L-4/T-1/ARCH **Date : 16/07/2016**

BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY, DHAKA

L-4/T-1 B. Arch. Examinations 2014-2015

Sub : **ARCH 431** (Environment and Design IV: Landscape Design)

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. (a) Distinguish between the conventional definition of landscape and landscape ecology. State the foci of landscape ecology. **(14)**

   (b) Why native plant community is important to address climate change and bio-diversity? **(16)**

2. Propose a plant community for the geological context of Dhaka. Use historical reference in terms of geology and vegetation pattern. **(20)**

3. Portray the role of trees in keeping the health of soil and vice-verse-explaining soil ecosystem. **(20)**

4. Write short notes on: **(10×2=20)**

   (a) Ecological services offered by Sundarban (Mangrove forest).

   (b) Guidelines for designing physically active neighborhood.

SECTION – B

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

5. (a) What is water smart landscaping? State the benefits of water smart landscaping. What are the strategies to attain "water smart landscaping"? **(18)**

   (b) "Green infrastructure has an important role to play in the adaptation to and mitigation of climate change" – state your critical position on the issue. **(12)**

6. Define land erosion. What are the reasons for land erosion in Bangladesh? Can vegetation play any role to prevent land erosion? Explain how? **(20)**

7. (a) What is planting? What are the steps involved in planting? **(12)**

   (b) State the factors that distinguish the planting season. **(8)**

8. Write short notes: **(10×2=20)**

   (a) Phytoremediation

   (b) Urban side walk construction

L-4/T-1/ARCH **Date : 20/07/2016**

BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY, DHAKA

L-4/T-1 B. Arch. Examinations 2014-2015

Sub : **ARCH 441** (Art and Architecture V)

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. 4** and any **TWO** from the rest.

1. What do you understand by the term "CHICAGO SCHOOL"? What was its contribution to Architecture? Briefly discuss the work of Adler and Sullivan. **(20)**

2. Describe Ronchamp Chapel as one of the finest work by Le Corbusier in his post-war phase. **(20)**

3. What were the theories behind 'Structural Classicism' and 'Romantic Classicism'? Give example of works belonging to these two streams of neo-classical architecture. **(20)**

4. Write short notes on any three: **(10×3)**
   (a) Deutsche Wrekbund
   (b) Cenotaph of Newton
   (c) Expressionism
   (d) Robie House

SECTION – B

There are **FOUR** questions in this section. Answer **Q. No. 8** and any **TWO** from the rest.

5. Describe the design concept and architectural features of Fransworth House to elucidate the dictum, "Less is more". **(20)**

6. Describe Robie House as one the finest Preirie house designed by Frank Lloyed Wright. **(20)**

7. What are the main features of all the three revolutions of the western art according to Gombrich? Explain with example. **(20)**

8. Write short notes on any three from below: **(3×10=30)**
   (a) Enlightenment
   (b) Bauhaus
   (c) Arrangement in Grey and Black
   (d) Towards a new architecture

L-4/T-1/ARCH **Date : 26/07/2016**

BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY, DHAKA

L-4/T-1 B. Arch Examinations 2014-2015

Sub : **CE 465** (Structure V: Reinforced Concrete Design)

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 advantages of Reinforced Concrete (RC)? **(3 1/3)**

   (b) A rectangular RC beam with dimensions b = 14″, d = 25″ and h = 28″ is reinforced with 3 – #10 bars. Given, f'_c = 5000 psi, f_y = 60 ksi, n = 7 and concrete modulus of rupture, f_r = 530 psi. **(10+10)**

   (i) Find the moment that will produce the first cracking at the bottom surface of the beam.

   (ii) Calculate the nominal moment capacity of this beam.

