L-1/T-2/URP **Date : 08/07/2013**

BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY, DHAKA

L-1/T-2 BURP Examinations 2011-2012

Sub : **HUM 177** (Macroeconomics)

Full Marks: 210 Time : 3 Hours

USE SEPARATE SCRIPTS FOR EACH SECTION

The figures in the margin indicate full marks.

SECTION – A

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

1. (a) Define GNP at market price. **(5)**

   (b) What are the methods used to measure national income in a developing country like Bangladesh? Explain them. **(15)**

   (c) Explain the problems of measuring national income. **(15)**

2. (a) Define budget surplus. **(5)**

   (b) Given that **(30)**

   $C = 300 + 0.8\ YD$

   $I = 100$

   $G = 100$

   $X = 150$

   $M = 70$

   $TR = 150$

   $T = 100 + 0.15\ Y$

   (i) Calculate equilibrium income and multiplier in this model.

   (ii) if government expenditure increases to 300, what will be the new equilibrium income.

   (iii) Calculate budget surplus.

   (iv) Calculate change in budget surplus.

   (v) if government increases the tax rate to 20% then what will be the new equilibrium income and multiplier.

3. (a) Define central bank. What are the functions of a central bank? **(15)**

   (b) Explain the credit creation process of a commercial bank. **(20)**

4. (a) What is business cycle? What are the phases of a business cycle? **(15)**

   (b) Explain the insider-outsider theory of unemployment. **(20)**

Contd P/2

HUM 177

SECTION – B

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

5. (a) What is macroeconomic equilibrium? Show graphically the macroeconomic equilibrium, full employment equilibrium, above full employment equilibrium and unemployment equilibrium. **(2+8=10)**

(b) Why does aggregate demand curve slope downward? What is the shape of short run and long run aggregate supply curves? **(4+6=10)**

(c) What is a circular flow of income and expenditure? Show injections and leakages in a circular flow of income and expenditure of a four sector economy. **(3+12=15)**

6. (a) Show graphically the impacts of the following changes on either aggregate demand curve or short run aggregate supply curve or long run aggregate supply curve or both: **(5×3=15)**

(i) Invention of new raw materials
(ii) Increasing government expenditure
(iii) Increasing expected future profit
(iv) Decreasing wages
(v) Depreciation of local currency (taka) against dollar.

(b) Derive an aggregate demand curve from the IS-LM analysis. "The steeper the IS curve, the steeper the aggregate demand curve" - justify the statement. **(8+12=20)**

7. (a) Explain the determinants of investment and consumption expenditure. **(20)**

(b) What are the factors that affect the export, import and net export? Derive the net export curve from the export and import curves. **(10+5=15)**

8. (a) What is inflation? What are the causes of demand pull and cost push inflation? **(20)**

(b) Compare graphically the effects of demand pull and cost push inflation on an economy? What do you mean by stagflation? **(15)**

L-1/T-2/URP Date : 23/09/2013

BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY, DHAKA

L-1/T-2 BURP Examinations 2011-2012

Sub : **ARCH 145** (Elements of Architecture)

Full Marks : 140 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 **Q. No. 1** and any **TWO** from the rest.

1. Briefly explain with sketches, as necessary, the main features of building design criteria for 'Warm-Humid' climate in terms of: **(30)**
   (i) Settlement planning
   (ii) Orientation of buildings
   (iii) Type and forms of buildings

2. Explain with sketches the architectural and planning features of King Surgon's palace at Khorshabad. **(20)**

3. Critically discuss 'Realism' in reference to the paintings of Francois Millet and Gustave Courbet. **(20)**

4. Write short notes on any four of the following: **(20)**
   (i) Edfu temple (ii) Main features of Stupa (iii) The Parthenon
   (iv) Evaluation of Pyramids (v) Significant features of impressionist paintings

SECTION – B

There are **FOUR** questions in this section. Answer **Q. No. 5** and any **TWO** from the rest.

