following equation:

          $\theta_x = 12000 - 5000P_x + 5I + 500P_c$

          where, P_x, is the price charged for Meghna cement.

          I, is the income per capita.

          P_c, is the price of cement from competing producer.

          Assume that the initial values of P_x, I and P_c are $5, $10000 and $6
          respectively.
          Using the above information the manager wanted to determine –
          (i) What effect a price increased would have on total revenues.
          (ii) Evaluate how sale of the product would change during a period of rising
          incomes.
          (iii) Asses the probable impact if competing producer would raise their prices.

4. (a) Define market. Write down the forms of market. (05)

(b) What is short-run? For a given price, explain how the perfect competitive firm (20) chooses the level of output that maximizes profit.

(c) Identify the shut-down position of a firm in the short-run under perfect (10) competition.

Section – B

5. (a) What is accounting? Who are the users of accounting information? (15)

(b) Identity and describe the steps of accounting cycle. (10)

(c) Describe the basic rules of debit and credit of accounts. (10)

6. (a) What is transaction? State the characteristics of transaction. (08)

(b) Mr. Turjo started business by bringing cash Tk. 75,000 as his capital on (27) January 01, 2017. Other transactions during the month are as follows:
January 05: Goods purchased for cash Tk. 35,000.
January 07: Goods sold for cash Tk. 15,000.
January 10: Purchased furniture for cash Tk. 12,000.
January 15: Withdrawn goods for personal use Tk. 2000.
January 18: Goods sold on credit Tk. 18,000.
January 22: Cash withdrawn by the owner Tk. 4000.
January 28: Cash received from account receivable Tk. 12,500.
January 31: Salaries paid in cash for the month Tk. 6,500.

Required: Give journal entries and prepare necessary ledger accounts.

7. (a) Define cash book. Show the classification of cash book. (10)

(b) The transactions of M/S Mahim & Co. for the month of May, 2018 are as (25) follows:
May 01: Opening cash balance Tk. 25,500 and balance of bank Tk. 24,000.
May 03: Goods purchase for cash Tk. 10,000 and goods sales for cash Tk. 18,000.
May 05: Received a cheque of Tk. 12,000 from Masud & Sons and deposited the same in to the bank immediately.
May 08: Drawing cash from bank Tk. 8,000 for office.
May 11: Purchased equipment for cash Tk. 6000.
May 15: Paid to Robi & Co. Tk. 1,600 in cash and Tk. 2,500 by cheque.
May 21: Deposited cash in to the bank Tk. 4000.
May 27: Bank interest credited Tk. 200 and bank charges debited Tk. 100.
May 31: Salaries paid in cash Tk. 5,000 and rent paid by cheque Tk. 3,000.

Required: Double column cash book in the books of M/S Mahim & Co.

8. The trial balance of Meghna Enterprise are as follows for the year ended (35) December 31, 2017:

Account Title	Debit Taka	Credit Taka
Cash	23,200	
Account Receivable	60,000	
Supplies	15,000	

Prepaid Insurance	18,000	
Equipment	2,80,000	
Accumulated Depreciation Equipment		20,000
Notes Payable		35,000
Accounts Payable		30,000
Capital		1,70,000
Drawing	16,00	
Service Revenue		2,25,000
Rent Expenses	19,800	
Utilities Expense	14,000	
Salaries Expense	26,000	
Advertisement Expense	8,000	
	4,80,000	4,80,000

Adjustments:

(i) Service performed but not yet billed for Tk. 12,500.

(ii) Insurance expires at the rate of Tk. 800 per mongth.

(iii) Depreciation on equipment @ 5% per annum.

Required:

(i) Prepare a statement of comprehensive income (income statement);

(ii) Owners equity statement and

(iii) Statement of financial position (balance sheet) as on December 31, 2017.

Khulna University of Engineering & Technology
Department of Building Engineering & Construction Management
B. Sc. Engineering 2ⁿᵈ Year 1ˢᵗ Term Regular Examination, 2018
Hum 2123
(Engineering Economics and Financial Accounting)

Full Marks: 210   Time: 3 hrs

N.B.   i)   Answer any three questions from each section in separate scripts.
      ii)   Figures in the right margin indicate full marks.

