

L-1/T-1/ARCH

Date : 29/12/2012

BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY, DHAKA

L-1/T-1 B. Arch. Examinations 2011-2012

Sub : **HUM 211** (Sociology)

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 are the elements of culture? How is globalization influencing changes in each of the elements of culture? Explain with some practical examples. (10)
- (b) What does socialization mean? How does socialization shape human behaviour? Discuss in the context of nature versus narture debate. (13 1/3)
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2. (a) Define sociology. (5)
- (b) What is sociological imagination? Why do sociologists apply sociological imagination to understanding human society? (10)
- (c) Illustrate the contribution of Max Weber in the development of sociology. (8 1/3)
3. (a) What is deviant behavior? Explain Durkheims view of anomie of a society. (10)
- (b) 'The nature of white collar crime has been changed a lot due to the application of modern technologies' - Argue in fabour of your answer. (13 1/3)
✓
4. Write short notes on any Three of the following: (23 1/3)
 - (a) Functionalism
 - (b) Dominant ideology and ethnocentrism
 - (c) Looking glass self theory
 - (d) System of social stratification.

SECTION - B

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

5. (a) What do you know about natural environment and man-made environment? (5)
- (b) How do you define greenhouse gases? (6 1/3)
- (c) Briefly describe the relationship between physical environment and social development. (12)
6. (a) What do you mean by crude birth-rate and crude death rate? (5)
- (b) What are the socio-cultural factors that influence population growth? (6 1/3)
- (c) Write down the factors that have led to the growth of cities. (12)

HUM 211(ARCH)

7. (a) What is meant by human migration? Discuss the ^ucauses and effects of rural to urban migration. (12)
- (b) Critically discuss the Malthusian population theory. (6)
- (c) What are the negative impacts of capitalism on society? (5 1/3)
8. Write short notes on any three of the following: (23 1/3)
- (a) The sources of social change
- (b) Features of capitalism
- (c) The various types of industries in Bangladesh
- (d) Demographic transition theory.
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HUM 211(ARCH)

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L-1/T-1/ARCH

Date : 15/12/2012

BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY, DHAKA

L-1/T-1 B. Arch. Examinations 2011-2012

Sub : ARCH 151 (Design Theory-I)

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 (04)** questions in this Section. Answer Q. No. **4** and any **TWO** from the rest.

1. What are the four different form-generating design approaches according to Geoffrey Broadbent? Describe any two of them with examples. **(20)**
2. Draw a comprehensive diagram and describe design proves as a spiral metaphor according to John Zeisel. **(20)**
3. Describe 'spirit of the time' and 'psychological demand' with examples, as determinants of architectural form. **(20)**
4. Write short notes on any two: **(15×2=30)**
 - (a) Creative leap
 - (b) Internal coherence
 - (c) Datum.

SECTION – B

There are **FOUR (04)** questions in this Section. Answer Q. No. **8** and any **TWO** from the rest.

5. What do you understand by "Unity in variety"? Which one among balance continuity and emphasis according to you can play the strongest role in uniting the elements of an organization in a usual field? **(20)**
6. Compare design by drawing with craft evolution. **(20)**
7. Neatly sketch a diagram showing the relationship between hue, intensity and value in relation to a colour wheel. **(20)**
8. Write short notes on any two. **(15×2=30)**
 - (a) Split complementary colour scheme.
 - (b) Radial Balance
 - (c) 'Hierarchy' as a principle of design.

Mohammed Ghany

L-1/T-1/ARCH

Date : 05/01/2013

BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY, DHAKA

L-1/T-1 B. Arch. Examinations 2011-2012

Sub : ARCH 141 (Art and Architecture I)

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 **Q. No. 1** and any **TWO** from the rest.

1. Write short notes with illustrations on any **TWO** of the following topics. **(10×2=20)**
 - (a) Stonehenge
 - (b) Ziggurats of Ur Nammur
 - (c) Temple of Abu-Simbel.

2. **(17+8=25)**
 - (a) Describe city of Babylon with illustrations.
 - (b) What are the major characteristics of Persian Architecture?

3. **(15+10=25)**
 - (a) Draw the plan of great temple of AMMON Karnak at Thebes indicating different parts of the temple.
 - (b) Draw the Great Pyramid of Cheops at Gizeh and indicate different parts of the structure.

4. **(17+8=25)**
 - (a) Describe Assyrian Palace at Khorsabad with illustrations.
 - (b) What are the influences of Mesopotamian Architecture?