5. Write short notes on any three of the followings: **(10×3=30)**
   (a) Primary Elements of Forms (b) Primary Shapes
   (c) Platonic Solids (d) Circulation Systems

6. How horizontal and vertical elements can define a space? Explain with sketches. **(10+10=20)**

7. Elaborate with sketches on different "Spatial Organizations". **(20)**

8. Briefly analyze and explain the form of one of your known Buildings in Bangladesh, focusing "Transformation of Form" of that built volume and "Organization" of its elements. Explain with sketches. **(20)**

L-1/T-2/URP **Date: 06/10/2013**

BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY, DHAKA

L-1/T-2 BURP Examinations 2011-2012

Sub: **MATH 103** (Mathematics II: Calculus and Differential Equations)

Full Marks: 140 Time: 3 Hours

USE SEPARATE SCRIPTS FOR EACH SECTION

The figures in the margin indicate full marks.

SECTION – A

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

Symbols used have their usual meaning.

1. (a) Given $f(x)=\begin{cases} x & ; \ when\ 0<x<1 \\ 2-x & ; \ when\ 1\le x\le 2 \\ x-\frac{1}{2}x^2 & ; \ when\ x>2 \end{cases}$. Discuss the continuity of $f(x)$ at $x = 1$ and differentiability of $f(x)$ at $x = 2$. Also sketch the graph. **(15)**

   (b) Find the n-th derivative of the function, $y=\tan^{-1}\left(\frac{1+x}{1-x}\right)$. **(8⅓)**

2. (a) If $y=\cos\{\ln(1+x)^2\}$, then show that $(1+x)^2 y_{n+2}+(2n+1)(1+x)y_{n+1}+(n^2+4)y_n=0$. **(10⅓)**

   (b) The total area of a page is 150 square inches. The combined width of the margin at the top and the bottom is 3″ and at the side is 2". What must be the dimensions of the page in order that the area of the printed matter may be maximum? **(13)**

3. (a) Determine the following integrals:

   (i) $\int(3x-1)\sqrt{x^2-x+1}\,dx$ **(7)**

   (ii) $\int\frac{4\cos x+10\sin x}{5-3\cos x+7\sin x}\,dx$ **(7)**

   (b) Evaluate, $\lim_{n\to\infty}\left[\frac{1}{\sqrt{(2n-1^2)}}+\frac{1}{\sqrt{(4n-2^2)}}+\frac{1}{\sqrt{(6n-3^2)}}+\cdots+\frac{1}{\sqrt{(2n^2-n^2)}}\right]$. **(9⅓)**

4. (a) Prove that, $\int_0^1\frac{\log(1+x)}{1+x^2}\,dx=\frac{\pi}{2}\log 2$. **(11⅓)**

   (b) Find the area of the loop of the curve $x^3+y^3=3axy$. **(12)**

Contd P/2

MATH 103

SECTION – B

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

5. (a) Form a differential equation of the lowest order by eliminating arbitrary constants a, b from the equation $\frac{x^2}{a^2+\lambda}+\frac{y^2}{b^2+\lambda}=1$. **(8⅓)**

(b) Solve: $\left(x\sin\frac{y}{x}-y\cos\frac{y}{x}\right)dx+x\cos\frac{y}{x}\,dy=0$ **(8)**

(c) Solve: $(x+y)^2\frac{dy}{dx}=a^2$ **(7)**

6. Solve the following ODE's

(a) $(1+y^2)dx+(x-\tan^{-1}y)dy=0$ **(8)**

(b) $(x^2+2xy-y^2)dx+(y^2+2xy-x^2)dy=0$ **(7⅓)**

(c) Is the differential equation $(12y+4y^3+6x^2)dx+3(x+xy^2)dy=0$ exact? If not, make it exact and solve. **(8)**

7. (a) Find the general solution of the Bernoulli's equation $\frac{dy}{dx}+P(x)y=Q(x)y^n$. **(7)**

(b) Solve the Bernoulli's equation $\frac{dy}{dx}+\frac{y}{2x}=\frac{x}{y^3}$ at $y(1)=2$. **(8⅓)**

(c) A certain radioactive substance has a half life of 38 hours. Find how long it will take for 90% of the radioactivity to be dissipated? **(8)**

8. Solve the following:

(a) $\frac{d^3y}{dx^3}-3\frac{d^2y}{dx^2}+4\frac{dy}{dx}-2y=e^{2x}+\sin x$ **(8)**