2. (a) What do you mean by balanced stress condition and balanced stress reinforcement ratio? **(5 1/3)**

   (b) Differentiate between working stress design (WSD)and ultimate strength design (USD) methods? **(4)**

   (c) Design the beam at sec A-A as shown in Fig. 1 for flexure using WSD method. Assume a rectangular cross-section of the beam with d = 2b. Given, f'_c = 3 ksi, f_s = 20 ksi, n = 9. **(14)**

3. (a) Describe briefly the diagonal tension caused by shear in RC beam. **(3 1/3)**

   (b) Design the web-reinforcement of the beam as shown in Fig. 2 by WSD method. Given, f'_c = 4 ksi, f_v = 24 ksi, n = 8. **(20)**

4. (a) What do you mean by serviceability and safety of a structure? **(4 1/3)**

   (b) A floor slab 4″ thick is supported by RC beams 50″ center to center which together with slab, act as T beams. The beams are simply supported and their span is 22 ft. The cross-section of each beam below the slab is 11 × 23 in. The reinforcement consists of 3 – # 11 bars in one row the center of which is 3″ above the bottom of the beam. Maximum allowable stress in the materials are f_c = 1125 psi and f_s = 24 ksi, with n = 10. What is the allowable uniformly distributed load which can be superimposed? **(19)**

Contd P/2

CE 465/ARCH

SECTION – B

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

Assume appropriate value(s) for any missing data.

5. (a) Draw with neat sketches different type of RC floor systems and briefly describe them. **(5 1/3)**

   (b) Using WSD method, design the slab panel "S1" as shown in Fig. 3. The slab carries a uniform service load of 40 psf and a service dead load of 60 psf in addition to its self-weight. Draw the reinforcement details also. Use Fig. 6 for calculation. **(18)**

   Given, f'_c = 4000 psi, f_s = 24 ksi, n = 8.

6. (a) What do you mean by one way slab and two way slab? **(3 1/3)**

   (b) Using WSD method, design the slab panel 'S1" as shown in Fig. 4. The slab carries a uniform service live load of 50 psf and a super-imposed dead load of 80 psf in addition to its self weight. Draw the reinforcement details also. Use Table 1, 2 and 3 for calculation.

   Given, f'_c = 4000 psi, f_s = 24 ksi, n = 8. **(20)**

7. (a) The flat slab carries a working live load of 200 psf in addition to its self weight. The center to center spacing of columns are 24′. Determine the size of drop panel, column capital and minimum thickness of the slab. Check the adequacy of the slab against punching shear. Given, f'_c = 4000 psi, f_v = 24 ksi, n = 8. **(20)**

   (b) What is temperature and shrinkage reinforcement in slab? **(3 1/3)**

8. (a) Describe briefly the ribbed floor systems with neat sketches. **(4 1/3)**

   (b) The one way ribbed floor system as shown in Fig. 5. The slab carries a service live load of 80 psf and service dead load of 80 psf in addition to its self-weight. **(19)**

   (i) Design the top flat plate supported by the ribs.

   (ii) Design the ribs as T-beams.

   Use WSD method. Given, f'_c = 4 ksi, f_s = 24 ksi, n = 8.