SECTION – B

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

5. Write short notes with illustrations on any **TWO** of the following topics. **(10×2=20)**
 - (a) Roman Basilica
 - (b) Agora
 - (c) Public building of Roman period.

 6. **(15)**
 - (a) Draw Doric order and indicate different parts of it.
 - (b) Write down the influences of Greek Architecture. **(10)**

 7. **(10)**
 - (a) Discuss the characteristics of different types of Roman Temple.
 - (b) Describe salient features of Pantheon. **(15)**

 8. **(15)**
 - (a) Describe and illustrate Roman Colosseum.
 - (b) Describe characteristics of Acropolis with illustrations. **(10)**
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Gamin

L-1/T-1/ARCH

Date : 17/11/2012

BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY, DHAKA

L-1/T-1 B. Arch. Examinations 2011-2012

Sub : **PHY 115** (Physics (Light, Heat, Sound))

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 is interference of light? What is the difference between constructive and destructive interference of light? (10)
- (b) Describe Young's double-slit experiment. Prove that the distance between any two consecutive bright or dark fringes is given by $\beta = \frac{\lambda D}{d}$, where their symbols have usual meaning. (18)
- (c) In Young's double-slit experiment the separation of the slits is 1.9 mm and the fringe spacing is 0.31 mm at a distance of 1 m from the slits. Calculate the wave length of light. (7)
2. (a) What is diffraction of light? (5)
- (b) Obtain an expression for the intensity distribution due to Fraunhofer diffraction at a single slit and hence find the conditions for maxima and minima. (22)
- (c) Show that the intensity of the first maximum is about 4.96% of the central maximum for Fraunhofer diffraction at a single slit. (8)
3. (a) What do you mean by 'plane polarized light'? (7)
- (b) Explain the Malus' law. How will you orient the polarizer and the analyzer so that a beam of natural light is reduced to (i) 0.25 (ii) 0.5 and (iii) 0.75 of its original intensity? (18)
- (c) State and explain inverse square law for light energy from a point source of light. (10)
4. (a) Explain the terms : (i) temperature gradient (ii) thermal resistance. (10)
- (b) Define the coefficient of thermal conductivity. Describe Searle's method for determining the thermal conductivity of a good conductor. (18)
- (c) The opposite faces of a metal plate of 0.2 cm thickness are at a difference of temperature of 100 °C and the area of the plate is 200 cm². Find the quantity of heat that will flow through the plate in one minute, if K = 0.2 CGS unit. (7)

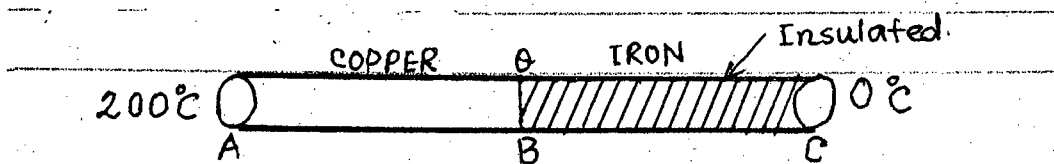
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PHY 115

SECTION - B

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

5. (a) Explain the terms natural and forced convection. (8)
- (b) Discuss the rectilinear flow of heat along a long metal bar of uniform cross-section and obtain an expression for temperature at any point of the bar in steady state. (20)
- (c) A bar of length 30 cm and uniform area of cross-section 5 cm^2 consists of two halves AB of copper and BC of iron welded together at B. The end A is maintained at 200°C and the end C at 0°C . The surface of the bar are thermally insulated. Find the rate of flow of heat along the bar in steady state. Thermal conductivities of copper and iron are 0.9 and 0.12 CGS units respectively. (7)



6. (a) What is a black body? What do you mean by black body radiation? (10)
- (b) Derive Planck's formula for energy distribution in the spectrum of a black body at an absolute temperature. (20)
- (c) A black body at a temperature of 1646 K has the wavelength corresponding to the maximum emission (λ_m) equal to 1.78 \AA . Find the temperature of the moon (assumed to be a black body) if λ_m for the moon is 14 \AA . (5)
7. (a) Define free and damped vibrations with examples. (7)
- (b) Derive the differential equation of a damped oscillator and find its solution under which the oscillations become lightly damped. (20)
- (c) A block attached to a spring is set in oscillation with an initial amplitude 120 mm. After 2.4 minutes the amplitude decreases to 60 mm. When will the amplitude be 30 mm? (8)
8. (a) What are the characteristics of wave motion? Obtain the differential equation of a plane progressive wave and hence show that $U = -v \frac{dy}{dx}$, where U is the particle velocity and v is the wave velocity. (16)
- (b) Show that the energy density of a plane progressive wave is given by $E = 2\pi^2 \rho n^2 a^2$. How much energy is transferred per unit area per unit second? (14)
- (c) A source of sound has a frequency of 256 Hz and an amplitude of $4.5 \times 10^{-3} \text{ m}$. If the velocity of sound is 340 m/s and the density of air is 1.29 kg/m^3 , what is the rate of flow of energy per square metre? (5)