(b) $\frac{d^2y}{dx^2}-2\frac{dy}{dx}+y=xe^x\cos x$ **(7)**

(c) $(1+x)^2\frac{d^2y}{dx^2}+(1+x)\frac{dy}{dx}+y=2\sin[\ln(1+x)]$. **(8⅓)**

Tanjab Ahmed
16.9.13

L-1/T-2/URP **Date : 24/07/2013**

BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY, DHAKA

L-1/T-2 BURP Examinations 2011-2012

Sub : **PLAN 113** (Fundamentals of Planning)

Full Marks : 140 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 is development planning? **(5⅓)**

   (b) Write about the development indicators of planning? Draw a comparative scenario between growth and development. **(13+5=18)**

2. (a) What is aspatial planning? Give an example of aspatial planning. **(5⅓)**

   (b) Why it is necessary to consider social justice and environmental equality during aspatial planning? **(14)**

   (c) Draw a diagram to show the domain of development planning. **(4)**

3. (a) Write about different types of systems. Draw a system diagram of urban ecostructure showing it's necessary components. **(8+10=18)**

   (b) What is traditional planning approach? **(5⅓)**

4. (a) How does the strategic planning approach differ from the traditional approach of planning? Describe with necessary examples. **(8)**

   (b) What are the main components of a traditional planning approach? **(10)**

   (c) Write about the function of NEC. **(5⅓)**

SECTION – B

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

5. (a) Planning involves making decisions about how to make best use of available resources – Explain this statement. **(4)**

   (b) Which aspects would you consider while evaluating the alternatives? **(7)**

   (c) Analysis of environment – is an important part of planning process – explain why? **(7)**

   (d) Which steps are followed during stakeholder analysis? **(5⅓)**

Contd P/2

PLAN 113

6. (a) Do you think normative planning procedure can be widely ~~practical~~ practiced in the context of Bangladesh? Elaborate your opinion with necessary arguments. **(9 1/3)**

   (b) Suppose you are working in a NGO and your responsibility is to prepare a rehabilitation plan for a cyclone affected area. Which planning procedure would you follow? Explain reasons behind your choice. **(14)**

7. (a) Planners should practice three fundamental ethical principles. Discuss these principles briefly. **(7)**

   (b) Explain the ethical principle "Expand choice and opportunity for all person" – elaborate your answer with relevant example. **(6)**

   (c) What are the limitations of "Rational Comprehensive Planning". How these issues were addressed by "Disjointed Incremental Planning" procedure? **(10 1/3)**

8. (a) What do you understand by the term "Community Participation". **(4)**

   (b) What strategies can be adopted to empower communities? **(6)**

   (c) According to Arnstein participation without redistribution of power is an empty and frustrating process – explain this statement and discuss different levels of participation. **(13 1/3)**

S Hasan
29-9-13

L-1/T-2/URP **Date : 29/09/2013**

BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY, DHAKA

L-1/T-2 B. URP Examinations 2011-2012

Sub : **PLAN 161** (Surveying and Cartography)

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 needs to be considered during the selection of suitable stations for chain survey? **(9)**

   (b) During the course of chain survey of an area, it is required to cross a 100 feet road for which it is unsafe to lay chains over the road due to heavy traffic volume. In this case, how the chaining can be continued without crossing the road with chains? **(8)**

   (c) For locating the details of a site you are told to use plane tabling. Describe, with necessary sketches, the methods you can use to accomplish the task and include any specific advantages of the methods. **(18)**

2. (a) Describe the Lehmann's Method of locating the position of instrument station of plane table. Draw appropriate sketches. **(10)**

   (b) In a closed traverse survey ABCDEA, the observed bearing of the starting line AB is 140°30′. The measured excluded angles of the four vertices are as follows:

Station	A	B	C	D	E
Excluded Angle	281°11′	197°38′	263°40′	259°47′	-

   (i) Calculate the forward bearings of the remaining sides. **(13)**

   (ii) Given that the lengths of sides AB, BC, CD, and DE are 20 m, 25 m, 19 m and 30 m respectively. Determine the length of the remaining side. **(12)**

3. (a) Discuss about the similarities and dissimilarities between the process of chain survey and traverse survey. **(5)**

   (b) What are the general characteristics of contour lines? Draw neat sketches where necessary. **(12)**

   (c) What are the advantages of plane table surveying over other surveying methods? **(6)**