Section – A

1. (a) Define economics and engineering economics. What are the fundamental principles of engineering economics? (10)

   (b) Define law of demand. Why the demand curve is downward sloping? (15)

   (c) Explain the determinants of supply. (10)

2. (a) What is market equilibrium? Explain market equilibrium with the help of demand and supply curve. (10)

   (b) Solve the problem: (25)
   There are 10,000 identical individuals in the market for commodity x, each with a demand equation is given by $\theta_{dx} = 12 - 2P_x$, and 1000 identical producers of commodity x, each with a supply equation is given by $\theta_{sx} = 20P_x$.
   (i) Find the market demand and market supply equation for commodity x.
   (ii) Obtain equation price and quantity.
   Now, if the government decides to collect sales tax $2 per unit sold, from each of the 1000 sellers of commodity x.
   (iii) What effect does this have on the equilibrium price and quantity of commodity x?
   (iv) Who actually pays the tax?
   (v) What is the total amount of taxes collected by the government?

3. (a) What is price-elasticity of demand? Explain the types of price-elasticity of demand with example. (10)

   (b) The "Meghna Corporation" is a producer of cement. The corporation hires an economist to determine the demand for its cement. After months of hard work the economist informed that the demand for its product is given by the following equation: (25)

   $\theta_x = 12000 - 5000P_x + 5I + 500P_c$

   where, P_x, is the price charged for Meghna cement.

   I, is the income per capita.

   P_c, is the price of cement from competing producer.

   Assume that the initial values of P_x, I and P_c are $5, $10000 and $6 respectively.
   Using the above information the manager wanted to determine -
   (i) What effect a price increased would have on total revenues.
   (ii) Evaluate how sale of the product would change during a period of rising incomes.
   (iii) Asses the probable impact if competing producer would raise their prices.

4. (a) Define market. Write down the forms of market. (05)

(b) What is short-run? For a given price, explain how the perfect competitive firm (20) chooses the level of output that maximizes profit.

(c) Identify the shut-down position of a firm in the short-run under perfect (10) competition.

Section – B

5. (a) What is accounting? Who are the users of accounting information? (15)

(b) Identity and describe the steps of accounting cycle. (10)

(c) Describe the basic rules of debit and credit of accounts. (10)

6. (a) What is transaction? State the characteristics of transaction. (08)

(b) Mr. Turjo started business by bringing cash Tk. 75,000 as his capital on (27) January 01, 2017. Other transactions during the month are as follows:
January 05: Goods purchased for cash Tk. 35,000.
January 07: Goods sold for cash Tk. 15,000.
January 10: Purchased furniture for cash Tk. 12,000.
January 15: Withdrawn goods for personal use Tk. 2000.
January 18: Goods sold on credit Tk. 18,000.
January 22: Cash withdrawn by the owner Tk. 4000.
January 28: Cash received from account receivable Tk. 12,500.
January 31: Salaries paid in cash for the month Tk. 6,500.

Required: Give journal entries and prepare necessary ledger accounts.

7. (a) Define cash book. Show the classification of cash book. (10)

(b) The transactions of M/S Mahim & Co. for the month of May, 2018 are as (25) follows:
May 01: Opening cash balance Tk. 25,500 and balance of bank Tk. 24,000.
May 03: Goods purchase for cash Tk. 10,000 and goods sales for cash Tk. 18,000.
May 05: Received a cheque of Tk. 12,000 from Masud & Sons and deposited the same in to the bank immediately.
May 08: Drawing cash from bank Tk. 8,000 for office.
May 11: Purchased equipment for cash Tk. 6000.
May 15: Paid to Robi & Co. Tk. 1,600 in cash and Tk. 2,500 by cheque.
May 21: Deposited cash in to the bank Tk. 4000.
May 27: Bank interest credited Tk. 200 and bank charges debited Tk. 100.
May 31: Salaries paid in cash Tk. 5,000 and rent paid by cheque Tk. 3,000.

Required: Double column cash book in the books of M/S Mahim & Co.

8. The trial balance of Meghna Enterprise are as follows for the year ended (35) December 31, 2017:

Account Title	Debit Taka	Credit Taka
Cash	23,200	
Account Receivable	60,000	
Supplies	15,000	

Prepaid Insurance	18,000	
Equipment	2,80,000	
Accumulated Depreciation Equipment		20,000
Notes Payable		35,000
Accounts Payable		30,000
Capital		1,70,000
Drawing	16,000	
Service Revenue		2,25,000
Rent Expenses	19,800	
Utilities Expense	14,000	
Salaries Expense	26,000	
Advertisement Expense	8,000	
	4,80,000	4,80,000

Adjustments:

(i) Service performed but not yet billed for Tk. 12,500.

(ii) Insurance expires at the rate of Tk. 800 per mongth.

(iii) Depreciation on equipment @ 5% per annum.

Required:

(i) Prepare a statement of comprehensive income (income statement);

(ii) Owners equity statement and

(iii) Statement of financial position (balance sheet) as on December 31, 2017.