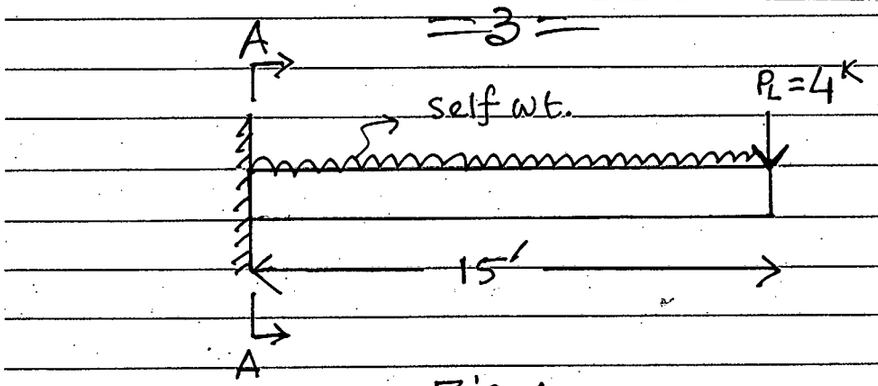

Fig. 1

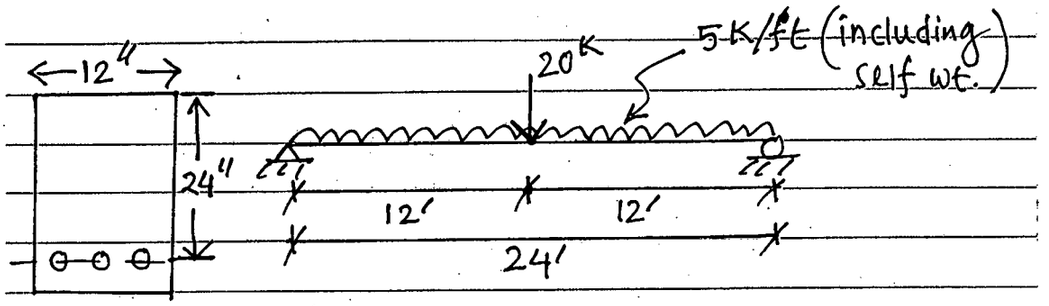

Fig. 2

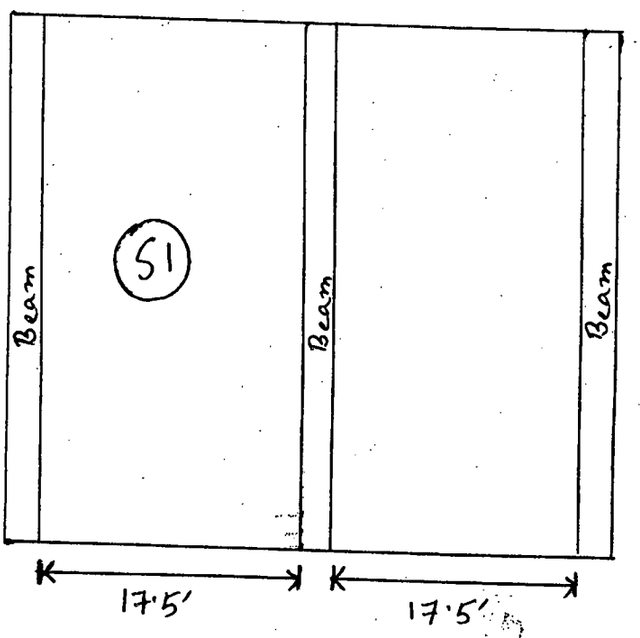

Fig. 3

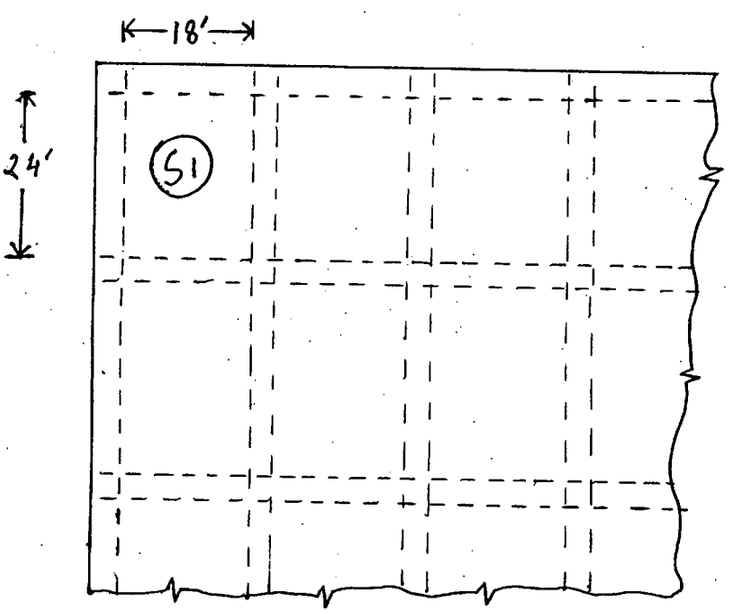

Fig. 4

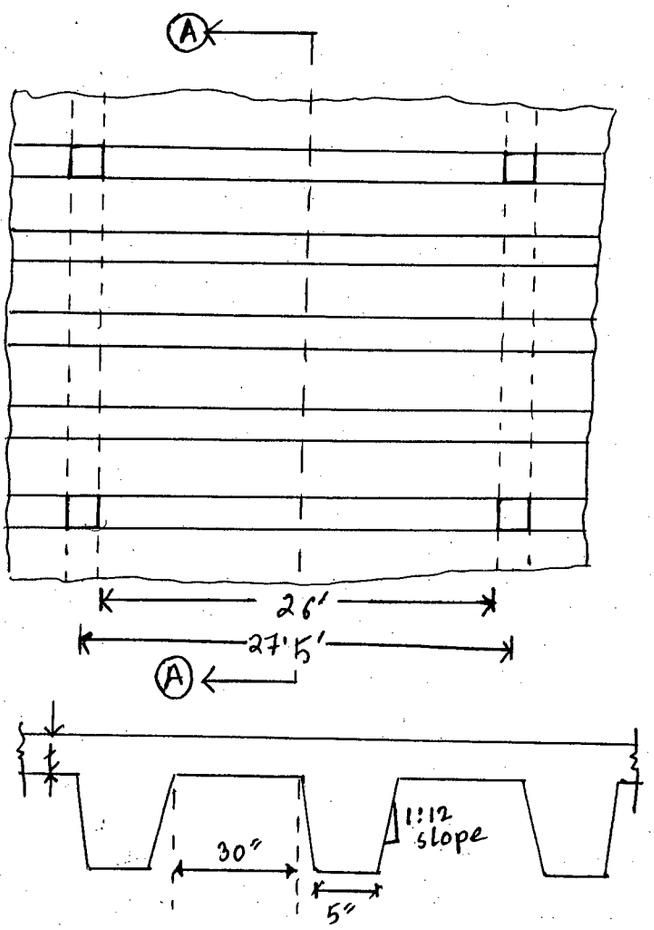

Fig. 5

FIGURE
Summary of ACI moment coefficients: (*a*) beams with more than two spans; (*b*) beams with two spans only; (*c*) slabs