   (d) An Engineer's chain shows the actual length during the measurement of a road at 55°F at a pull of 10 kg. The same chain was used to determine the length of another road during which the surrounding temperature was 65°F and the pull applied to the chain was 19 kg. If the cross-sectional area of the chain was 0.025 inch^2 and the measured length of the road was 20, 500 feet, what is the actual length of this road? The coefficient of thermal expansion and Young's modulus of elasticity of the chain are 6.25×10^{-6} per °F and 2.1×10^6 kg/cm^2 respectively. **(12)**

Contd P/2

PLAN 161

4. (a) Explain with appropriate sketches how staff readings can be affected during levelling which involves long sight distances. What corrections are used for balancing these errors? **(6+3=9)**

(b) An automatic level is placed at C on a line AB. C is 2500 feet from A and 5500 feet from B. The difference between the staff readings on A and B is 3.28 feet. The staff reading on A is 6.52 feet and B is on a higher ground than A. Calculate the true difference of level between A and B. **(6)**

(c) Briefly describe the different types of levelling. **(20)**

SECTION – B

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

The symbols and terminology have their usual meanings.

5. (a) What is map? Why do you think urban planners need map? **(4+6)**

(b) You have been assigned to prepare an amenity distribution map of Dhaka Mega city.

(i) What is the class associated with this kind of map? **(2)**

(ii) What objectives would you consider from mapping and design perspective in preparing the layout for the above mentioned map? **(8)**

(iii) You found that 1″ = 20 mile scale would suit your purpose for preparing the above mentioned map. What is the type of mentioned scale? What are the other kinds of scale? Express this scale in other kinds of scale. **(1+2+2)**

(c) Graphically explain the major and minor elements of a map composition. **(10)**

6. (a) Why do you think one needs to project map? What are the problems a map maker face in defining co-ordinate system of earth surface? Describe the different types of co-ordinate system used by cartographer for projecting map. **(2+9+9)**

(b) Explain with appropriate figure the relationship among geoid height, ellipsoid height and orthometric height. **(5)**

(c) Everest 1830 is the ellipsoid used in official maps of Bangladesh. Its semi major axis is 6,337, 276.345 m and semi minor axis is 6,356,098.359 m. Determine the co-efficient of flattening of the ellipsoid. **(2)**

(d) BTM is a cylindrical tangent projection system. What are the common characteristics it would show with other cylindrical projection system like UTM? **(8)**

7. (a) As SA no longer exist, what are the error source you would encounter in conducting a GPS survey? **(10)**

Contd P/3

PLAN 161

Contd ... Q. No. 7

(b) During a GPS survey you observe followings in the receiver- **(5)**

(i) HDOP 5,

(ii) VDOP 4,

(iii) TDOP 4,

Would you use the data from this receiver for positional and geographical determination? Explain the reason for your decision.

(c) Write short notes (Any four) **(4×5)**

(i) Cartogram,

(ii) Datum,

(iii) Types of aerial photo,

(iv) Space segment of NAVSTAR program,

(v) The semiotics of Cartography,

(vi) General purpose maps of Bangladesh.

8. Your firm won a contract from UDD to prepare a 3-D topographic and land use map of Dinajpur district. The average elevation of Dinajpur is 37 m above sea level. As part of your contract you have to use aerial photograph for the survey. UDD set the following condition for the survey.

(i) Photo must be in a contact print, the size of which is 23×23 cm^2,

(ii) The scale of the print is 1 : 20,000,

(iii) Forward lap 60% (at least),

(iv) Side lap 30% (at least)

The longest length of the study area in east-west direction is 18 km while that of north-south is 20 km. You have a map of the area in 1 : 100,000 scale and the camera mounted in the air craft has a focal length of 175 mm.

(a) Prepare a flight plan for the crews of the aircraft for conducting the survey. **(18)**

(b) What are (is) data you needed to include the time between exposures and exposure time for each photograph in the flight plan? **(5)**

(c) Determine the aperture setting for the survey. **(6)**

(d) A pair of stereoscopic parallax photographs you found that difference between top and bottom of a water tower in Dinajpur city are 20.6 mm and 19.8 mm respectively. The photobase was found to be 51.8 mm. Determine the height of the water tower. **(6)**