Shafiq

L-1/T-1/ARCH

Date : 23/12/2012

BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY, DHAKA

L-1/T-1 B. Arch. Examinations 2011-2012

Sub : **MATH 111** (Calculus and Solid Geometry)

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) Sketch the graph of the function (13)

$$f(x) = \begin{cases} 1-x^2 & \text{for } x < 0 \\ 1 & \text{for } 0 \leq x < 1 \\ \frac{1}{x} & \text{for } x \geq 1 \end{cases}$$

and discuss continuity ^{and} differentiability of $f(x)$ at $x = 0$ and at $x = 1$.

- (b) If $y = e^{m \cos^{-1} x}$ then show that $(1-x^2)y_{n+2} - (2n+1)xy_{n+1} - (n^2+m^2)y_n = 0$. Hence find the value of y_n at $x = 0$. (10 1/3)

2. (a) If $u = \tan^{-1} \frac{x^3+y^3}{x-y}$; then show that $x \frac{\partial u}{\partial x} + y \frac{\partial u}{\partial y} = \sin 2u$ and then evaluate $x^2 u_{xx} + 2xy u_{xy} + y^2 u_{yy}$. (13)

- (b) A closed cylindrical can is to hold 1 liter (1000 cm^3) of liquid. How should we choose the height and radius to minimize the amount of material needed to manufacture the can? (10 1/3)

3. Work out the following:

(a) $\int \frac{dx}{(2x+3)\sqrt{x^2+3x+2}}$ (8)

(b) $\int \frac{\sin 2x}{(a+b \cos x)^2} dx$ (7)

(c) $\int \frac{dx}{x(a+bx^n)}$ (8 1/3)

4. (a) Evaluate $\int_0^{\pi/2} \frac{x dx}{\sin x + \cos x}$. (11 1/3)

- (b) Sketch the region bounded by the graphs of $y^2 = 4x$ and $y = 2x - 4$. Then find the area of the region by integration. (6)

- (c) Find the area interior to $y^2 = 2ax - x^2$ and exterior to $y^2 = ax$ lying in the first quadrant. (6)

MATH 111(ARCH)**SECTION - B**

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

5. (a) Find the locus of a point P which moves so that its distances from the point A(-2, 2, 3) and B(13, -3, 13) are governed by the relation: $3PA = 2PB$. (11 $\frac{1}{3}$)
- (b) Find the angle between the lines whose direction cosines are given by the relations $l + m + n = 0$ and $l^2 + m^2 - n^2 = 0$. (12)
6. (a) Determine whether the four points (0, -1, -1), (4, 5, 1), (3, 9, 4) and (-4, 4, 4) are coplanar or not. Find the equation of the plane if they are coplanar. (11 $\frac{1}{3}$)
- (b) A variable plane passes through a fixed point (a, b, c) and meets the axes of reference in A, B, and C. Show that the locus of the point of intersection of the planes through A, B, and C parallel to the coordinate planes is: $ax^{-1} + by^{-1} + cz^{-1} = 1$. (12)
7. (a) Find the direction cosines of the line whose equation is $x + y - 3 = 0 = x + y + z$. Also find the angle that the line makes with the plane $y - z + 2 = 0$. (11 $\frac{1}{3}$)
- (b) Find the shortest distance between the lines $\frac{x-3}{3} = \frac{y-8}{-1} = \frac{z-3}{1}$ and $\frac{x+3}{-3} = \frac{y+7}{2} = \frac{z-6}{4}$. Find also the equation of the shortest distance and the points in which it meets the given lines. (12)
8. (a) Find the equation of a sphere for which the circle $x^2 + y^2 + z^2 + 7y - 2z + 2 = 0$, $2x + 3y + 4z = 8$ is a great circle. (11 $\frac{1}{3}$)
- (b) Find the equations to the tangent planes to $7x^2 + 5y^2 + 3z^2 = 60$, which passes through the line $7x + 10y - 30 = 0$, $5y - 3z = 0$. (12)
-