with spans not exceeding 10 ft; (*d*) beams in which the sum of column stiffnesses exceeds 8 times the sum of beam stiffnesses at each end of the span.

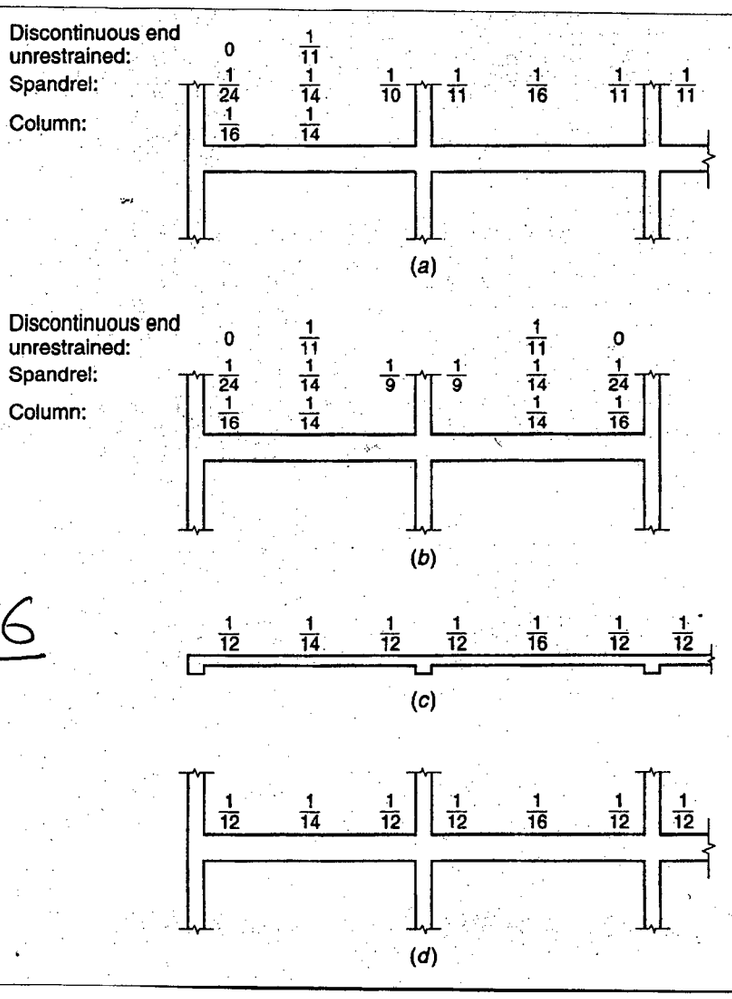

Figure-6

Table : 01

TABLE
Coefficients for negative moments in slabs[a]

$M_{a,neg} = C_{a,neg} w l_a^2$
$M_{b,neg} = C_{b,neg} w l_b^2$ where w = total uniform dead plus live load

Ratio $m = \frac{l_a}{l_b}$		Case 1	Case 2	Case 3	Case 4	Case 5	Case 6	Case 7	Case 8	Case 9
1.00	$C_{a,neg}$		0.045		0.050	0.075	0.071		0.033	0.061
	$C_{b,neg}$		0.045	0.076	0.050			0.071	0.061	0.033
0.95	$C_{a,neg}$		0.050		0.055	0.079	0.075		0.038	0.065
	$C_{b,neg}$		0.041	0.072	0.045			0.067	0.056	0.029
0.90	$C_{a,neg}$		0.055		0.060	0.080	0.079		0.043	0.068
	$C_{b,neg}$		0.037	0.070	0.040			0.062	0.052	0.025
0.85	$C_{a,neg}$		0.060		0.066	0.082	0.083		0.049	0.072
	$C_{b,neg}$		0.031	0.065	0.034			0.057	0.046	0.021
0.80	$C_{a,neg}$		0.065		0.071	0.083	0.086		0.055	0.075
	$C_{b,neg}$		0.027	0.061	0.029			0.051	0.041	0.017
0.75	$C_{a,neg}$		0.069		0.076	0.085	0.088		0.061	0.078
	$C_{b,neg}$		0.022	0.056	0.024			0.044	0.036	0.014
0.70	$C_{a,neg}$		0.074		0.081	0.086	0.091		0.068	0.081
	$C_{b,neg}$		0.017	0.050	0.019			0.038	0.029	0.011
0.65	$C_{a,neg}$		0.077		0.085	0.087	0.093		0.074	0.083
	$C_{b,neg}$		0.014	0.043	0.015			0.031	0.024	0.008
0.60	$C_{a,neg}$		0.081		0.089	0.088	0.095		0.080	0.085
	$C_{b,neg}$		0.010	0.035	0.011			0.024	0.018	0.006
0.55	$C_{a,neg}$		0.084		0.092	0.089	0.096		0.085	0.086
	$C_{b,neg}$		0.007	0.028	0.008			0.019	0.014	0.005
0.50	$C_{a,neg}$		0.086		0.094	0.090	0.097		0.089	0.088
	$C_{b,neg}$		0.006	0.022	0.006			0.014	0.010	0.003

[a] A crosshatched edge indicates that the slab continues across, or is fixed at, the support; an unmarked edge indicates a support at which torsional resistance is negligible.

Table : 02

TABLE
Coefficients for dead load positive moments in slabs[a]

$M_{a,pos,dl} = C_{a,dl} w l_a^2$
$M_{b,pos,dl} = C_{b,dl} w l_b^2$ where w = total uniform dead load

Ratio $m = \frac{l_a}{l_b}$		Case 1	Case 2	Case 3	Case 4	Case 5	Case 6	Case 7	Case 8	Case 9
1.00	$C_{a,dl}$	0.036	0.018	0.018	0.027	0.027	0.033	0.027	0.020	0.023
	$C_{b,dl}$	0.036	0.018	0.027	0.027	0.018	0.027	0.033	0.023	0.020
0.95	$C_{a,dl}$	0.040	0.020	0.021	0.030	0.028	0.036	0.031	0.022	0.024
	$C_{b,dl}$	0.033	0.016	0.025	0.024	0.015	0.024	0.031	0.021	0.017
0.90	$C_{a,dl}$	0.045	0.022	0.025	0.033	0.029	0.039	0.035	0.025	0.026
	$C_{b,dl}$	0.029	0.014	0.024	0.022	0.013	0.021	0.028	0.019	0.015
0.85	$C_{a,dl}$	0.050	0.024	0.029	0.036	0.031	0.042	0.040	0.029	0.028
	$C_{b,dl}$	0.026	0.012	0.022	0.019	0.011	0.017	0.025	0.017	0.013
0.80	$C_{a,dl}$	0.056	0.026	0.034	0.039	0.032	0.045	0.045	0.032	0.029
	$C_{b,dl}$	0.023	0.011	0.020	0.016	0.009	0.015	0.022	0.015	0.010
0.75	$C_{a,dl}$	0.061	0.028	0.040	0.043	0.033	0.048	0.051	0.036	0.031
	$C_{b,dl}$	0.019	0.009	0.018	0.013	0.007	0.012	0.020	0.013	0.007
0.70	$C_{a,dl}$	0.068	0.030	0.046	0.046	0.035	0.051	0.058	0.040	0.033
	$C_{b,dl}$	0.016	0.007	0.016	0.011	0.005	0.009	0.017	0.011	0.006
0.65	$C_{a,dl}$	0.074	0.032	0.054	0.050	0.036	0.054	0.065	0.044	0.034
	$C_{b,dl}$	0.013	0.006	0.014	0.009	0.004	0.007	0.014	0.009	0.005
0.60	$C_{a,dl}$	0.081	0.034	0.062	0.053	0.037	0.056	0.073	0.048	0.036
	$C_{b,dl}$	0.010	0.004	0.011	0.007	0.003	0.006	0.012	0.007	0.004
0.55	$C_{a,dl}$	0.088	0.035	0.071	0.056	0.038	0.058	0.081	0.052	0.037
	$C_{b,dl}$	0.008	0.003	0.009	0.005	0.002	0.004	0.009	0.005	0.003
0.50	$C_{a,dl}$	0.095	0.037	0.080	0.059	0.039	0.061	0.089	0.056	0.038
	$C_{b,dl}$	0.006	0.002	0.007	0.004	0.001	0.003	0.007	0.004	0.002

[a] A crosshatched edge indicates that the slab continues across, or is fixed at, the support; an unmarked edge indicates a support at which torsional resistance is negligible.

Table : 03

TABLE

Coefficients for live load positive moments in slabs[a]

$M_{a,pos,ll} = C_{a,ll} w l_a^2$
$M_{b,pos,ll} = C_{b,ll} w l_b^2$
where w = total uniform live load

Ratio $m = \frac{l_a}{l_b}$		Case 1	Case 2	Case 3	Case 4	Case 5	Case 6	Case 7	Case 8	Case 9
										
1.00	$C_{a,ll}$	0.036	0.027	0.027	0.032	0.032	0.035	0.032	0.028	0.030
	$C_{b,ll}$	0.036	0.027	0.032	0.032	0.027	0.032	0.035	0.030	0.028
0.95	$C_{a,ll}$	0.040	0.030	0.031	0.035	0.034	0.038	0.036	0.031	0.032
	$C_{b,ll}$	0.033	0.025	0.029	0.029	0.024	0.029	0.032	0.027	0.025
0.90	$C_{a,ll}$	0.045	0.034	0.035	0.039	0.037	0.042	0.040	0.035	0.036
	$C_{b,ll}$	0.029	0.022	0.027	0.026	0.021	0.025	0.029	0.024	0.022
0.85	$C_{a,ll}$	0.050	0.037	0.040	0.043	0.041	0.046	0.045	0.040	0.039
	$C_{b,ll}$	0.026	0.019	0.024	0.023	0.019	0.022	0.026	0.022	0.020
0.80	$C_{a,ll}$	0.056	0.041	0.045	0.048	0.044	0.051	0.051	0.044	0.042
	$C_{b,ll}$	0.023	0.017	0.022	0.020	0.016	0.019	0.023	0.019	0.017
0.75	$C_{a,ll}$	0.061	0.045	0.051	0.052	0.047	0.055	0.056	0.049	0.046
	$C_{b,ll}$	0.019	0.014	0.019	0.016	0.013	0.016	0.020	0.016	0.013
0.70	$C_{a,ll}$	0.068	0.049	0.057	0.057	0.051	0.060	0.063	0.054	0.050
	$C_{b,ll}$	0.016	0.012	0.016	0.014	0.011	0.013	0.017	0.014	0.011
0.65	$C_{a,ll}$	0.074	0.053	0.064	0.062	0.055	0.064	0.070	0.059	0.054
	$C_{b,ll}$	0.013	0.010	0.014	0.011	0.009	0.010	0.014	0.011	0.009
0.60	$C_{a,ll}$	0.081	0.058	0.071	0.067	0.059	0.068	0.077	0.065	0.059
	$C_{b,ll}$	0.010	0.007	0.011	0.009	0.007	0.008	0.011	0.009	0.007
0.55	$C_{a,ll}$	0.088	0.062	0.080	0.072	0.063	0.073	0.085	0.070	0.063
	$C_{b,ll}$	0.008	0.006	0.009	0.007	0.005	0.006	0.009	0.007	0.006
0.50	$C_{a,ll}$	0.095	0.066	0.088	0.077	0.067	0.078	0.092	0.076	0.067
	$C_{b,ll}$	0.006	0.004	0.007	0.005	0.004	0.005	0.007	0.005	0.004

[a] A crosshatched edge indicates that the slab continues across, or is fixed at, the support; an unmarked edge indicates a support at which torsional resistance is negligible.

L-4/T-1/ARCH **Date : 31/07/2016**

BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY, DHAKA

L-4/T-1 B. Arch Examinations 2014-2015

Sub : **ARCH 445** (Architectural Conservation)

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. (a) What do you understand by the term "Architectural Conservation"? **(6)**

   (b) Why and what to conserve? Discuss. **(7)**

   (c) What are the 'values in conservation'? Categories them under different heads and discuss. **(13)**

2. (a) What do you understand by 'conservation ethics'? **(12)**

   (b) Elaborate on 'Authenticity'; 'Patination' and 'Conjecture' in conservation. **(10)**

3. (a) List 10 international charters on architectural and historic conservation, mentioning the area of focus in each case. **(10)**

   (b) Discuss heritage area conservation with respect to 'Panam nagar' in Bangladesh and 'Imai-machi' in Japan. **(12)**

4. (a) Discuss principle causes of decay in heritage properties. **(9)**

   (b) Discuss Disaster Risk Reduction in movable heritage properties. **(13)**

SECTION – B

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

5. (a) What are the objectives of Architectural conservation? **(12)**

   (b) Briefly discuss conservation guidelines. **(7)**

   (c) Discuss the role of conservation Architects. **(7)**

6. (a) What do you understand by "Conservation of Areas". **(6)**

   (b) How are conservation areas designated? **(6)**

   (c) Discuss the case of 'Shakhari Patti" in the light of the checklist for a Charter of Conservation Areas. **(10)**

Contd P/2

ARCH 445

7. (a) What are the common threats to conservation? **(10)**

   (b) What tools are available in Bangladesh that contribute towards "Architectural and Urban Conservation"? **(12)**

8. (a) What is a conservation management? **(9)**

   (b) Discuss the salient features of a conservation management plan in the context of Bangladesh. **(13)**

L-4/T-1/ARCH **Date : 31/07/2016**

BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY, DHAKA

L-4/T-1 B. Arch. Examinations 2014-2015

Sub : **ARCH 455** (Urban Design II)

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. 4** and any **TWO** from the rest.

1. (a) Define Urban Design. What is considered a sustainable approach to urban design? **(10)**

   (b) What are the problems of modern urban design? **(13)**

2. (a) Define "positive space". What are the principles a designer should follow in creating positive space in urban environment? **(10)**

   (b) Elaborately discuss the basic human need in public space. **(13)**

3. (a) Define "situational approach" to prevent crime in urban space. **(10)**

   (b) Discuss the situational approach strategy of Jane Jacob, Oscar Newman and Bill Hillier to define territoriality, surveillance and activity in urban space. **(13)**

4. Write short note on the followings: (any 3) **(8×3=24)**

   (a) Imeagibility

   (b) Legibility

   (c) Enclosure

   (d) Coherence

SECTION – B

There are **FOUR** questions in this section. Answer **Q. No. 8** and any **TWO** from the rest.

5. (a) Discuss the goal of Urban Life. **(13)**

   (b) Discuss the importance of 'context' in Urban Design. **(10)**

6. (a) What are the basic elements to create an identity of place? Discuss three design strategies that helps to assist a sense of identity in Urban Design. **(10)**

   (b) Discuss the five elements of urban mapping by Kevin Lynch, that helps to construct image of the city. **(13)**

Contd P/2

ARCH 455

7. (a) Define Urban Design process. Discuss different stages of urban design process. **(10)**

   (b) Enumerate the checklist for the appraisal in an urban design endeavor. **(13)**

8. (a) Discuss the social objectives of neighbourhood design. **(8)**

   (b) Write notes on any two of the following: **(8×2=16)**

   (i) Perry Neighbourhood unit

   (ii) Urban Village

   (iii) Oldenburg's concept of 'third place'
